

NAVIGATING CARBON TRADING IMPLEMENTATION IN THE INDONESIAN STOCK EXCHANGE IDXCARBON: CHALLENGES AND OPPORTUNITIES

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ABSTRACT

Global capital markets are increasingly aware of the urgency of addressing climate change by implementing various policies to reduce carbon emissions. One increasingly popular approach is carbon pricing, which aims to encourage companies to reduce emissions by factoring environmental costs into their investment decisions. In Indonesia, the capital market is under pressure to follow similar steps, especially in light of the Paris Agreement and the Indonesian government's commitment to reducing carbon emissions. This research investigates the challenges and opportunities in implementing carbon pricing in the Indonesian capital market IDX Carbon. Through in-depth literature analysis, this research identifies the factors that influence the implementation process and its impact on capital market stakeholders, including investors, companies and regulators. One of the main challenges is the complexity of the Indonesian capital market structure, such as low liquidity, the dominance of certain sectors in the index, and a lack of environmental awareness among investors. However, there are huge opportunities to introduce carbon pricing, such as increasing transparency and reporting of carbon emissions, providing economic incentives for green performing companies, and increasing environmental awareness among investors. It is hoped that the results of this research will provide valuable insights for regulators and capital market players in designing effective policies to reduce carbon emissions and increase economic sustainability.

INTRODUCTION

In the modern economic era, almost every facet of economic activity has an impact on greenhouse gas emissions, especially carbon dioxide (CO₂), and also affects the global climate. Therefore, effective climate change policies must influence decision-making related to these activities. Novikasari, S. R., & Mardhatillah, S. R. (2020).

The 2015 Paris Agreement has prompted the government to examine stronger policies to achieve decarbonization. It can be argued that the most economical method to reduce greenhouse gas emissions is to implement a carbon price as a policy instrument. Aldy, J. E. (2015).

Achieving the Paris Agreement goal of limiting the increase in average surface temperature to below 2°C (and ideally 1.5°C) above pre-industrial levels depends on countries increasing their nationally determined contributions (NDCs). Together with other policies, markets have important potential to set a meaningful price on carbon, enabling market participants to efficiently allocate capital towards low-carbon solutions and provide the type of emissions reductions needed to prevent the worst impacts of an emergency. Rosales, R. C., Bellino, P., Elnahass, M., Heubaum, H., Lim, P., Lemaistre, P., & Sjögersten, S. (2021).

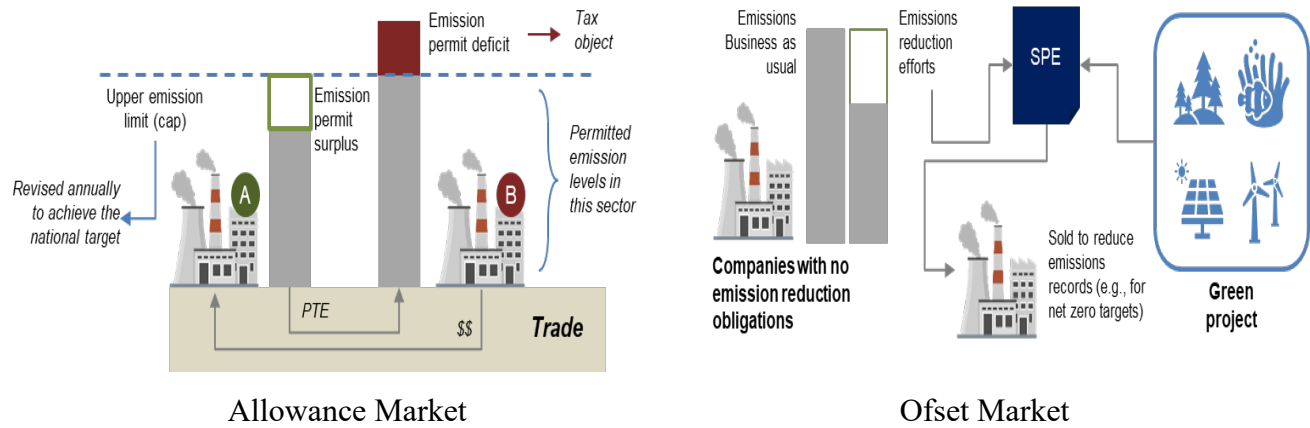
In September 2014, more than a thousand companies, including leading oil and gas companies, signed the Carbon Pricing Statement issued by the World Bank. (World Bank 2014). In 2015 alone, carbon pricing policies generated \$26 billion in global revenues (World Bank, 2016). Revenues derived from auctioning carbon allowances can be used for various purposes, such as mitigating climate change, reducing tax inequality, addressing budget deficits, improving competitiveness, increasing government spending on public services, or increasing climate finance flows from developed to developing countries. (Narassimhan, E., Gallagher, K. S., Koester, S., & Alejo, J. R. 2017; World Bank 2016).

Indonesia's efforts to reduce carbon emissions in recent years have seen progress in both small- and large-scale carbon reduction programs, despite obstacles that have arisen as the government tries to craft a consistent climate change agenda in the context of rapid economic growth and adjustments to the policy framework. Indonesia has been actively involved in the UNFCCC since submitting its First National Communication in 1992, and subsequently ratified the Kyoto Protocol in 2004. Under Presidential Regulation No. 61/2011, the Indonesian government aims to reduce carbon emissions by 26 percent by 2020 compared to a business-as-usual baseline. S. (2021).

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Indonesia is also taking part in shaping a low-emission future through National Contribution (NDC) and setting a voluntary Green House Gas (GHG) emission reduction target of between 26% and 41% compared to BAU in 2030. Government Regulation 98/2021 regulates that Carbon Trading through exchange is one of the Carbon Price Determination instruments. IDX Carbon Indonesia (2024)

Figure 1. Allowance & Offset Market



Allowance & Offset Market in IDX Carbon Indonesia

Sources: Idx Carbon Indonesia

The IDX Carbon product in this market is Technical Approval of Upper Emission Limits - Business Actors (PTBAE-PU). The Allowance Market is a cap and trade mechanism generally applied to the Compliance Carbon Market. Certain business entities determined by the Government receive a "stamp" in the form of an emission quota allocation for a certain period of time. Business entities that exceed this limit can purchase carbon units from other business entities whose quota has not been used.

The IDX Carbon product in this market is a Greenhouse Gas Emission Reduction Certificate (SPE-GRK) which is commonly known as "carbon offset". Offset Market is a scheme where business entities trade carbon units resulting from the reduction or elimination of GHGs by certain business actors and/or other climate change mitigation actions. Business entities can purchase carbon units to achieve emissions reduction targets and fulfill their commitment to be carbon neutral or net-zero. IDX Carbon Indonesia (2024)

IDX Carbon is the first official carbon exchange in Indonesia. IDXCarbon is registered and

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supervised by Otoritas Jasa Keuangan. Currently, carbon unit that can be traded on IDXCarbon is PTBAE-PU (allowance) and SPE-GRK (carbon offset). IDXCarbon is run by the Indonesia Stock Exchange.

1. The First Official Carbon Exchange in Indonesia

IDX Carbon is the first official carbon exchange in Indonesia with operational permit granted by OJK. IDX Carbon operation is run by the Indonesia Stock Exchange, the sole provider of the Securities Exchange in Indonesia since 1992 with the largest market capitalization in ASEAN. Currently, there are more than 850 companies listed on IDX.

2. Connected to Sistem Registri Nasional (SRN-PPI)

IDX Carbon is connected to SRN-PPI which is operated by Kementerian Lingkungan Hidup dan Kehutanan (KLHK) or Ministry of Environment and Forestry to ensure smooth transfer of carbon unit.

3. Ease of Access

IDX Carbon develops a carbon unit trading system based on blockchain technology and is committed to providing convenience in transactions, namely: Users can directly doing transaction on the Carbon Exchange. Instant settlement. Transparency in trading carbon units.

RESEARCH METHOD

This research is a literature review, which is a summary of theories, findings and other research material obtained from references to be used as a basis for developing a clear framework for formulating the problem under study. The author carries out a critical and in-depth summary, analysis and synthesis of previous literature. A quality literature review is one that evaluates the quality and new findings of a scientific paper.

Researchers analyzed trade and growth data released by IDXCarbon Indonesia and several literatures and then summarized the results. After conducting an in-depth analysis of the table, the researcher will obtain a summary of the results which can be included in the next chapter. The literature journals used are the latest journals published by publishers of international reputation. The analysis covers topics such as carbon pricing and carbon markets which are grouped based on the characteristics of each journal. Because this research is an analytical research and literature review, there is no specific population or sample. Meanwhile, the analysis was carried out on carbon growth and trading reports supported by journals according to their characteristics.

RESULT AND DISCUSSION

The President of the Republic of Indonesia, Joko Widodo, officially launched the Indonesian

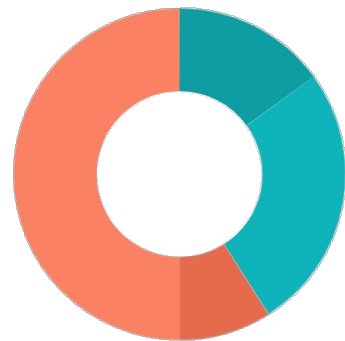
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Carbon Exchange (IDXCarbon) at the Main Hall of the Indonesian Stock Exchange (BEI) on Tuesday (26/9). The Carbon Exchange Operator business license has been granted to the IDX by the Financial Services Authority (OJK) through Decree number KEP-77/D.04/2023 on September 18 2023.

According to OJK Regulation (POJK) Number 14 of 2023 concerning Carbon Trading through the Carbon Exchange, IDXCarbon acts as a Carbon Exchange Organizer which provides a transparent, orderly, fair and efficient trading system. Apart from providing transparency in prices, IDXCarbon trading also offers a simple and easy transaction mechanism. Currently, there are four IDXCarbon trading mechanisms, namely Auction, Regular Trading, Negotiated Trading, and Marketplace.

IDXCarbon has been integrated with the National Climate Change Control Registry System (SRN-PPI) owned by the Ministry of Environment and Forestry (KLHK), thus simplifying the administrative process of transferring carbon units and preventing double counting. Companies that have a responsibility or voluntary commitment to reduce Greenhouse Gas emissions can use the IDXCarbon service and purchase available Carbon Units. The company must register first by filling out the IDXCarbon Service User Registration Form which can be accessed via the website www.idxcarbon.co.id. In addition, project owners who already have Carbon Units registered in SRN-PPI can also sell their Carbon Units via the IDXCarbon platform.

Figure 2. Carbon Exchange Participants 2023



■ BUMN & Subsidiaries (non listed) (15%)
■ Listed Companies & Subsidiaries (26%)
■ Exchange Member (9%) ■ Others (50%)

Carbon Exchange Participants in IDX Carbon Indonesia 2023

Source: Data IDX Carbon Indonesia

In 2023, IDXCarbon recorded significant participation from various entities in carbon trading. Data shows that as many as 15 state-owned companies (BUMN) and their subsidiaries that are not listed on the stock exchange participate in carbon trading. In addition, as many as 26 companies listed on the stock exchange participated, along with their subsidiaries. The active stock exchange members on IDXCarbon reach 9 companies. Apart from that, there are 50 other entities that also contribute to carbon trading on the IDXCarbon platform. The broad participation of these various entities shows great interest in efforts to reduce carbon emissions and fight for environmental sustainability through carbon trading. Hal ini juga sejalan dengan penelitian. Han, G., Olsson, M., Hallding, K., & Lunsford, D. (2012).

Table 1. Resume data of trade 2023

Trade Volume (tCO ₂ e)	Trade Value (IDR)	Number of Trade
494,254	30,907	47

Resume data of trade 2023

Source: Data IDX Carbon Indonesia

In 2023, IDXCarbon shows significant progress in carbon trading. The number of trades reached 47 transactions, with a total trade volume of 494,254 tons of carbon dioxide equivalent (tCO₂e). This reflects high activity in carbon markets, with multiple parties involved in trading carbon emission rights. In terms of trade value, IDXCarbon recorded a total trade value of 30.907bn. This figure reflects the enormous economic value involved in carbon trading, demonstrating the increasing interest of market players in reducing carbon emissions and contributing to climate change mitigation. This is also shown in research, all of these factors will have a big impact on operation of carbon markets, even with well-marked rules and regulations. This spirit could enable China to build a unique and innovative system carbon market to curb now soaring emissions.

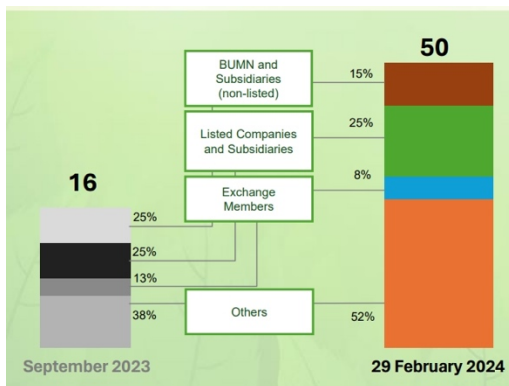
2023, IDX Carbon Indonesia shows a number of opportunities and challenges in managing

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participation in carbon trading. Opportunities include increased participation from various entities, such as state-owned companies and subsidiaries not listed on the stock exchange (15 entities), as well as companies listed on the stock exchange and their subsidiaries (26 entities). Apart from that, there are opportunities from stock exchange members who are active in IDX Carbon, which reaches 9 companies. Apart from these entities, there was also participation from 50 other entities.

However, on the other hand, there are several challenges that IDX Carbon must face. One of them is ensuring transparency and fairness in carbon trading, especially with the increasing number of entities involved. Apart from that, IDX Carbon also needs to face challenges in ensuring compliance with applicable regulations and standards, as well as maintaining market integrity. The increasing complexity of carbon participation and trading can also be a challenge, given the existence of various entities that have different characteristics and needs. Overall, IDX Carbon has the opportunity to increase its contribution to carbon trading, but must also prepare for the complex challenge of managing participation from multiple entities in 2023. in research Spash, C. L. (2010). said Company power has been shown to be the main factor influencing the operation and structure of the emissions market. Despite the potential to be manipulated to achieve financial gain, attention to environmental and social impacts is often given less attention, especially as markets expand internationally and trade becomes more complex. At an individual level, there is a risk that emissions trading could have undesirable ethical and psychological impacts, as well as discourage voluntary action. In conclusion, such an emphasis on markets tends to obscure the need to change human behavior, institutions, and infrastructure.

Figure 3. Carbon Exchange Pasrtisipant Total



Carbon Exchange All Participants in IDX Carbon Indonesia between 2023 and 2024

Source: Data IDX Carbon Indonesia

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From September 2023 to February 2024, the growth in participation in carbon exchange saw a significant spike. This participation increased by 220% from initial figures, indicating strong interest from various parties in carbon trading. This growth reflects a variety of factors, including increasing awareness of environmental issues and climate change among companies, governments and the general public. Companies are starting to realize the importance of reducing carbon emissions and investing in environmentally friendly practices to fulfill their commitment to environmental sustainability.

In addition, stricter regulations and incentives provided by the government have also driven this growth. More progressive climate change policies and the implementation of effective carbon markets have opened up opportunities for more entities to engage in carbon trading. During this period, many companies and financial institutions have allocated additional resources and workforce to manage their investments in carbon trading. This includes establishing dedicated teams, increasing capacity, and developing more sophisticated trading strategies. Overall, the 220% growth in participation in carbon trading from September 2023 to February 2024 reflects a significant shift towards greater awareness and action in addressing climate change and protecting the environment.

During the period from September 2023 to February 2024, IDXCarbon faces various opportunities and challenges for significant participation growth of 220%. Emerging opportunities include increasing awareness of the importance of environmental sustainability and climate change among companies and the general public. This motivates entities to adopt more environmentally friendly business practices and look for ways to reduce their carbon footprint. IDXCarbon, as a carbon trading platform, can take advantage of this awareness by providing services and solutions that suit market needs. This includes providing an accessible, transparent and efficient platform for carbon trading.

Apart from that, stricter regulations and government incentives in an effort to reduce carbon emissions are also opportunities for IDXCarbon. Stronger regulations could encourage more companies to participate in carbon trading as part of their efforts to comply with regulations and achieve their carbon emissions goals. Incentives provided by the government, such as fiscal incentives or subsidies for environmentally friendly projects, can also encourage growth in participation in IDXCarbon. However, along with these opportunities, IDXCarbon also faces a

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number of challenges. One of them is the increasing complexity in managing increasingly busy carbon trading. With significant growth in participation, IDXCcarbon must face demands to maintain market security, transparency and fairness. This requires investment in advanced information technology and data security as well as the development of appropriate policies. Additionally, education and market awareness are also challenges. IDXCcarbon needs to ensure that market participants have sufficient understanding of carbon trading and its benefits. This may involve efforts to raise awareness through education and outreach campaigns. Overall, although faced with a number of challenges, IDXCcarbon has a significant opportunity to capitalize on significant participation growth over the period September 2023 to February 2024. With the right strategy and effective management, IDXCcarbon can become a key driver in global efforts to reduce carbon emissions and tackle climate change.

Carbon pricing is expected to drive economic and social transformation for the better. a low-carbon and decarbonized world. Lohmann, L. (2006).he said In the United States, there is a tendency to prefer market instruments in addressing carbon issues, and there is increasing push to increase carbon trading. Some argue that companies are more likely to steer governments toward trade schemes similar to the U.S., designed to provide the greatest profits for themselves with minimal greenhouse gas control risks. Although much of the literature on mitigation prevention is theoretical, recent years have witnessed an increase in the publication of related empirical case studies. This has expanded understanding of how carbon offset markets are implemented through social and material interactions. Carton, W. (2019). Kojima, S., & Asakawa, K. (2016). According to Zhang, Z. (2015). In his research Environmental taxes can be imposed on sectors not covered by emissions trading and applied in regions that do not apply emissions trading.

CONCLUSION

The journey of carbon pricing on the IDX Carbon Indonesia capital market has been marked by a blend of challenges and opportunities. As evidenced by the significant 220% increase in participation from September 2023 to February 2024, it is clear that there is a growing recognition of the importance of carbon pricing in addressing climate change and promoting sustainability. This surge in participation underscores the potential for IDX Carbon to play a pivotal role in facilitating carbon trading and fostering environmental stewardship within Indonesia's financial landscape.

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The opportunities presented by carbon pricing are manifold. With heightened awareness of environmental issues, both among businesses and the public, there is a growing demand for sustainable practices. IDX Carbon stands at the forefront of this shift, offering a transparent and efficient platform for carbon trading. Moreover, stringent regulations and government incentives aimed at reducing carbon emissions further enhance the prospects for carbon pricing. By leveraging these opportunities, IDX Carbon can continue to expand its influence and contribute significantly to Indonesia's transition to a low-carbon economy.

However, alongside these opportunities come several challenges. The complexity of managing carbon trading in a rapidly growing market poses significant operational and regulatory challenges for IDX Carbon. Ensuring market integrity, transparency, and fairness amidst increasing participation requires robust technological infrastructure and effective policy frameworks. Additionally, there remains a need for greater education and awareness among market participants regarding the intricacies of carbon pricing and its implications. Overcoming these challenges will be crucial for IDX Carbon to sustain its growth trajectory and realize its full potential as a catalyst for environmental sustainability.

In conclusion, the journey of carbon pricing on the IDX Carbon Indonesia capital market is characterized by a dynamic interplay of challenges and opportunities. While the surge in participation reflects a growing momentum towards sustainability, it also underscores the need for proactive measures to address the complexities inherent in carbon trading. By capitalizing on opportunities, navigating challenges, and fostering collaboration among stakeholders, IDX Carbon can emerge as a driving force in advancing climate action and promoting environmental stewardship within Indonesia's financial ecosystem. Di banyak negara, sektor-sektor yang menghasilkan banyak karbon sering kali menentang pengenaan harga karbon yang dapat mengakibatkan kenaikan biaya produksi yang signifikan, asalkan kondisi lainnya tetap tidak berubah. Namun, di sisi lain, pengenaan harga karbon diharapkan dapat mendorong perubahan ekonomi dan sosial menuju sebuah dunia yang lebih rendah emisi karbon dan dekarbonisasi, yang memerlukan perubahan pada "kondisi lainnya". Penting untuk membangun kesamaan pandangan antara mereka yang mendukung dan yang menentang, sehingga dapat terjadi diskusi yang konstruktif.

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