
The Dynamics of Carbon Trading: Challenges and Opportunities from the Perspective of Islamic Economic Empowerment

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ABSTRACT

This research aims to provide an overview of the challenges and opportunities in carbon trading from the perspective of Islamic economic empowerment. This research method is qualitative descriptive, which is a research approach used to describe a certain phenomenon by understanding and describing in depth the characteristics, context, and complexity of the phenomenon. The results of this study show that carbon emission reduction and trading is not only enjoyed by a few, but also contributes positively to the wider society, encouraging sustainable and environmentally friendly practices, including investment in green technology, renewable energy development, and environmental protection. Encouraging companies and entities to improve energy efficiency and reduce carbon emissions, emphasizing the responsible use of resources. Able to encourage the active participation of local communities in emission reduction and carbon management projects, as well as ensure a more equitable distribution of benefits. For this reason, it is necessary to have government regulations and policies that favor vulnerable local communities, so that they can provide legal certainty to be able to contribute and get a decent life.

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1. INTRODUCTION

In recent decades, the issue of global problems has become a very important topic to discuss because it has an impact on various levels of society, especially in the long term. Climate change is a global challenge that affects various aspects of human life and the environment. Since the 1800s, climate change has changed rapidly due to human activities, both from the burning of fossil fuels such as natural gas, petroleum, new coal, and so on. This causes climate change such as droughts, tornadoes, and high rainfall. In fact, the intensity of climate-related disasters such as landslides, storms, droughts, and floods is getting higher and has a serious impact on the human environment (Azizi et al., 2023).

Losses due to climate change according to the Thomson Reuters Foundation in 2020 mentioned in Irama (2020) have reached 8 billion USD every day. This amount includes medical expenses for

diseases, inability to work, and the need for medical equipment. Loh & Stevenson in Irama (2020) also mentioned that the loss reaches 5% of global GDP per year. In fact, it is stated that the impact of the change in the click cannot be irreversible or reversed but can only be minimized.

Through the United Nations Framework Convention on Climate Change or UNFCCC, it is a convention formed between countries whose scope is to carry out international agreements (Cadizza & Rizanizarli, 2024). One of the agreements is to reduce greenhouse gas emissions considering that the increase in GHG has the effect of increasing heat on the earth's surface due to the increase in infrared radiation trapped in the atmosphere. Losses from the economic side, according to Wardoyo (2016), one of them will be able to reduce agricultural yields by around 20% because several types of plants will die due to rising earth temperatures. If agricultural yields fall, hundreds of millions of people will be food insecure and deaths due to food shortages may increase due to malnutrition and overheating. This can cause food problems to be vulnerable in the future so efforts to reduce GHG emissions are very important.

Carbon trading has become one of the main instruments used to reduce greenhouse gas (GHG) emissions. Carbon trading is a form of buying and selling intangible objects that have value through a credit mechanism or if it is associated with a carbon exchange, what is traded is carbon credits owned by corporations, individuals, or legal institutions that have projects on nature conservation or forest conservation (Alfarizy et al., 2024). This is underpinned by the Kyoto Protocol which is the beginning of efforts to reduce global carbon emissions and continued with the Paris Agreement which contains the obligation for party countries to reduce carbon emissions by submitting emission reduction targets every five years (Cadizza & Rizanizarli, 2024).

The basic concept of carbon trading involves allocating emission permits to other companies or entities, which can be traded in the carbon market. The emergence of a carbon emission trading scheme is a sign that companies are facing various concrete rules to overcome the problem of climate change. The regulator emphasizes the implementation of a carbon trading system for various companies whose operations are directly related to the environment or nature, such as the energy sector, including petroleum, natural gas, electricity, fertilizers, renewable energy, new coal, liquified natural gas, petrochemical products, and so on (Wahyuningsih et al., 2023). However, in this context, it is important to look at the dynamics of carbon trading from the perspective of Islamic economic empowerment.

Carbon trading, in its implementation through a cap-and-trade system, provides economic incentives for entities to reduce GHG emissions. Each entity is given specific emission permits that they can trade. The concept is based on efforts to improve efficiency in emission reduction and encourage sustainable technological innovation in the industrial sector. While carbon trading offers a structured market approach to tackling climate change, there are some challenges that must be addressed. One of them is the volatility of carbon prices which can affect market stability and market participants' confidence. In addition, the risk of carbon leakage, in which production and emissions are shifted to regions with weaker environmental regulations, could reduce the global effectiveness of emissions reduction efforts.

Islamic economic empowerment offers a unique view of natural resource management and the environment. Principles such as social justice, sustainability, and equitable distribution of wealth are

the main guides. For example, the principle of zakat (mandatory donation in Islam) can be used to support sustainable environmental projects or improve environmentally friendly infrastructure.

Integration between Islamic economics and carbon trading offers significant opportunities for sustainable and inclusive economic development. Islamic financial products such as green sukuk can be an effective instrument to finance environmental projects that support GHG emission reduction. In addition, the principle of profit-sharing in the Islamic financial system encourages investment in sustainable technologies and motivates companies to adopt more environmentally friendly practices.

By integrating Islamic economic principles in carbon trading, it can strengthen the foundations of social and environmental justice. Collaboration between Islamic economic practitioners, policymakers, and global carbon market actors is needed to achieve the full potential of this integration. This combination will not only strengthen global efforts to address climate change, but also promote sustainable and inclusive economic development around the world.

Some previous research, carbon trading in Indonesia: a study of state institutions and finances. The results of the simulation show that there is a potential for non-tax state revenue of Rp 51 trillion to Rp 180 trillion during the carbon emission reduction program. Furthermore, every year carbon trading will contribute PNB of 7.5 - 26.1% of the realization of Annual BLU Revenue for the period 2011-2018. This study is the first to explain carbon trading in Indonesia (Irama & Bebi Irama, 2020). Internalization of carbon tax externalities: systematic literature review, the Indonesian government enacted two regulations related to carbon tax in 2021: Presidential Regulation No. 98 of 2021 on the Implementation of Carbon Economic Value and Law No. 7 of 2021 on the Harmonization of Tax Regulations as part of efforts to mitigate climate change. This systematic literature review highlights the importance of effective policy design and proper implementation in internalizing carbon tax externalities in Indonesia, which is crucial for achieving climate change mitigation goals (Suryati & Mooduto, 2024). Public Transportation Improves the Green Economy Sustainably In Jakarta, the results found that the application of the Green Economy concept not only affects the economic sector in general, but also public transportation. In Jakarta, public transportation has become a major means of realizing Green Economy principles, such as reducing carbon emissions, using renewable energy, and increasing resource efficiency. the change of society from the use of private vehicles to public transportation can significantly reduce greenhouse gas emissions, which is in accordance with sustainable development goals. Therefore, the purpose of this research is to review and analyze public transportation as an alternative solution in improving the green economy. (Wahididiah et al., 2024). Some studies do not mention carbon trading in the empowerment of Islamic economies, so we think this is the first study to address this

Literature Review

Carbon Trading

Carbon trading is a system designed to regulate and reduce greenhouse gas (GHG) emissions, such as carbon dioxide, produced from various industrial and human activities. The basic concept involves granting emission permits to companies or other entities by the government or regulatory bodies. This permit establishes the maximum amount of GHGs that are allowed to be released into the atmosphere over a period of time. (Anggraeni, 2015)

In the carbon trading system, the government sets a limit on the total allowable emissions, referred to as a "cap". (Addressing the Climate Change Dilemma: The Relevance of Cap-and-Trade in Indonesia's Carbon Trading Policy to Meet Nationally Determined Contributions under the Paris Agreement, n.d.) Companies or entities that can reduce their emissions below a set limit can sell their remaining permits to other entities that need additional permits to meet their emissions obligations. This process forms a market where emission permits can be traded, and the price of these permits is influenced by supply and demand mechanisms (Gunawan, 2023).

The main goal of carbon trading is to reduce GHG emissions economically efficiently (Kukah et al., 2024). Providing financial incentives to companies that can reduce their emissions at a lower cost, the system encourages innovation in green technologies and sustainable practices. These circumstances can help mitigate the impact of climate change by promoting sustainable economic development and reducing reliance on carbon-based energy (Maizara et al., 2024). If your research article is quantitative and should have hypotheses development, you have to present in this section. The hypotheses development should clarify the works of previous studies before stating your hypotheses statements. State clearly the hypotheses statements and take your position either positive or negative if you examine the relationship among variables.

How Carbon Trading Works

Carbon trading operates in two main types: voluntary markets and mandatory markets. The carbon market is divided into two main trading schemes: the Emissions Trading Scheme (ETS) and the Carbon Credit Trading Scheme. (Bryken Barus, State Finance Polytechnic, STAN, Suparna Wijaya, State Finance Polytechnic, STAN, 2021)

The Emissions Trading Scheme (ETS), also known as cap-and-trade, is an approach applied to the mandatory carbon market. The government sets the maximum limit of carbon emissions allowed, called a quota or *allowance*, for each period. Participants such as companies or countries must report their emissions regularly and ensure that their emissions do not exceed the set limits. If any participant manages to reduce their emissions more than required, they can sell the unused quota to other participants who need more quota. (Mj et al., 2023)

On the other hand, carbon credit trading schemes, also known as *baseline-and-crediting* or *carbon offset*, do not require an initial allocation of quotas. In this scheme, carbon credits are generated from projects that have succeeded in reducing carbon emissions. One unit of carbon credit is usually equivalent to one ton of CO₂ successfully reduced. These credits can be sold to other participants who need to achieve their emission reduction targets or to achieve carbon neutral status. (Law et al., 2023)

In the ETS scheme, the credit value is predetermined, while in the carbon credit scheme, the credit value is generated after a certain period, depending on the effectiveness of the emission reduction project carried out. As such, carbon trading serves as an instrument to efficiently regulate and reduce carbon emissions, providing financial incentives for companies to adopt sustainable practices and mitigate the impact of global climate change.

2. METHOD

The method we use is a descriptive qualitative research method. The descriptive qualitative research method is a research approach used to describe a certain phenomenon or event by understanding and describing in depth the characteristics, context, and complexity of the phenomenon (Fadli, 2021). The purpose of the descriptive qualitative research is to provide a comprehensive and in-depth overview of the Dynamics of Carbon Trading: Challenges and Opportunities in the Perspective of Islamic Economic Empowerment, so that researchers can understand how it occurs and how its context affects the phenomenon, and how if this system is actually implemented in Indonesia.

3. RESULTS AND DISCUSSION

Results

Carbon trading exists because it is one of the global efforts to tackle climate change in an economically efficient way. Some of the main reasons why carbon trading is necessary and implemented are as follows:

First, carbon trading is designed to provide financial incentives to companies or other entities to reduce greenhouse gas (GHG) emissions at a lower cost (Ngadisih et al., 2024). This means that by setting limits or caps for GHG emissions, carbon trading allows companies that can reduce their emissions at a lower cost to sell their emission permits to other entities that may require additional permits (Mufidah Hariswan et al., 2022). This creates a system where GHG emissions can be efficiently reduced across all sectors of the economy. The carbon trading system encourages innovation in green technology and sustainable practices. Second, Companies that want to reduce the cost of their emission permits tend to look for more environmentally friendly technology solutions, such as renewable energy or energy efficiency (Di et al., 2020). This not only helps reduce GHG emissions, but also promotes the development of technologies that can be used around the world to address climate change.

Third, carbon trading can support sustainable economic development. It creates new jobs in sectors related to renewable energy, green infrastructure, and technological innovation, all of which are essential components of a more sustainable future economy. Fourth, carbon trading helps these countries achieve their emissions targets in an efficient and measurable way, while ensuring compliance with their agreed international obligations (Irama, 2020). Fifth, carbon trading provides a structured framework for mitigating the impacts of climate change in a measurable and manageable way, while promoting more sustainable development (Han & Tan, 2023).

From a government and regulatory perspective, carbon trading is more feasible and easier to implement than regulations that directly limit and tax carbon emissions. Direct regulation would be more expensive in terms of budget and limit the room for economic growth driven by industry. Through carbon trading, governments can also monitor the amount of carbon emissions produced in their countries in a more organized manner. This is because the amount of emissions and absorption potential is measurable with the standards that have been set. The amount of carbon credits circulating

in the carbon market will certainly help in controlling the amount of carbon emissions released into the atmosphere. In addition, carbon trading will also open up new economic opportunities for participating countries. As one of the world's lungs, Indonesia is estimated to contribute 75-80% of the world's carbon credits. Thus, carbon trading can contribute up to more than USD150 billion to the Indonesian economy.

Although many countries and regions have implemented carbon trading systems, there are challenges that need to be addressed. One of them is the volatility of carbon prices that can affect market stability and the certainty of long-term investment in green technology. In addition, the phenomenon of carbon leakage can occur where highly carbon-intensive production is shifted to countries or regions with weaker environmental regulations, reducing the effectiveness of global efforts to reduce emissions overall. Overall, carbon trading remains a key instrument in the global effort to tackle climate change. Despite its certain challenges, this system continues to evolve and is the main focus in international policy to maintain environmental and economic balance in the future (Pratama et al., 2021).

Discussion

The condition of the earth's ecosystem that is not bound to a regional administrative boundary and the relationship between current conditions and the projection of future climate conditions makes the concept of environmental justice based on two main concepts, namely intergenerational equity and intra-generational equity. According to Prihatiningtyas et al., (2023), intergenerational justice is the relationship between humans and other species of living things and the relationship between humans and the environmental system that humans contain. Each generation has an obligation to present environmental conditions that are worthy of enjoyment and is also obliged to improve the condition of environmental damage as a result of the actions of previous generations in an effort to ensure environmental sustainability. If associated with the concept of Islam, maintaining the ecosystem is a form of justice that has been discussed in the economics of the Islamic perspective.

The concept of justice has been discussed in Islam, when it is associated with carbon trading has emphasized the importance of a fair distribution of the benefits and burdens associated with reducing carbon emissions. Carbon trading allows a country or company that has exceeded emission limits to buy carbon credits. This if associated with the concept of Islamic economic empowerment, it has benefits related to the multiplier effect.

Empowerment of Islamic economics in the context of carbon trading involves the integration of Islamic economic values and principles in carbon trading practices. Islam as a religion and system of life provides a framework that includes principles such as social justice, sustainability, and environmental responsibility. Here are some aspects of Islamic economic empowerment in carbon trading:

First, in the context of carbon trading, the application of the principles of social justice and wealth distribution can ensure that the benefits of emission reduction and carbon trading are not only enjoyed by a few, but also contribute positively to the wider community, including vulnerable communities. Second, in the context of carbon trading, the empowerment of Islamic economies can encourage sustainable and environmentally friendly practices. This includes investments in green technologies, the development of renewable energy, and the protection of the surrounding

environment. Third, the concept of resource management (*isti'mar*) and efficiency in the use of resources (*israf*) is an integral part of Islamic values. In carbon trading, the empowerment of Islamic economies can encourage companies and entities to improve energy efficiency and reduce carbon emissions, in line with Islamic economic principles that emphasize the responsible use of resources. Fourth, in carbon trading, community and cooperative economic empowerment approaches can encourage active participation of local communities in emission reduction and carbon management projects, as well as ensure a more equitable distribution of benefits (Cadizza & Rizanizarli, 2024).

Some examples of projects that can be developed, such as power generation projects using renewable energy such as solar, wind, or hydroenergy, are effective examples in reducing carbon emissions. For example, the construction of a massive wind farm to replace conventional fossil fuel power plants. Programs to improve energy efficiency in industry, for example by adopting high-efficiency technologies or energy-saving equipment, help reduce energy consumption and therefore reduce carbon emissions per unit of production. Sustainable forest management projects, including reforestation and restoration, can sequester carbon from the atmosphere and reduce deforestation which is a major contributor to carbon emissions. Investments in environmentally friendly public transport, as well as incentives to reduce motor vehicle emissions, such as electric vehicles or the use of alternative fuels, are other efforts to reduce transport emissions. Projects to improve solid and liquid waste management, including the treatment of organic waste into biogas or compost, can reduce methane emissions and generate renewable energy, and more. (Humaira, 2021)

On the other hand, all of these opportunities also have challenges, namely the need for comprehensive education and awareness-raising to explain the benefits and mechanisms of these projects, as well as how the community can participate and benefit. Because of distrust and dissatisfaction among the local community. This can create conflicts and hinder project implementation. For this reason, affirmative policies ensure that vulnerable groups should be prioritized in training programs, jobs, and other economic benefits. Governments and relevant authorities must ensure that existing regulatory and policy frameworks are supportive, clear, and consistent. Regulations must be designed to support the equitable distribution of benefits and the participation of local communities. (Yasin et al., 2023)

In its implementation, the empowerment of Islamic economies in carbon trading can be realized through various mechanisms, including the establishment of sharia-compliant financial institutions to support green projects, education and training for the public on sustainable practices, and policy advocacy that strengthens the integration of Islamic economic principles in carbon trading regulations. (Samasta, 2023)

4. CONCLUSION

By combining carbon trading as a global instrument to address climate change with Islamic economic principles focused on social justice, sustainability, and environmental responsibility, we can create more holistic and sustainable solutions to today's global environmental challenges. The relevance of carbon trading to the empowerment of Islamic economies is not only about adhering to sharia principles, but also about creating a more just, sustainable, and harmonious world for future generations.

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