

## Formulation of Legal and Regulatory Models of Carbon Units as Collateral Objects in Indonesia

Diana Tantri Cahyaningsih<sup>1</sup>, Dona Budi Kharisma<sup>2</sup>, Alisha Vinia Alethea Majid<sup>3</sup>

<sup>1,2,3</sup>Faculty of Law, Universitas Sebelas Maret, Indonesia

[dianatantri@staff.uns.ac.id](mailto:dianatantri@staff.uns.ac.id)<sup>1</sup>, [donabudikharisma@staff.uns.ac.id](mailto:donabudikharisma@staff.uns.ac.id)<sup>2</sup>,  
[alishaviniaaletheamajid@student.uns.ac.id](mailto:alishaviniaaletheamajid@student.uns.ac.id)<sup>3</sup>

### **Article Info**

Received: 2022-09-02

Revised: 2023-08-05

Accepted: 2023-10-21

### **Keywords:**

Carbon Trading,  
Collateral, Fiduciary

### **Abstract**

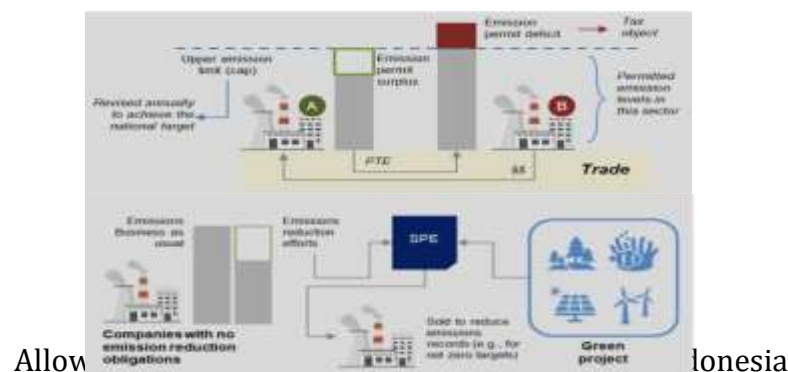
*The rise in GHG emissions has driven countries, including Indonesia, to commit to Net Zero Emissions through the 2015 Paris Agreement. One of Indonesia's efforts is limiting carbon emissions via carbon trading. The traded object, carbon units, are categorized as securities with economic value, presenting an opportunity to use them as collateral. However, there is no clear regulation governing this. This normative legal research uses statute and conceptual approaches, with primary and secondary legal materials on collateral law. The study aims to propose regulatory recommendations to enable the use of carbon units as collateral in Indonesia. The findings suggest that fiduciary is the most suitable binding method, as it does not require physical delivery and allows execution through private sale under Article 31 of Indonesia Fiduciary Law. The lack of a valuation institution can be addressed by optimizing collaboration between public appraisers, like KJPP and GHG Validation and Verification institutions (LV/V GRK).*

## I. Introduction

According to the United Nations Framework Convention on Climate Change (UNFCCC), scientists have found that greenhouse gas (GHG) emissions indicate changes in air, sea, ice, and rain that lead to global warming (Lulu Kurniarahma, 2020). The international community has jointly committed to achieving Net Zero Emission (NZE) to address this issue through an international agreement, the Paris Agreement. Indonesia ratified the agreement in Law Number 16 of 2016 concerning Ratification of the Paris Agreement To The United Nations Framework Convention on Climate Change. Indonesia's participation in reducing GHG emissions by empowering carbon emission expenditures through carbon trading organized through a carbon exchange called IDXCarbon (Bursa Karbon Indonesia, 2023).

Carbon trading in Indonesia is regulated in the Financial Services Authority Regulation Number 14 of 2023 concerning Carbon Trading Through the Carbon Exchange (Peraturan Otoritas Jasa Keuangan Nomor 17 Tahun 2023). The regulation also explains the cooling instrument, namely carbon units consisting of the Technical Approval of the Upper Limit of Business Emissions (PTBAE-PU) and the Greenhouse Gas Emission Certificate (SPE-GRK) (Rahmat Olii, 2024).

**Figure 1. Allowance Market & Offset Market**



Sources: IDXCarbon

In IDXCarbon, there are 2 (two) market schemes, namely the allowance market and the offset market. The allowance market trades carbon units in the form of PTBAE-PU, the government provides an allocation of emission quotas to business actors that

have been determined for a certain period. If in the future the business with the quota given, then the business can buy carbon units from other businesses that still have remaining emission quotas or whose emission quotas are unused, while for the offset market, what is traded is SPE-GRK, where business actors sell carbon units that sell carbon units originating from the reduction or elimination of GHG emissions by certain actors and/or other climate change mitigation actions (Mekanisme Bursa Karbon, 2025). Article 3 paragraph 1 of OJK regulation Number 14 of 2023 states that carbon units are securities. This shows that carbon units have economic value, as the data states that in 2023 carbon trading transactions in the power plant sub-sector amounted to 7.1 million tons of CO<sub>2</sub> equivalent reaching a value of IDR 84.17 billion (Kementerian Energi dan Sumber Daya Mineral, 2024). This opens up great opportunities for the use of carbon units to be used as collateral like other securities and can enable the expansion of financing access for low-emission projects and support green financing.

Generally, the collateral agreement itself is an additional agreement that arises due to the existence of a principal agreement, such as a debt agreement. For creditors, a guarantee is needed to protect creditors when the debtor fails to fulfill its obligations by giving the creditor the right to sell the collateralized property and obtain payment in advance from the proceeds of the sale. Unfortunately, currently there are no laws and regulations that explicitly and clearly regulate the status of carbon unit securities as collateral, such as the type of binding, execution mechanism, and carbon unit assessment institution as collateral.

In this regard, by considering the economic potential of carbon units as securities, further research is needed on what regulatory formulation can be recommended so that carbon unit securities can be used as collateral in Indonesia.

## **2. Research Method**

This research is a normative research that is prescriptive in nature. Normative research is conducted by examining laws that are conceptualized as norms or rules that apply in society (Abdulkadir Muhammad, 2002). The approaches used to answer legal problems in this study are in the form of a statutory regulatory approach and a

conceptual approach. The statutory approach includes the Civil Code, the Law on Fiduciary Guarantees, and other related laws and regulations. The conceptual approach itself is in the form of the concept of guarantee law in Indonesia. Sources of legal materials include primary and secondary legal materials. Primary legal materials include laws and regulations relating to guarantees and carbon units, while secondary legal materials include articles and books, and internet media.

### 3. Results and Discussion

In the property law regulated in Article 499 in conjunction with Article 503 of the *Burgerlijk Wetboek* (BW), carbon units meet the characteristics of intangible movable objects. They are said to be movable objects because they can be transferred due to their nature, namely through buying and selling on the carbon exchange, while as intangible objects because carbon units do not have a physical form and cannot be touched or observed naturally (Kendelif Kheista, 2024). Because carbon units meet the requirements and characteristics of objects, such as being able to be owned, being able to be transferred, having economic value, and being classified as objects, carbon units actually meet the requirements to be used as collateral objects. Of the various types of collateral in Indonesia, considering that carbon units are intangible movable objects, the most possible collateral binding is between fiduciary or pawn.

Fiduciary binding is seen as a binding scheme that is more relevant and adaptive to the characteristics of carbon units compared to pawn, considering that pawn requires a real delivery of the collateral object as regulated in Article 1152 of the BW (Dermina Delimunthe, 2018). In addition, fiduciary is considered more adaptive because it offers flexibility by allowing the transfer of ownership rights based on the principle of trust without the need for physical delivery. The fiduciary guarantor does not have the authority to transfer the object of the fiduciary guarantee because there has been a transfer of ownership rights through trust over the object that is the object of the fiduciary guarantee from the debtor to the creditor. Therefore, the debtor is in the position of a borrower for the object that is the object of the fiduciary guarantee whose ownership rights have been transferred through trust from him to the creditor. If carbon units are charged with fiduciary guarantees, then the carbon units will

remain in the power of the fiduciary grantor (debtor). In this case, the fiduciary grantor can use the carbon units he owns to achieve the commitment to reduce GHG emissions. However, this shows a potential problem in practice. If carbon units are used, there will be a reduction in the emission quota. Therefore, the parties in the fiduciary can agree that only some of the carbon units can be used by the debtor, while the rest must remain available as collateral (Yudhi Setiawan,, 2020). This is reinforced by the principle of freedom of contract based on Article 1338 paragraph (1) *jo*. Article 1320 BW. Another way is to freeze the carbon units that are pledged with the aim of preventing the retirement process, transfer, or re-pledge. Such standardization is based on the implementation of other types of securities such as shares.

Regarding the appropriate execution mechanism, it can refer to the execution regulated in Law Number 42 of 1999 concerning Fiduciary Guarantees. Article 29 paragraph (1) of the Fiduciary Law states that execution of fiduciary guarantees can be carried out if the debtor or in this case the business actor is in default, either on the principal agreement or on the fiduciary guarantee agreement. In this article, several fiduciary guarantee execution mechanisms are regulated, including:

a. Executorial title

The presence of the words "FOR JUSTICE BASED ON THE ONE ALMIGHTY GOD" in the fiduciary certificate indicates the executorial power which means that the fiduciary recipient can directly carry out the execution without going through the courts. In addition, the nature of the executorial power is final and binding on the parties to implement the decision. Given the Constitutional Court Decision Number 18/PUU-XVII/2019, execution in this manner has changed because execution through the district court can only be used if there is no agreement between the creditor and the debtor, so that the determination of default depends on the debtor's prior approval (Putu Eka Trisna Dewi, 1999).

b. General auction

Regulated in Article 29 paragraph (1) letter b of the Fiduciary Law which stipulates that the definition of a general auction or parate execution is the

implementation of an execution that does not need to involve the debtor and without fiat or a judge's determination or permission and executorial title. Although there is an auction market scheme in carbon trading, execution by public auction cannot yet be applied not only because there are no regulations governing it but also because the auction market in carbon units has a different context. In the auction market, prospective buyers of carbon units submit a purchase request according to the desired volume and price. On the other hand, the auction process that occurs is generally carried out by the Class I Auction Officer (PL I) at the KPKNL. In addition to the auction market scheme, there is also a regular market scheme that allows buyers and sellers of carbon units to enter offers and/or requests for carbon units which are then brought together by the carbon exchange.

c. Underhand sales

This execution is carried out based on an agreement between the fiduciary giver and the fiduciary recipient so that cannot obtain the highest price that benefits the parties. Underhand sales can be carried out if the following conditions are met:

- 1) There is an agreement between the fiduciary provider and recipient;
- 2) If the underhand sale achieves the highest price that benefits the parties;
- 3) Notified in writing by the fiduciary provider and/or fiduciary recipient to the interested parties;
- 4) Announced in at least two newspapers in the relevant area; and
- 5) The sale is carried out after one month has passed since being notified in writing.

The method of executing carbon units that is closest to being precise is execution by underhand sales. because it has similarities with the negotiation market scheme in carbon trading. This is also possible based on Article 31 of the Fiduciary Law. In the negotiation market scheme, with the approval of the creditor, the debtor can negotiate directly with prospective buyers of the executed carbon units and can set the highest price to make a profit. If there is then an agreement to purchase

carbon units, the sale and purchase transaction can be carried out on the carbon exchange.

The next obstacle is related to the absence of an assessment institution, even though its role is very crucial to ensure that the value of the traded carbon units truly reflects the actual contribution to emission reduction. The solution that can be provided is to collaborate between existing assessment institutions such as the Public Assessment Services Office (KJPP) and the Greenhouse Gas Validation/Verification Institution (LV/V GRK). The technical scheme for measuring Indonesian GHG emission reduction certification (SPEI) has been regulated in the Decree of the Minister of Environment and Forestry of the Republic of Indonesia Number: SK.1131/MENLK/PPI/PPI.2/10/2023 concerning the Indonesian Greenhouse Gas Emission Reduction Certification Scheme. Collaboration between KJPP and LV/V is one effort that can be made considering that there are still very few LV/V providing their services, including their limited expert staff. The role of LV/V can calculate and guarantee that the amount of carbon claimed is correct, while KJPP can play a role in assessing its economic value based on the results of the verification, current carbon market prices, and other risks. By building collaborative mechanisms such as the formation of an association of assessment institutions, they will be able to share technical expertise, conduct joint training, and develop a shared database related to carbon projects. In addition, the government also plays a role in setting standards that can be used for carbon unit assessments because currently there are no standards that specifically regulate carbon unit assessments, only guidelines for measuring, attaching, and reducing GHG emissions in terms of verification and validation (Bagaskara, 2025).

Optimizing assessment institutions through collaboration will have an impact on increasing investor and project owner confidence in participating in the carbon trading scheme. With the presence of competent assessment institutions and consistent assessment results according to applicable standards, investment risks can be minimized. Project owners will be more confident that the carbon units they produce will be recognized and valued fairly in the carbon market. This will certainly

encourage more emission reduction projects to emerge and can create green economic opportunities that can reduce carbon emissions while improving the company's financial performance (Sebastian Bleuel & Carsten Muller, 2024).

#### 4. Conclusion

Carbon units as securities in Indonesia open up opportunities to be bound as collateral and as a reference for regulatory formulation related to the implementation of their binding. In property law, carbon units meet the criteria for property as intangible movable objects. Therefore, a more appropriate binding is with a fiduciary guarantee considering that the concept of a fiduciary guarantee is based on the principle of trust without any physical delivery. The most possible execution mechanism is with an underhand sale. In addition, the establishment of carbon unit collateral assessment standards needs to be determined as a reference for assessment institutions. Although there is no independent carbon unit assessment institution, the government can utilize collaboration between independent assessment institutions such as KJPP with LV/V GRK to create accurate and more transparent assessment results.

#### References

- Bagaskara, March 14, 2025, "ISO 14064–Emisi gas rumah kaca: Sertifikasi, Manfaat, Regulasi Terbaru", Available on website: <https://mutucertification.com/iso-14064-gas-rumah-kaca/>, Accessed June 16th, 2025.
- Bleuel, Sebastian & Muller, Carsten. "Unlocking the potential: Expert Insights on the long-term compability of forest carbon credits with the EU ETS". Forest Policy and Economics. Vol. 162. May 2024. Pp. 1-13. DOI: <http://doi.org/10.1016/j.forpol.2024.103185>
- Delimunthe, Dermina. "Objek Gadai Dalam Kitab Undang-Undang Hukum Perdata (BW)". Yurisprudensi: Jurnal Hukum Ekonomi. Vol. 4 Issue. 1, June 2018. Pp. 50-66.
- Dewi, Putu Eka Trisna. "Eksekusi Jaminan Fidusia: Analisis Konflik Norma dalam UU Nomor 42 Tahun 1999 dan Putusan Mahkamah Konstitusi No. 18/PUU-XVII/2019". Journal of Intellectual Property Law. Vol. 1 Issue 1. July 2024. Pp. 60-72.

- Fitrianto, I. (2024). Critical Reasoning Skills: Designing an Education Curriculum Relevant to Social and Economic Needs. *International Journal of Post Axial: Futuristic Teaching and Learning*, 245-258
- Fitrianto, I. (2024). Innovation and Technology in Arabic Language Learning in Indonesia: Trends and Implications. *International Journal of Post Axial: Futuristic Teaching and Learning*, 134-150.
- Fitrianto, I. (2024). Strategi Guru Pai Dalam Mengatasi Kesulitan Belajar Pada Mata Pelajaran Hadis Kelas 8 MTS Ibadurrahman Subaim. *IJER: Indonesian Journal of Educational Research*, 356-363.
- Fitrianto, I. (2025). Beyond Competence: Rethinking Education for Holistic Well-Being and Happiness. *International Journal of Post Axial: Futuristic Teaching and Learning*, 1-11.
- Fitrianto, I., & Abdillah, F. M. (2018). MODEL PEMBELAJARAN PROGAM PEMANTAPAN BAHASA ARAB DAN SHAHSIAH (KEMBARA) KE 4 MAHASISWA KOLEJ UNIVERSITI ISLAM ANTAR BANGSA SELANGOR (KUIS) TAHUN 2018. *University of Darussalam Gontor 15-16 September 2018*, 121.
- Fitrianto, I., & Farisi, M. (2025). Integrating Local Wisdom into 21st Century Skills: A Contextual Framework for Culturally Relevant Pedagogy in Rural Classrooms. *International Journal of Post Axial: Futuristic Teaching and Learning*, 109-121.
- Fitrianto, I., & Layalin, N. A. (2025). The Paradigm of Physical Punishment from the Perspective of Islamic Education and Its Implementation in Indonesia and Malaysia. *International Journal of Post Axial: Futuristic Teaching and Learning*, 147-156.
- Fitrianto, I., & Saif, A. (2024). The role of virtual reality in enhancing Experiential Learning: a comparative study of traditional and immersive learning environments. *International Journal of Post Axial: Futuristic Teaching and Learning*, 97-110.
- Fitrianto, I., Al-Faruqi, M. R., & Hanifah, N. A. (2025). The Contributions of Ibn Malik to Arabic Language Education: A Historical and Pedagogical Analysis. *IJAS: International Journal of Arabic Studies*, 1-11.
- Fitrianto, I., Hamid, R., & Mulalic, A. (2023). The effectiveness of the learning strategy" think, talk, write" and snowball for improving learning achievement in lessons insya'at Islamic Boarding School Arisalah. *International Journal of Post Axial: Futuristic*

Teaching and Learning, 13-22.

IDXCarbon, "Fitur Perdagangan IDXCarbon". Available on website: <https://idxcarbon.co.id/id>, Accessed June 16<sup>th</sup>, 2025.

IDXCarbon. "Mekanisme Bursa Karbon". Available on website: <https://idxcarbon.co.id/id>, Accessed June 16<sup>th</sup>, 2025.

IDXCarbon. September 226, 2023, "Bursa Karbon Indonesia (IDXCarbon) Resmi Diluncurkan," Available on website: <https://www.idx.co.id/id/berita/siaran-pers/2016>, Accessed June 15<sup>th</sup>, 2025.

Kementerian Energi dan Sumber Daya Mineral. July 23, 2024. "Transaksi Perdagangan Karbon Tahun 2023 Capai Rp84miliar". Available on website: <https://www.esdm.go.id/id/media-center/arsip-berita/transaksi-perdagangan-karbon-tahun-2023-capai-rp84-miliar>, Accessed June 15<sup>th</sup>, 2025.

Khesita, Kendelif, et. al. "Implementasi Hukum Benda (Zaak) dalam Perspektif Hukum Perdata Indonesia". Jurnal Kewarganegaraan. Vol. 8 Issue 1. June 2024. Pp.

Kurniarahma, Lulu, et. al. "Analisis Faktor-Faktor yang Mempengaruhi Emisi CO2 di Indonesia". Directory Journal of Economic. Vol. 2 Issue 2. March 2020. Pp. 368-385.

Muhammad, Abdulkadir. 2002. Hukum dan Penelitian Hukum. Bandung: Citra Aditya Bakti.

Olii, Rahmat. "Navigating Carbon Trading Implementation in the Indonesian Stock Exchange IDXCaron: Challenges and Opportunities". Jurnal Cahaya Mandalika. Vol. 3 Issue 3. April 2024. Pp. 1586-1597.

Setiawan, Yudhi, et. al. "Pelaksanaan Pasal 138 Ayat (1) dan (3) KUHPDT tentang Kebebasan Berkontrak dan Iktikad Baik Dalam Pembiayaan Kendaraan Bermotor". Jurnal Kompilasi Hukum. Vol. 5 Issue 1, June 2020. Pp. 60-72.