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Legal Certainty in Carbon Trading in Indonesia

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Abstrak

Perubahan iklim global telah menjadi salah satu permasalahan terpenting yang dihadapi dunia saat ini. Perubahan iklim dapat didefinisikan sebagai perubahan suhu dan kondisi cuaca dalam jangka panjang. Penyebab utama perubahan iklim adalah meningkatnya Emisi Gas Rumah Kaca (GRK) ke atmosfer akibat berbagai aktivitas manusia, termasuk aktivitas industri dan transportasi. Untuk memerangi perubahan iklim, komunitas internasional telah mengembangkan berbagai perjanjian dan kerangka kerja, termasuk Protokol Kyoto, diikuti oleh Perjanjian Paris, yang bertujuan untuk mengurangi emisi GRK secara global. Salah satu instrumen yang dikembangkan dengan tujuan mengurangi emisi GRK adalah perdagangan karbon atau dikenal juga dengan istilah perdagangan emisi. Perdagangan karbon adalah mekanisme dimana perusahaan atau negara dapat membeli atau menjual izin emisi GRK, yang disebut sertifikat karbon atau unit emisi, dengan tujuan mengurangi emisi secara efektif. Melalui perdagangan karbon, negara atau perusahaan dapat mengurangi emisi GRK yang dapat membantu negara lain mencapai tujuan emisinya secara lebih ekonomis. Indonesia, sebagai negara dengan emisi GRK yang tinggi, memiliki tanggung jawab untuk mengurangi emisi sesuai dengan komitmen internasional, seperti Perjanjian Paris. Meskipun telah mengambil langkah-langkah seperti pengembangan energi terbarukan, pengaturan. Penelitian ini menggunakan metode penelitian hukum yuridis normatif dengan pendekatan konseptual (*conceptual approach*), dan pendekatan perundang-undangan (*statue approach*). Penelitian ini juga akan membahas peran lembaga keuangan dan pasar modal dalam perdagangan karbon di Indonesia, sistem perdagangan karbon di Indonesia, serta perbedaan mekanisme perdagangan karbon antara Indonesia dengan negara lain.

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Abstract

Global climate change has become one of the most important issues facing the world today. Climate change can be defined as long-term changes in temperature and weather conditions. The main cause of climate change is the increase in Greenhouse Gas (GHG) emissions into the atmosphere due to various human activities, including industrial and transportation

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activities. To combat climate change, the international community has developed various agreements and frameworks, including the Kyoto Protocol, followed by the Paris Agreement, which aim to reduce GHG emissions globally. One of the instruments developed to reduce GHG emissions is carbon trading, also known as emissions trading. Carbon trading is a mechanism where companies or countries can buy or sell permits to emit GHGs, known as carbon credits or emission units, with the goal of effectively reducing emissions. Through carbon trading, countries or companies can reduce GHG emissions, helping other countries achieve their emission targets more economically. Indonesia, as a country with high GHG emissions, has a responsibility to reduce emissions in accordance with international commitments such as the Paris Agreement. Although steps have been taken, such as the development of renewable energy, regulations. This research uses a normative juridical legal research method with a conceptual approach and a statute approach. This study will also discuss the role of financial institutions and capital markets in carbon trading in Indonesia, the carbon trading system in Indonesia, and the differences in carbon trading mechanisms between Indonesia and other countries.

INTRODUCTION

Global climate change has become one of the most important issues facing the world today. Climate change can be defined as long-term changes in temperature and weather conditions. The main cause of climate change is the increase in Greenhouse Gas (GHG) emissions into the atmosphere due to various human activities, including industrial and transportation activities. To combat climate change, the international community has developed various agreements and frameworks, including the Kyoto Protocol, followed by the Paris Agreement, which aim to reduce GHG emissions globally. One of the instruments developed to reduce GHG emissions is carbon trading, also known as emissions trading.

Carbon trading is a mechanism where companies or countries can buy or sell permits to emit GHGs, known as carbon credits or emission units, with the goal of effectively reducing emissions. Through carbon trading, countries or companies can reduce GHG emissions, which can help other countries achieve their emission targets more economically. This research aims to analyze the legal regulations related to carbon trading in Indonesia and provide recommendations for the improvement and further development of these regulations. With a deeper understanding of the legal aspects of carbon trading in Indonesia, it is hoped that the country can more effectively reduce GHG emissions and meet its international commitments to address climate change sustainably. Based on the above description, the issues can be formulated as follows:

1. What is the role of financial institutions and capital markets in carbon trading in Indonesia?

2. What is the carbon trading system in Indonesia?
3. What are the differences in carbon trading mechanisms between Indonesia and other countries?

METHOD

This journal employs a normative legal research method that emphasizes the application of rules or norms in the prevailing law, using a conceptual approach that examines the legal basis while considering principles proposed by academics and legal figures, and a statute approach that involves the study of all legal regulations related to the legal issues being examined. This approach focuses on the consistency and alignment between laws and other regulations. The objective of legal research is to uncover the extent of consistency between legal norms and regulations, the alignment of norms encompassing rules and prohibitions with legal principles, and the compliance of individuals in carrying out certain activities with norms and legal principles. Normative legal research, also known as library research, involves the analysis of library or secondary materials in a legal context.

DISCUSSION AND ANALYSIS

Carbon trading is a concept that has emerged as a global effort to reduce carbon emissions in the atmosphere, which are considered a cause of global warming. Carbon trading, also known as emissions trading, is a market-based mechanism that allows countries to buy and sell carbon emission rights. Climate change is a global challenge that requires an immediate and effective response from the entire international community. In Indonesia, carbon trading has become an increasingly relevant topic in line with the growing awareness of the impacts of climate change.

The success of carbon trading is highly dependent on the legal certainty provided by a supportive regulatory framework. The regulatory framework for carbon trading in Indonesia is gradually evolving. The Environmental Law No. 32/2009 serves as the main foundation regulating environmental issues, including climate change mitigation efforts.¹ In practice, carbon trading has been operating smoothly between countries and industry players. Industrial companies that produce carbon as part of their business activities can make carbon management agreements with

¹ Hasid, H. Z., SE, S., Akhmad Noor, S. E., SE, M., & Kurniawan, E. (2022). *Ekonomi Sumber Daya Alam Dalam Lensa Pembangunan Ekonomi*. Cipta Media Nusantara.

other parties or other countries. Currently, there are three types of carbon trading implemented in various countries, including Indonesia.²

a. Cap and Trade

Cap and Trade is a scheme where carbon certificates are traded. Industry players are allowed to produce carbon according to their emission permit quota, which is allocated by the government at the beginning of the period. Previously, industries could release unlimited carbon, but now they must comply with emission permits and report their emissions periodically. Each industry receives a different quota of credits, depending on the type and potential carbon output. Industries that exceed their quota must buy emission credits from other industries that are below their limit. In a cap and tax system, industries that exceed their quota are subject to fines or taxes.³

b. Clean and Development Mechanism (CDM)

The Clean Development Mechanism (CDM) is a carbon trading mechanism that involves investment or funding for the development of clean energy infrastructure or environmentally friendly projects. In this scheme, projects typically include the construction of coal-fired power plants, solar power plants, or hydroelectric power plants in countries with supporting resources. Some countries that frequently receive investment funding for carbon offset infrastructure development from industry players are India, China, and Indonesia. Industry players who choose this trading scheme will receive compensation in the form of additional emission certificates to increase their carbon offsets.⁴

c. Reducing Emissions from Deforestation and Forest Degradation (REDD+)

Reducing Emissions from Deforestation and Forest Degradation (REDD+) is a scheme that does not involve the purchase of carbon certificates or investment in environmentally friendly projects but focuses on the conservation of natural areas with significant carbon absorption potential. Industry players using this scheme invest in maintaining areas that serve as carbon sinks, and if an imbalance occurs, they will receive additional carbon

² Nadya, Kurnia. 2023. Jenis-Jenis Perdagangan Karbon Di Dunia: Indonesia Bisa Terima Pendanaan Proyek Hijau <https://www.idxchannel.com/economics/jenis-jenis-perdagangan-karbon-di-dunia-indonesia-bisa-terima-pendanaan-proyek-hijau> Diakses Pada 07 Maret 2024

³ Alfianida, A., Saputri, A. H., Pardosi, H. T., Abdilah, S., Pragasti, D. T., Josephine, J., ... & Manalu, M. (2023). Gagasan Inovasi Untuk Pemerintah Indonesia Di Bidang Publik Dan Perpajakan Menuju Era Local Genius 6.0.

⁴ Sitorus, J. A., & Uliarina, E. V. (2024). Mezzanine Financing Dan Clean Development Mechanism Sebagai Katalisator Transformasi Energi Baru Terbarukan Berbasis Tenaga Gelombang Laut. Anthology: Inside Intellectual Property Rights, 1(1).

credits. Indonesia is one of the target locations for the REDD+ conservation program. Indonesia's rainforest-rich areas are conservation targets as they are estimated to contribute 75-80% of global carbon credits, potentially generating funding for environmentally friendly projects in Indonesia. Although carbon trading is still in the development stage, the Indonesian government has issued regulations related to the carbon market, namely Presidential Regulation No. 98 of 2021. With this regulation, Indonesia has the opportunity to obtain funding from carbon credit projects.⁵

Article 2 (4) of Presidential Regulation No. 98/2021 stipulates that "emission control is carried out through policies at the national, central, and regional development levels and from, for, and by the central government, regional governments, business world, and society." Based on the aforementioned regulations, the implementation of Presidential Regulation No. 98/2021 is important to be integrated into Indonesia's legal system because:

- a. Providing legal basis for NDC and achieving Indonesia's NDC;
- b. Providing procedural guidelines for the carbon economic value system;
- c. Establishing channels for implementing the carbon economic value in Indonesia;
- d. Offering incentives options for the business world;
- e. Setting legal foundations for the implementation of environmental funding instruments; and
- f. Supporting the performance of environmental funding instrument implementation.⁶

The diversity of these regulations often causes ambiguity and legal uncertainty. For example, inconsistency between central and regional regulations can create barriers for businesses in effectively implementing carbon trading practices. One of the main challenges in creating legal certainty in carbon trading in Indonesia is policy uncertainty. Frequent policy changes can disrupt long-term investments in projects related to carbon trading. Additionally, infrastructure limitations also pose obstacles in developing the carbon market in Indonesia.⁷

The lack of supporting infrastructure, such as databases on GHG emissions and transparent reporting mechanisms, can be barriers to the growth of carbon trading. Despite the significant challenges faced, there are bright prospects for the development of carbon trading in Indonesia.

⁵ Siagian, A. W., & Arifin, A. H. (2023). *Perlindungan Hutan Mangrove Melalui Valuasi Ekonomi Jasa Karbon Sebagai Upaya Pertambahan Pendapatan Negara*. *Kajian*, 27(2), 111-125.

⁶ Sulistiawati, L. Y., & Buana, L. (2023). *Legal Analysis Of The Carbon Pricing Regulation In Indonesia*. *Journal Of Central Banking Law And Institutions*, 2(1), 179-198.

⁷ Suyanto, S. (2023). *Buku Referensi: Mengenal Bursa Karbon Di Indonesia*.

The Indonesian government has demonstrated its commitment to addressing climate change issues through various policies and programs, including the REDD+ program aimed at reducing deforestation and forest degradation. Moreover, with increasing awareness of the importance of environmental protection, investment opportunities in sustainable projects related to carbon trading are on the rise.⁸

To address these challenges, concrete steps are needed, such as enhancing regulatory consistency, providing fiscal incentives, and improving supportive infrastructure. The government also needs to enhance coordination among related agencies to ensure policy consistency and support the growth of carbon trading in Indonesia. Carbon trading holds significant potential in reducing the impacts of climate change in Indonesia. However, challenges such as regulatory uncertainty and infrastructure limitations need to be overcome to create conditions conducive to sustainable carbon trading development. With collective commitment from the government, industry players, and society, Indonesia can harness the potential of carbon trading to effectively and sustainably achieve climate change mitigation targets.⁹

Carbon trading consists of two main mechanisms: emission trading and emission offsets. In the Emission Trading Mechanism, also known as the cap and trade system, businesses are required to reduce GHG emissions in accordance with their Business Emission Cap Agreement (BECA) or the emission limits set. Each business entity, such as those in sub-sectors like peat and mangrove management, is allocated a specific amount of GHG emissions they are allowed to release based on the designated cap. At the end of the period, businesses must report their actual GHG emissions. If their emissions exceed the set limit (deficit), they are required to purchase surplus GHG emissions from other businesses that have emissions below the designated cap.¹⁰

In the mechanism of carbon emission offsets, the tradable carbon units originate from emission reductions or increases in carbon absorption and/or storage that occur after achieving the NDC targets for sub-sectors. This results in surplus emission reductions. The emission reductions from carbon absorption and/or storage, in accordance with regulations, are then issued as Carbon

⁸ Wicaksono, D. A., & Yurista, A. P. (2013). Konservasi Hutan Partisipatif Melalui REDD+ (Studi Kasus Kalimantan Tengah Sebagai Provinsi Percontohan REDD+). *Jurnal Wilayah Dan Lingkungan*, 1(2), 189-200.

⁹ Nugraha, R., Varlitya, C. R., Judijanto, L., Adiwijaya, S., Suryahani, I., Murwani, I. A., ... & Basbeth, F. (2024). *Green Economy: Teori, Konsep, Gagasan Penerapan Perekonomian Hijau Berbagai Bidang Di Masa Depan*. PT. Sonpedia Publishing Indonesia.

¹⁰ PPID, 2023. *Perdagangan Karbon Untuk Pencapaian Target NDC, Kontribusi Indonesia Bagi Agenda Perubahan Iklim Global* <https://ppid.menlhk.go.id/Berita/Siaran-Pers/7443/Perdagangan-Karbon-Untuk-Pencapaian-Target-Ndc-Kontribusi-Indonesia-Bagi-Agenda-Perubahan-Iklim-Global> Diakses Pada 20 Februari 2024

Credit Certificates known as Greenhouse Gas Emission Reduction Certifications (SPE-GHG). These credits can be traded by businesses that have surplus emission reductions (offsets) to other businesses. Therefore, buyers can claim that they have reduced their GHG emission levels. According to Presidential Regulation No. 98/2021 on the Implementation of Carbon Economic Value, the implementation of Carbon Economic Value (NEK) is conducted by ministries/agencies, regional governments, businesses, and the community. The implementation of NEK is carried out through the following mechanisms:

- a. Carbon trading,
- b. Performance-based payments,
- c. Carbon levies; and/or
- d. Other mechanisms as determined by the Minister in accordance with developments in science and technology.¹¹

According to the fiskal.kemenkeu.go.id website, carbon pricing instruments include the following trading mechanisms:

- a. Emission Permit Trading is a mechanism where emission permit certificates are traded between entities needing additional emission permits and entities that have surplus emission permits. There are two main types of emission permit trading, namely cap and trade, and baseline and credit.
- b. Offset Emission is a concept where companies that produce a certain amount of emissions must offset these emissions elsewhere. This can be done through various methods such as afforestation, tree planting, and reforestation.¹²

Besides trading instruments, there are also instruments known as non-trading instruments:

- a. Carbon Levy is a charge imposed by the state, both centrally and regionally, based on carbon content, carbon emission potential, amount of carbon emissions, and/or the performance of Mitigation Actions.
- b. Result Based Payment (RBP) is a mechanism of payment provided for the success in reducing GHG emissions through specific mitigation actions agreed upon between program

¹¹ Kajian, T. (2023). Masa Depan Nilai Ekonomi Karbon Di Indonesia: Kondisi Terkini Dan Langkah-Langkah Selanjutnya.

¹² Badan Kebijakan Fiskal, 2022. <https://fiskal.kemenkeu.go.id/Publikasi/Siaran-Pers?Q=Carbon+Pricing> Diakses 26 Februari 2024

implementers and fund providers. Assessment of success is conducted by UNFCCC Certificates or technical teams appointed by UNFCCC.¹³

The provisions regarding ownership rights in carbon trading are regulated in Article 3 of Regulation No. 14/2023 concerning Carbon Trading through the Carbon Exchange. Carbon trading/REDD+ is a new issue related to environmental protection within the context of climate change and global warming, as well as in the context of international business and community welfare. In the social and environmental standards of REDD+, it is mentioned that carbon ownership rights can be held by individuals and groups. This regulation further stipulates that if REDD+ programs allow for individual and group ownership, these rights must be based on laws and customary rights over land, territories, and resources that result in GHG emission reductions. This regulation in Indonesia can be associated with forest classification, namely state forests and customary forests.¹⁴

The issue of carbon ownership must be based on Article 33 of the 1945 Constitution which emphasizes that the earth, air, and natural resources must be controlled by the state and used for the greatest prosperity of the people. This article regulates the control of natural resources in Indonesia, including forests and the natural wealth contained within them. However, "controlled" in Article 33 of the 1945 Constitution does not mean owned directly. It means the state has the authority to regulate the ownership and management of natural resources, including forests and their natural wealth, such as forest carbon. Therefore, through legislation, the state can establish various regulations in accordance with the principles of Article 33 of the 1945 Constitution.¹⁵

In addition to considering quantitative carbon emission reductions, legal reform related to carbon trading regulation is also crucial. Currently, carbon trading regulations such as those stipulated in Presidential Regulation No. 98/2021 are not yet supported by clear technical regulations, hindering progressive steps in carbon trading. Concerns about legal certainty have also arisen with the enactment of Presidential Regulation No. 98/2021. As an executive-level regulation, it is susceptible to changes at any time because it involves only the government in its

¹³ Iqbal, Muhamad. 2023. Pengertian Nilai Ekonomi Karbon, Peraturan, Manfaat, Mekanisme Dan Potensinya. https://Lindungihutan.Com/Blog/Nilai-Ekonomi-Karbon-Dan-Peraturannya/#Bagaimana_Mekanisme_Pelaksanaan_Nilai_Ekonomi_Karbon Diakses 26 Februari 2024

¹⁴ Duchelle, A. E., Simonet, G., Sunderlin, W. D., & Wunder, S. (2018). What Is REDD+ Achieving On The Ground?. *Current Opinion In Environmental Sustainability*, 32, 134-140.

¹⁵ Sanusi, S., Mujibussalim, M., & Fikri, F. (2013). *Perdagangan Karbon Hutan Aceh: Analisis Hukum Pada Tahapan Perencanaan*. *Kanun Jurnal Ilmu Hukum*, 15(1), 41-63.

formulation. To achieve legal certainty in carbon trading regulation in the future, it is recommended to consider harmonizing and revising the laws that govern aspects of carbon trading, especially the Environmental Law, Forestry Law, and Local Government Law, by incorporating considerations of social justice for the community.¹⁶

Carbon trading in Indonesia, like in many other countries, is associated with global efforts to reduce carbon emissions and address global warming. In the Indonesian context, carbon credit trading often involves projects implemented by developing countries, which are then purchased by developed countries or private entities. To achieve legal certainty in carbon trading in Indonesia, it is necessary to refer to several relevant legal sources and regulations:

- a. Republic of Indonesia Law Number 32 of 2004 concerning Environmental Management: Although it does not specifically mention carbon trading, this law provides the basic legal framework for environmental management in Indonesia, including the management of carbon emissions.
- b. Minister of Environment and Forestry Regulation of the Republic of Indonesia Number 10 of 2010 concerning Carbon Emission Standards: This regulation establishes carbon emission standards for various industrial sectors in Indonesia, which is a crucial step in managing carbon emissions.
- c. Minister of Environment and Forestry Regulation of the Republic of Indonesia Number 12 of 2012 concerning Carbon Emission Management: This regulation governs carbon emission management, including mechanisms for carbon emission reduction and carbon credit trading.

Policy on carbon trading in Indonesia must integrate principles of environmental justice. Although the NEK Presidential Regulation in Indonesia is seen as a positive step in supporting climate change mitigation, there are still issues regarding injustice for local communities and the environment. It is crucial to consider social and environmental justice in carbon trading policies and to undertake legal reforms to ensure legal certainty in the context of carbon trading. By considering ecological, social, and economic aspects, it is hoped that carbon trading policies can achieve fairness for all parties involved and contribute to climate change mitigation efforts.

¹⁶ Prihatiningtyas, W., Wijoyo, S., Wahyuni, I., & Fitriana, Z. M. (2023). Perspektif Keadilan Dalam Kebijakan Perdagangan Karbon (Carbon Trading) Di Indonesia Sebagai Upaya Mengatasi Perubahan Iklim. *Refleksi Hukum: Jurnal Ilmu Hukum*, 7(2), 163-186.

Carbon markets have become increasingly important tools in global efforts to address the impacts of climate change. As a country with significant greenhouse gas emissions, Indonesia has great potential to play an active role in the global carbon market. However, to activate this potential, legal certainty in carbon trading in Indonesia is crucial. With abundant natural resources and a commitment to tackling climate change, Indonesia has the opportunity to lead in carbon trading in Southeast Asia and globally.¹⁷

The Role of Financial Institutions and Capital Markets in Carbon Trading in Indonesia

The capital market and financial institutions play a crucial role in supporting carbon trading in Indonesia. The capital market has a vital economic and financial role, connecting issuing companies with investors and providing returns to capital owners according to their investment instruments. Additionally, the capital market facilitates long-term funding sources for businesses, enabling efficient fund allocation, and creating opportunities for stable companies and job creation.¹⁸ The Financial Services Authority Regulation (POJK) 14/2023 on Carbon Trading through Carbon Exchange stipulates that trading organizers in the capital market must organize Carbon Trading through the Carbon Exchange. They are required to obtain a business license from the Financial Services Authority (OJK) beforehand. Article 2 of POJK 14/2023 grants authority to the OJK to regulate, issue business licenses, supervise, and develop Carbon Trading through the Carbon Exchange. A Carbon Exchange is defined as a system that regulates the trading of carbon and/or records ownership of Carbon Units.

The role of the capital market in the national economy includes income distribution, increasing state revenue, enhancing company productivity, and creating job opportunities. The capital market enables companies to obtain long-term funding, while investors seek profit potential with measured risks through transparency, liquidity, and investment diversification. Therefore, financial institutions and the capital market play a crucial role in providing funding and investment for carbon trading projects in Indonesia. This includes the role of financial institutions in

¹⁷ Legionosuko, T., Madjid, M. A., Asmoro, N., & Samudro, E. G. (2019). Posisi dan strategi indonesia dalam menghadapi perubahan iklim guna mendukung ketahanan nasional. *Jurnal Ketahanan Nasional*, 25(3), 295-312.

¹⁸ Rustiana, D., & Ramadhani, S. (2022). Strategi Di Pasar Modal Syariah. *Jikem: Jurnal Ilmu Komputer, Ekonomi Dan Manajemen*, 2(1), 1578-1589.

supporting investment and financing for environmentally friendly projects, as well as the role of the capital market in providing a platform for trading financial instruments related to carbon.¹⁹

The emission permits or carbon credits purchased will be used to fulfill the greenhouse gas (GHG) emission reduction obligations set by the Indonesian Government for the buyers. This replaces the GHG emission reduction actions that should have been undertaken by the Indonesian Government to achieve Indonesia's NDC targets. Carbon trading is one of the policy options that can be used to reduce GHG emissions in a country. In addition, the Government has other options to reduce GHG emissions, such as through regulatory or licensing mechanisms (command & control), implementing carbon taxes, or through direct investments that directly impact GHG emission reductions, such as building a mass transportation system. There are also other options that are a combination of these options.²⁰

According to Inarno Djajadi, Executive Director of Capital Market Supervision at the Financial Services Authority (OJK), through a press release, "financial institutions and the capital market play a crucial role in supporting carbon trading in Indonesia." They can serve as key facilitators in providing financial resources and market infrastructure necessary for developing carbon trading mechanisms. The positive performance of Indonesia's capital market throughout 2023 has also been noted, indicating the potential of the capital market to support carbon trading initiatives. This reflects investor and market interest in sustainable and environmentally friendly investments, including investments in projects that contribute to reducing greenhouse gas emissions.²¹

Bank Mandiri, one of the leading financial institutions in Indonesia, has expressed readiness to pioneer in the Indonesian Carbon Exchange by investing in carbon trading. This step demonstrates the financial institution's commitment to supporting carbon trading initiatives and playing a key role in developing the carbon market in Indonesia. From the provided sources, it is evident that financial institutions and the capital market play a significant role in supporting carbon

¹⁹ Permata, C. P., & Ghoni, M. A. (2019). Peranan Pasar Modal Dalam Perekonomian Negara Indonesia. *Jurnal Akuntie (JAS)*, 5(2), 50-61.

²⁰ Maharat, D. D., Sutanto, N. N., & Fachran, S. (2023). Tinjauan Yuridis Penerapan Pajak Karbon Sebagai Solusi Percepatan Green Energy Di Indonesia. *JURNAL SPEKTRUM HUKUM*, 20(1), 1-18.

²¹ OJK, 2023. Siaran Pers: OJK Dukung Pengurangan Emisi GRK Dan Siapkan Penyelenggaraan Bursa Karbon <https://ojk.go.id/id/Berita-Dan-Kegiatan/Siaran-Pers/Pages/OJK-Dukung-Pengurangan-Emisi-Gas-Rumah-Kaca-Dan-Siapkan-Penyelenggaraan-Bursa-Karbon.aspx> Diakses 21 Februari 2024

trading in Indonesia. They can act as primary facilitators in providing financial resources and market infrastructure necessary for developing carbon trading mechanisms.²²

Financial institutions and capital markets play an important role in supporting carbon trading in Indonesia. Here are some aspects to consider:²³

1. Facilitating Investment and Financing for Environmentally Friendly Projects

Financial institutions play a role in facilitating investment and financing for environmentally friendly projects. They can provide the necessary financial resources to develop projects that contribute to reducing GHG emissions.

2. Platform for Trading Carbon-Related Financial Instruments

Capital markets provide a platform for trading carbon-related financial instruments. This includes trading carbon emission permits and carbon credits, which are integral parts of the carbon trading mechanism.

3. Carbon Trading Through the Carbon Exchange

The Indonesia Stock Exchange (IDX) has served as a platform for carbon trading. Finance Minister Sri Mulyani has urged the capital market to play a more active role in carbon emission reduction efforts, and IDX has been tasked with designing carbon trading mechanisms.

4. Role of OJK and Relevant Ministries

The Financial Services Authority (OJK) together with relevant ministries/agencies have prepared for carbon trading through the carbon exchange, demonstrating the involvement of financial institutions in supporting carbon trading initiatives.

With active participation from financial institutions and capital markets, it is expected that carbon trading will continue to grow and make a substantial contribution to reducing greenhouse gas emissions in Indonesia. Article 14 of the Minister of Environment and Forestry Regulation 14/2023 regulates carbon trading through carbon exchanges, enabling financial institutions to accelerate sustainable economic growth. Meanwhile, Article 48 (1) of Presidential Regulation

²² Saumi, Annisa Kurniasari. Laras, Arlina. 2023. *Bursa Karbon Resmi Meluncur, Bank Mandiri, CIMB Niaga, Hingga DBS Jadi Pembeli Awal* https://finansial.bisnis.com/read/20230926/90/169_8558/Bursa-Karbon-Resmi-Meluncur-Bank-Mandiri-Cimb-Niaga-Hingga-DBS-Jadi-Pembeli-Awal Diakses 20 February 2024

²³ Ahmadin, A., Pinem, D., Bahtiar, D., Hanika, I. M., Sofyan, H., & Jejen, A. (2023). Faktor-Faktor Yang Mempengaruhi Keputusan Investasi ESG (*Environmental, Social, And Governance*). *Innovative: Journal Of Social Science Research*, 3(6), 9450-9463.

98/2021 defines Indonesia's government responsibility in establishing a carbon trading system, providing financial institutions an opportunity to support carbon trading towards achieving Indonesia's contribution targets in climate change mitigation efforts.

Carbon Trading System (Emission Trading System/ETS) in Indonesia

The Indonesian government plays a crucial role in managing the energy sector to achieve ambitious carbon emission reduction targets. This includes setting emission targets, incentive policies, and regulations to promote the use of clean energy. A significant challenge is ensuring reliable and affordable energy availability for Indonesia's large and diverse population. Carbon markets are considered a key instrument in addressing climate change impacts and reducing CO₂ emissions by providing a trading platform where companies and countries can buy or sell carbon emission permits, thereby incentivizing them to reduce their emissions.

A carbon trading system is a policy-based trading mechanism that sets a price on carbon emissions to reduce greenhouse gas emissions. Currently, Indonesia is conducting pilot carbon trading in the power generation sector. The Indonesian Carbon Trading Guidebook provides detailed information on carbon markets, trading mechanisms, and global developments, including those in Indonesia. The European Union Emissions Trading System (EU ETS) is currently the world's largest mandatory carbon market. Under the ETS, authorities set carbon emission limits for each participant, and those with emissions below the limits can sell excess carbon credits to participants exceeding their emission limits.²⁴

Article 1 paragraph (17) of Regulation POJK 14/2023 defines carbon trading as a market mechanism to reduce greenhouse gas emissions through the buying and selling of Carbon Units. This trading can occur domestically or internationally, as stipulated in Article 48 paragraph (1) of the Presidential Regulation on Carbon Economic Value, facilitated through a Carbon Exchange. Similar regulations are found in Presidential Regulation Number 46 of 2008 concerning the National Council on Climate Change. Carbon trading operates akin to typical buying and selling transactions, but the commodities traded are carbon emissions. Buyers typically include developed

²⁴ Kerr, S., Lubowski, R., Ward, J., Marijs, C., Sammon, P., Guigon, *et al.* (2016). *Emissions Trading In Practice: A Handbook On Design And Implementation*. The World Bank.

countries and large industries, while sellers are often entities in developing countries that possess emission certificates, often related to carbon-absorbing forests.²⁵

The Carbon Trading System (Emission Trading System/ETS) is a mechanism that enables companies or countries to buy or sell rights to emit carbon. In Indonesia, ETS is a system adopted to regulate and control emissions of greenhouse gases (GHG) such as carbon dioxide (CO₂), methane (CH₄), and nitrogen oxide (NO_x) from specific industrial sectors. When designed well, the emission trading system (ETS) can be an effective, credible, and transparent tool in helping to reduce emissions at a low cost by mobilizing private sector actors, attracting investments, and promoting international cooperation. However, to ensure its effectiveness, each ETS must be designed according to its unique context.²⁶

The main objective of implementing ETS in Indonesia is to reduce GHG emissions efficiently and economically. Some of the benefits of this system include:

1. Emission Reduction: ETS provides incentives for companies to proactively reduce their carbon emissions, thereby contributing to global climate change mitigation efforts.
2. Economic Efficiency: By allowing emission rights trading, ETS enables companies to find the most economically efficient emission reduction solutions, thus reducing overall costs.
3. Technological Innovation: ETS promotes cleaner and environmentally friendly technological innovations by incentivizing companies to develop more efficient emission reduction technologies.
4. Additional Revenue: Through the sale of emission rights, companies that successfully reduce their emissions can generate additional revenue that can be used for investment in sustainable projects.²⁷

Implementation of ETS in Indonesia involves several steps, including:

1. Emission Target Setting: The government sets emission targets for specific industrial sectors based on emission analysis and international commitments.

²⁵ Fitri Nurfatriani, Dodik Ridho Nurrochmat, Dan Mimi Salminah. (2019) 'Opsi Skema Pendanaan Mitigasi Perubahan Iklim Di Sektor Kehutanan' 13 (1) Jurnal Ilmu Kehutanan 98, 99.

²⁶ Tampubolon, R. (2022). Perdagangan Karbon: Memahami Konsep dan Implementasinya. Standar: Better Standard Better Living, 1(3), 25-29.

²⁷ Wibisono, R., Setiawan, C., & Choi, Y.-J. (2021). A Review On The Development Of Emission Trading Systems In Southeast Asia With Focus On Indonesia. *Environmental Science & Pollution Research*, 28(1), 1-11. <https://doi.org/10.1007/S11356-020-01089-Z>

2. Emission Rights Allocation: The government allocates a certain amount of emission rights to companies participating in the ETS based on specific criteria such as production capacity or emission history.
3. Emission Rights Trading: Companies with surplus emission rights can sell their rights to other companies needing additional rights to meet their emission obligations.
4. Monitoring, Reporting, and Verification (MRV): The MRV system is implemented to monitor greenhouse gas emissions from companies involved in the ETS, as well as to verify their emission reports.
5. Enforcement: The government is responsible for enforcing compliance with ETS rules and regulations, including imposing sanctions on companies that violate these provisions.²⁸

Although ETS has many advantages, the system also faces several challenges, including difficulties in setting realistic emission targets, accurately monitoring and reporting emissions, and effectively enforcing laws. However, with strong support from the government, industry players, and the community, ETS has the potential to become an effective instrument in Indonesia's efforts to mitigate climate change. Several countries in Asia, such as South Korea, China, and Japan, have adopted the carbon market concept. In South Korea, the carbon trading system has become a core policy in greenhouse gas emission reduction efforts, leading to continuous increases in carbon prices that stimulate carbon reduction actions. Similarly, in China, the Emission Trading Scheme is planned to become the world's largest carbon market and is expected to expand to cover eight sectors with a total emission of around 4.5 billion tons.²⁹

Indonesia has introduced a carbon trading market proposal through the Nusantara Carbon Scheme. This scheme serves as a certification and registration mechanism for the outcomes of each greenhouse gas emission reduction activity. However, this scheme is voluntary, meaning there are no legal consequences or obligations for participants who choose not to join. The mechanism works as follows:

1. The output of this certification is a carbon credit called an Archipelagic Carbon Unit. One credit unit is equivalent to the reduction of one ton of carbon dioxide (CO₂). Therefore,

²⁸ Prasajo, H., Septiriana, R. T., & Nugroho, A. Penerapan Pasar Karbon (*Emission Trade System*) Di Indonesia Dan Pembelajaran Dari Uni Eropa.

²⁹ Rachmaniar, A., Supriyadi, A. P., & Pradana, H. (2021, April). *Carbon Trading System As A Climate Mitigation Scheme: Why Indonesia Should Adopt It?* In *IOP Conference Series: Earth And Environmental Science* (Vol. 739, No. 1, P. 012015). IOP Publishing.

each carbon credit issued will be recorded in a database and can be used to offset greenhouse gas emissions by the credit owners.

2. Ownership of carbon credits can be transferred among registered users, allowing for carbon credit trading. However, this certification mechanism is not associated with Indonesian government policies or decisions regarding greenhouse gas emission reduction efforts.³⁰

This mechanism adopts a cap and trade system similar to that implemented by the European Union. The government sets a total emission limit on one or more economic sectors and issues a corresponding number of allowances that can be traded to ensure the limit is not exceeded. Typically, each certificate represents one ton of emissions. Participants covered by the ETS are generally required to surrender certificates for each ton of emissions they are responsible for. Participants holding certificates can sell them or bank them for future use. Companies needing additional benefits can purchase allowances on the market. It's also possible to use eligible emission units from other sources, such as domestic or international offset mechanisms or other ETSs.³¹

By limiting the number of certificates and creating a market to trade these certificates, a uniform price for certificates (carbon price) is established. This incentivizes emission reduction because the cost of reducing emissions becomes lower than this price. As a result, it creates price signals that support goods and services with lower emissions. Tighter restrictions mean fewer certificate supplies, higher prices, and stronger incentives for emission reduction. Setting limits in advance provides long-term market signals so that participants can plan and invest accordingly. Quotas can be allocated for free or auctioned based on a combination of emission history, production, and/or standard performance.³²

Additional mechanisms can be used to support price predictability, cost control, and effective market operations. Environmental integrity of the system is ensured through enforcement of emission MRV requirements and penalties for violations. All of this is enabled by registrants who are responsible for issuing certificates, tracking certificates during transactions between

³⁰ Dewan Nasional Perubahan Iklim, 2013, *Mari Berdagang Karbon!: Pengantar Pasar Karbon Untuk Pengendalian Perubahan Iklim*, Jakarta.

³¹ Baskara, A. P. W. (2023). *Kerangka Hukum Bursa Karbon Di Indonesia: Perkembangan Terkini Dan Tantangan Ke Depan*. *Mimbar Hukum*, 35.

³² Putra, J. J. H., Nabilla, N., & Jabanto, F. Y. (2021). *Comparing "Carbon Tax" And "Cap And Trade" As Mechanism To Reduce Emission In Indonesia*. *International Journal Of Energy Economics And Policy*, 11(5), 106-111.

different participants, and retiring certificates when used for compliance or social responsibility purposes. Market oversight regulations ensure the integrity of trading activities.³³

Differences in Carbon Trading Mechanisms Between Indonesia and Other Countries

As a key tool in mitigating the impact of climate change, Carbon Exchanges have significantly evolved over the past few decades. Awareness of the urgency of climate change has made them a focal point with substantial growth potential. While already established in regions such as the European Union, North America, and Australia, there remains significant opportunity for expansion, especially in developing countries and emerging economies. Global climate change initiatives have prompted countries to seek new methods to reduce greenhouse gas emissions, including carbon trading, which allows for the buying and selling of carbon credits as rights to emit specific amounts of emissions. Approaches to carbon trading vary based on each country's policies, infrastructure, and economic conditions.³⁴

Indonesia, with its vast tropical forests, has significant potential to participate in carbon trading through REDD+ programs. However, the biggest challenge lies in measuring and verifying carbon emissions from deforestation. On the other hand, other countries may have more mature market structures, such as Emission Trading Systems, which enable emission reductions in industrial and transportation sectors. The differences in carbon trading mechanisms between Indonesia and other countries present several implications and opportunities for collaboration. Indonesia can leverage the experiences of other countries in developing a more mature carbon market infrastructure.³⁵

Carbon trading is a key instrument in global efforts to reduce greenhouse gas emissions, with each country adopting different approaches based on policies and local conditions. Analyzing these differences helps understand potential cross-country collaboration and opportunities to enhance climate mitigation effectiveness. In Indonesia, carbon trading has become a primary focus in climate change mitigation strategy, reflected in regulatory developments such as the Environmental Law that underpins its implementation. Carbon trading mechanisms are gaining

³³ Kerr, S., Lubowski, R., Ward, J., Marijs, C., Sammon, P., Guigon, P., ... & Duan, M. (2016). *Emissions Trading In Practice: A Handbook On Design And Implementation*. The World Bank

³⁴ Angelsen, A., & Mcneill, D. (2013). Evolusi REDD+. In *Menganalisis REDD+: Sejumlah Tantangan Dan Pilihan*. Center For International Forestry Research (CIFOR), Bogor, Indonesia.

³⁵ Yakin, A. (2015). Prospek Dan Tantangan Implementasi Pasar Karbon Bagi Pengurangan Emisi Deforestasi Dan Degradasi Hutan Di Kawasan ASEAN. Dalam Paper "Optimalisasi Integrasi Menuju Komunitas ASEAN."

serious attention in Indonesia as part of the national strategy to reduce emissions. This is evident in regulatory advancements, including the Environmental Law, which provides the legal framework for implementing carbon trading.³⁶

The EU ETS, the world's oldest carbon trading market, has been operational since 2005 and covers more than 10,000 entities responsible for 40% of total greenhouse gas emissions in the European Union. The program spans 31 countries, including 28 EU member states, as well as Iceland, Liechtenstein, and Norway, and involves the electricity, manufacturing, and aviation sectors. China's national ETS now follows in terms of size. The EU ETS has undergone several reforms, with the most recent revision in July 2021 as part of the European Green Deal, aiming to expand coverage to include the maritime sector, road transportation, and buildings. The European Green Deal sets a target to reduce greenhouse gas emissions by at least 55% below 1990 levels by 2030, with the goal of achieving carbon neutrality by 2050.³⁷

Currently, the United States does not have plans to adopt a national Emission Trading System (ETS), but several states have collaborated with Canadian provinces to develop regional carbon markets. One example of such a regional market is the Regional Greenhouse Gas Initiative (RGGI), initiated by nine states in the Northeastern and Mid-Atlantic regions in 2009, focusing on reducing CO₂ emissions from the electricity sector. Another regional market, the Western Climate Initiative (WCI), was established in 2012 and consists of seven U.S. states and four Canadian provinces. The WCI aims to promote the development of ETS among its member states and provinces to achieve regional emission reductions of up to 15% below 2005 levels by 2020.³⁸

In Asia, several countries currently operate Emission Trading Systems (ETS) including China, South Korea, Japan, and Kazakhstan. South Korea's ETS (K-ETS) started in 2015 as the first mandatory national ETS in East Asia. The program covers the energy, industrial, waste, and domestic aviation sectors, collectively responsible for over 70% of emissions in the country. Between 2015 and 2017, K-ETS recorded a 3.5% reduction in emission intensity. South Korea aims to reduce emissions by 37% below business as usual (BAU) levels by 2030.³⁹

³⁶ Safitra, D. A. (2022). Insentif Pajak Properti Atas Bangunan Hijau: Sebuah Studi Komparasi. *Jurnal Pajak Dan Keuangan Negara (PKN)*, 3(2), 331-342.

³⁷ European Parliament, 2021 <https://www.europarl.europa.eu/news/en/headlines/society/20210303STO99110/Carbon-Leakage-Prevent-Firms-From-Avoiding-Emissions-Rules> Diakses 29 Februari 2024

³⁸ Cullenward, D. (2014). *How California's Carbon Market Actually Works*. *Bulletin Of The Atomic Scientists*, 70(5), 35-44.

³⁹ Seneca ESG, 2023. *PENENTUAN HARGA KARBON: SKEMA PERDAGANGAN EMISI [BAGIAN.2]* <https://senecaesg.com/Id/Insights/Pricing-Carbon-Emissions-Trading-Schemes-Part-2/> Diakses Pada 29 Februari 2024

In Japan, while there is no national Emission Trading System (ETS), they operate a mandatory cap-and-trade program in the Tokyo Metropolitan area. This program requires large buildings, factories, heating fuel suppliers, and other large fossil fuel consumers to reduce emissions below specified thresholds set for specific facilities. In 2019, the city announced the Tokyo Zero Emission Strategy, aiming to reduce greenhouse gas emissions by 30% from the 2000 levels by 2020 and achieve net-zero carbon emissions by 2050.⁴⁰

Table 1 Comparison of Carbon Trading between Indonesia and China

Aspect	Indonesia	China
Legal basis	1. Presidential Regulation of the Republic of Indonesia Number 98 of 2021 (Perpres 98/2021) discusses the regulation of carbon value and pricing in the context of carbon markets.	
	2. Minister of Environment and Forestry Regulation of the Republic of Indonesia Number 21 of 2022 (Permen LHK 21/2022) regulates the procedures for implementing the Carbon Economic Value (NEK) in Indonesia.	In December 2017, the National Carbon Emission Trading Market Development Plan (Electric Power Industry) was issued, aiming to initiate a national carbon emission trading system in the electric power industry sector.
	3. Financial Services Authority Regulation of the Republic of Indonesia Number 14 of 2023 concerning Carbon Trading through Carbon Exchanges regulates the process of carbon trading through carbon exchanges.	
Emission Targets	Emission reduction targets of 29-41% by 2030 (with and without international support).	Targets to reach peak emissions before 2030 and increase the share of renewable energy to 20% of total energy consumption by 2030.

⁴⁰ Nguyen, D. H., Chapman, A., & Farabi-Asl, H. (2019). *Nation-Wide Emission Trading Model For Economically Feasible Carbon Reduction In Japan*. *Applied Energy*, 255, 113869.

MRV System	GHG Emission Verification, Reporting and Research (MRV) System	A more mature and extensive MRV system, with participation from various industrial sectors
Carbon Market	Development of a national carbon market mechanism is underway	The national emissions trading system (ETS) is already running and covers several provinces
REDD+ and Forests	REDD+ program to reduce deforestation and forest degradation	Forest planting and wetland conservation initiatives through national programs
International Cooperation	Active in international cooperation related to CDM, Article 6, and others	Major player in international agreements such as the Paris Agreement and the Belt and Road initiative

Source: by private person

One of the main challenges in developing an Emission Trading System (ETS) is data quality. In China, companies vary significantly in their development and maturity of management practices at this stage. This leads to varying capabilities among companies in collecting, organizing, and storing data effectively, resulting in often inconsistent, incomplete, or invalid data being collected. During the pilot market phase, some companies and third parties were found to falsify emission data. Therefore, strengthening corporate governance and data management capacity is crucial for the long-term acceptance and credibility of the ETS.⁴¹

Another common issue related to Emission Trading Systems (ETS) is carbon leakage. Carbon leakage refers to the shifting of emissions to countries with looser climate regulations from countries with stricter emission policies. For example, California's ETS, part of the Western Climate Initiative (WCI), has experienced significant carbon leakage due to electricity contract trading with neighboring states. Leakage can also occur between industrial sectors and companies with unbalanced emission policies. For instance, ETS may lead to increased emissions at industrial installations not covered by the ETS scope. To address the issue of carbon leakage, the European Parliament is considering the implementation of a Carbon Border Adjustment Mechanism

⁴¹ Santhyami, M. S., & Roziaty, E. 2022. AGROFORESTRI: Potensi & Implementasi Dalam Pasar Karbon. Muhammadiyah University Press.

(CBAM).⁴² This mechanism imposes carbon levies on imports from countries with greenhouse gas emission regulations deemed less ambitious than those of the European Union, starting with the electricity sector and energy-intensive industries. Additionally, a more intensive approach to emission intensity in China can also reduce the risk of carbon leakage. Overall, to address carbon leakage, strengthening emission regulations and expanding carbon markets regionally and internationally are necessary as preventive measures.

CONCLUSION

Legal certainty related to carbon trading in Indonesia has seen significant development in recent years, though it is still in the process of refinement. Capital markets and financial institutions play a key role in supporting carbon trading in Indonesia by connecting issuer companies with investors, providing returns to capital owners, and offering long-term financing sources for businesses. This enables efficient fund allocation, creates opportunities for stable companies, and generates job opportunities. The Indonesian government plays a crucial role in energy management to achieve targets for reducing CO₂ emissions, including setting targets, incentives, and regulations for clean energy. Every country has a different approach to implementing carbon trading, depending on local policies, infrastructure, and economic conditions. Indonesia, with its vast potential from tropical forests, is involved in carbon trading through the REDD+ program. However, the main challenges lie in measuring and verifying carbon emissions from deforestation. Cross-country collaboration can enhance the effectiveness of climate mitigation efforts, while carbon leakage and data quality remain critical challenges that need to be addressed for the long-term success of the carbon trading system.

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⁴² Benson, E. (2022). Analyzing The European Union's Carbon Border Adjustment Mechanism. Center For Strategic And International Studies (CSIS).

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