

GREEN FINANCE IN ISLAMIC PERSPECTIVE: A SENTIMENT ANALYSIS OF CARBON TRADING AND GREEN INVESTMENT ON SOCIAL MEDIA

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Abstract: This study analyses public sentiment towards carbon trading and green investment from an Islamic perspective using data taken from social media. *Theoretical Framework:* This study builds on a theory that combines Islamic finance principles with Maqashid Sharia with modern sustainability concepts to assess the ethical suitability of green financial instruments. *The method used is sentiment analysis of social media data collected using the Talkwalker platform, covering 15.6_K posts from various social media. Results and Discussion* this study shows that green investment is dominated by positive sentiment and is consistent with Sharia values. *Research Implications* this study enhances the existing literature and demonstrates the potential of social media analysis using Talkwalker to understand that Islamic finance is designed with a proper Sharia structure. *Originality Value* this research examines the hitherto limited topic of green finance from an Islamic perspective and extends the Maqashid Sharia approach into the domain of environmental finance.

Keywords: Green Finance, Carbon Trading, Green Investment in Islamic Perspective, Sentiment Analysis on Social Media, Maqashid Sharia.

1. Introduction

Climate change is a global challenge that has a direct impact on the environment, the economy, and social life. Climate change is increasingly recognised not only as an environmental concern but also as a significant factor affecting the global financial system. (Qiao & Xu, 2025). Countries around the world, including Muslim-majority countries, are still working to mitigate the negative impacts of climate change through policies and innovations in the financial sector. As a policy tool that directs financial resources towards the green economy, green credit policies encourage enterprises to engage in clean production by restricting financing support to highly polluting companies, enhancing resource use efficiency, and promoting industrial upgrading. (Qiao & Xu, 2025).

Green finance has the advantages of providing policy and financial support for low carbon industries and promoting the transformation of traditional industries with high pollution

and energy consumption, thus it is conducive to promoting the development of a low-carbon economy and achieving "emission peak" and "carbon neutrality" as soon as possible. (Guo et al., 2022).

This financial paradigm, focused on environmental sustainability, has garnered significant attention for its potential to drive decarbonization and support the transition to a low-carbon economy. Green finance steers capital towards projects that are centered on clean energy and environmental sustainability by employing mechanisms such as green credit and green bonds. (Bhatnagar et al., 2024). Green productivity growth has been aimed at by countries, regulators, and industry leaders due to aviation's importance in global transportation and economic development. Green productivity will continue to gain traction as the aviation industry strives for its ambitious target of zero net carbon emissions by the year 2050. (Kumar et al., 2025).

From an Islamic perspective, the principles of Islamic finance emphasize justice, balance, social responsibility, and environmental preservation as part of man's duty as a khalifah on earth. Therefore, green finance has significant value congruence with the principles of the maqashid al-shariah, which is the normative framework of the objectives of Islamic law.

The implementation of maqashid sharia in the implementation of Islamic economic and financial practices is the main thing in the process of formulating and creating Islamic banking and financial products. (Aji & Mukri, 2022). In terminology, Maqashid al-shariah is the intention of Allah as a maker of sharia to provide benefits (maslahah) to humans, namely, by fulfilling the needs of daruriyah (primary), hajiyah (secondary), and tahsiniyah (tertiary) needs so that humans can live in goodness and can become good servants of Allah. Scholars then divided the daruriyah category in more detail into al-kulliyat al-khamsah, namely hifz al-din (preservation of religion), hifz al-nafs (preservation of the soul), hifz al-aql (preservation of reason), hifz al-nasl (preservation of offspring), and hifz al-mal (preservation of property). (Iskandar & Aqbar, 2019).

Several jurisdictions have varying definitions of "green finance," which is an important investment and financing tool. The European Commission viewed it as a financial tool to help with the adaptation, mitigation, and other green aspects of the environment. To combat climate change, this can be achieved through green bonds, green credit, green funds, and carbon finance. Eventually, resources are allocated to green development projects for sustainable environments. (Mashari et al., 2023).

Islamic finance, which is based on the Sharia principles, has unique characteristics that emphasize fairness, transparency, and sustainability. Therefore, it is important to understand how the concepts of green finance, particularly carbon trading and green investment, are viewed within the Islamic framework. In this context, the two main concepts often discussed are carbon trading and green investment. However, the extent to which Muslim societies understand, accept, and value concepts such as carbon trading and green investment has not been widely explored.

Social media, as a reflection of public opinion, offers great potential to explore people's perceptions of these two concepts. Carbon trading refers to the trading of carbon emission

rights, where companies or countries that produce emissions lower than a set limit can sell their excess to other parties. Green investment involves financing projects or activities that contribute to environmental sustainability, such as renewable energy, energy efficiency, and environmentally friendly natural resource management. With the increasing use of social media as a channel for public opinion, analysing the perceptions of the Muslim community towards these two concepts has become increasingly important. Through a sentiment analysis approach to social media data, this study aims to identify public sentiments towards carbon trading and green investment, analyse the relationship of these sentiments with sharia principles, provide recommendations for the development of green finance in the context of Islamic finance, and with a sentiment analysis approach, it is expected to determine the extent to which public opinion supports or rejects green finance concepts within the sharia framework.

2. Literature Review

2.1 Green Finance

Green finance is a financial concept that focuses on environmental sustainability during the investment decision-making process. It includes various financial instruments such as green bonds, green loans, and equity investments aimed at supporting green projects. Examples include renewable energy, energy efficiency, waste management, and natural resource protection. (Rangkuti, 2024). This reveals that the development of green finance exhibits regional variations, emphasising the significance of these regional factors in influencing green finance. (Kwilinski et al., 2025).

Green finance, if appropriate, can reduce footprints that are harmful to the environment and improve environmental quality through mitigating climate change also noted that the ‘green’ attribute of the concept requires the extension of financial resources to the protection of the environment. (Qiao & Xu, 2025).

2.2 Carbon Trading

In recent years, the issue of global warming has become a very important business and political issue in national and international circles, both developed and developing countries. Various challenges and threats due to global warming and climate change are caused by greenhouse gases. (Mulyati & Darmawati, 2023).

Carbon trading is a market mechanism designed to control greenhouse gas emissions by setting an emissions cap and allowing entities whose emissions fall below the cap to sell their excess allocations to other parties. Despite its economic effectiveness, there has been much criticism regarding the validity of the concept from a Shariah perspective, and its suitability is often questioned because of its speculative nature and uncertainty in implementation.

Many countries adopt a carbon trading mechanism as the main policy tool to control carbon emissions. Although carbon trading systems have been established, there are still some

ongoing problems such as inconsistent carbon accounting standards, data distortion and inefficient overall process within these systems. (Qiao & Xu, 2025).

2.3 Green Investment in Islamic Perspective

Green investments have gained significant attention over the past decade, whether it be stocks or fixed income securities. Such increasing coherence between the green assets is diluting diversification gains, which is another reason for the increasing popularity of green investments. (Qiao & Xu, 2025).

Green Investment aim to channel public and private investment towards the green sector. They are integral in improving energy efficiency and boosting green energy projects, developing a framework highlighting the green finance ecosystem of the country. The previous studies on green investment have focused on the growth and measurement of green and environment-related instruments. However, the development of green investment is significantly influenced by the regulatory and economic environment of the countries. (Bhatnagar et al., 2024).

In Islamic finance, investments must be halal in substance and must benefit society at large and not cause harm. Green investments fulfil these criteria, as they can support environmental sustainability, improve social welfare, and provide long-term positive impacts. Green investment funds are established to facilitate the flow of capital into the environmental and low-carbon economic sectors, supporting technological innovation and the development of green industries. (Li, 2024). The concept of the maqashid al-shariah is relevant for assessing the validity of green investment in the Islamic financial system.

2.4 Sentiment Analysis on Social Media

Sentiment analysis is natural language processing technique used to identify and categorize opinions expressed in text, primarily to determine whether an author's attitude towards a particular subject is positive, negative, or neutral. Social media can be a rich source of data to illustrate people's perceptions of contemporary issues, including finances and the environment.

The Kaffah religion of Islam has prohibited all forms of destruction of the surrounding nature, both directly and indirectly. The earth on which we live is his property. Therefore, humans should not arbitrarily explore nature without considering the consequences. This is consistent with the concept of a Green Economy.

All Muslim scholars agree that religion should be prioritized when determining law. Of course, the religion in question is Islam itself. The religion of Islam must be preserved, because the greenest religion or the most concerned about the environment on earth is Islam.

2.5 Maqashid Sharia

Maqasid Shariah in economics involves applying Sharia goals to economic transactions to achieve human welfare and benefit in all aspects of life, including the economy. Implementation of Maqasid Shariah in the economy involves applying Sharia principles to economic transactions to ensure that these transactions are fair and transparent. (Harahap & Uula, 2023).

Yusuf Qardhawi explains in *Ri'ayah al-Bi'ah' fi Syari'ah al-Islam* that maintaining the environment is the same as maintaining the five basic objectives of Islam (maqashid al-syari'ah). This is because the five basic objectives can be explained if the environment and the universe support them. Therefore, taking care of the environment is the same as that of the maqashid al-shari'ah. (Iskandar & Aqbar, 2019).

Maqashid Sharia contains five main goals, which are: The benefit of religion (hifz ad-diin), the benefit of the soul (hifz an-nafs), the benefit of reason (hifz al-aql), the benefit of offspring (hifz an-nasl) and the benefit of property (hifz al-maal). At each level, has its own classification, namely the major rank necessities (dharuriyyat), secondary needs (hajiyyat) and additional/tertiary (tahsiniyyat) maintaining religion (din), the soul (nafs), reason (aql), offspring (nasl), and wealth (mal) (Fitria et al., 2022) . Each level has its own classification, namely the major rank necessities (dharuriyyat), secondary needs (hajiyyat) and additional/tertiary (tahsiniyyat).

3. Method

The methodology used was sentiment analysis, which is a text mining technique aimed at automatically evaluating opinions, feelings, judgments, and attitudes towards a target, such as products and services. (Syahdatul Maulida & Bashir Ammar Hakim, 2022). Sentiment analysis is a natural language processing technique used to identify and categorize opinions expressed in a text, primarily to determine whether an author's attitude toward a particular subject is positive, negative, or neutral.

Between May 20 and 26, 2025, a thorough understanding of Green Finance in an Islamic Perspective can be gained through analysis of Carbon Trading Sentiment and Green Investment on Social Media. By identifying and categorizing online discussions, the platform makes it possible to track public opinion and sentiments regarding green finance. The application of sophisticated algorithms and analytical methods provides a comprehensive overview of how these problems change across various social media platforms. The findings of this analysis can provide a thorough understanding of the influence, shifts in public opinion, and discussion dynamics of social media.

This study uses a quantitative-descriptive approach with a sentiment analysis method based on social media data to evaluate the public perception of the two main aspects of green finance, namely carbon trading and green investment, from an Islamic perspective. The main

tool used is TalkWalker, an artificial intelligence (AI) based social media analytics platform that enables real-time monitoring and analysis of online conversations.

This research is also equipped with a qualitative content approach to deepen the narratives and Sharia values that emerge in public conversations, in order to link sentiment results with the principles of Sharia maqashid.

4. Results And Discussion

Using the Talkwalker tool on social media platforms, a total of 15.6 K social media posts relevant to the keywords “carbon trading” and “green investment” were obtained. This study aims to measure the sentiment of Twitter tweets relating to green finance during the research period from 20-26 May 2025. Sentiment analysis is used to describe the public's views on a topic.

The data used in this study consists of Talkwalker tweets related to green finance, which are considered secondary data. Users and readers of tweets about green finance on Twitter are diverse, ranging from ordinary users to practitioners, politicians, and organizations. Therefore, opinions on green finance can be collected from users with different demographics and interests. Users from different countries are also included in the data. Talkwalker data were collected weekly, and the number of tweets collected may vary from week to week. The data are collected live, allowing users to download tweets, locations, and other features.

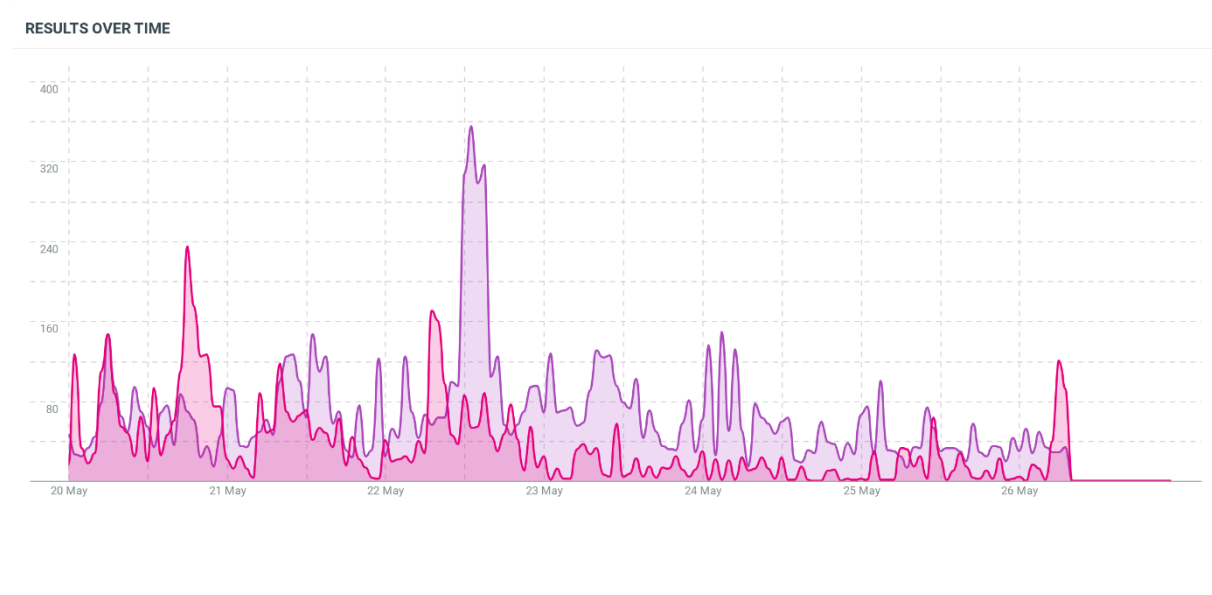


Figure 1. Key Metrics

The graph above illustrates the trend of online conversations over time, comparing the two key topics of Carbon Trading and Green Investment in the time spans of May 20 and May

26, 2025. Data were collected using the Talkwalker analytics tool, which plots the volume of conversations over time.

In general, the graph shows that both topics experienced significant fluctuations in conversation intensity. Purple topics (Green Investment) tend to have a higher overall volume of conversation compared to pink topics (Carbon Trading). This indicates a generally greater level of public interest in and concern for green investment initiatives. A significant peak for Green Investment occurred on May 22, when the volume of mentions surged to nearly 400, indicating a spike in public discourse. This could be attributed to the emergence of a notable event, such as a policy announcement, a public figure's statement, or viral news content, highlighting the relevance of Islamic principles in sustainable finance.

By contrast, Carbon Trading experienced its highest level of activity on May 21, reaching close to 240 mentions. This spike may reflect public reactions to specific debates or controversies related to the Islamic permissibility (halal or haram) of carbon trading mechanisms. This analysis shows that Green Investment tends to receive greater and more sustained attention from the public than Carbon Trading. This finding is in line with the assumption that Shariah-compliant green investments are more socially and emotionally acceptable to the Muslim community, compared to carbon trading mechanisms that are still debated in terms of ethics and Islamic law.



Figure 2. Top Theme

From the visualisation, it can be observed that the terms ‘green’, ‘investment’, ‘energy’, ‘global’, and ‘development’ are the most dominant topics in the digital discourse. This shows that green investment is a strategic concept that is closely related to issues of sustainable development, energy transformation, and global implications. This finding is consistent with the academic view that green investment plays a central role in supporting the transition to a low-carbon economy.

Meanwhile, topics such as ‘key’, ‘high’, “future”, and ‘support’ emphasize the importance of green investment's position in a long-term policy framework that promotes

innovation, capacity building, and sustainability. The occurrence of the words ‘power’, ‘sector’, and ‘supply’ also indicates that the conversation is related to the energy and logistics sectors, where green transformation is being accelerated through investment and policy reforms.

By contrast, carbon trading is shown in smaller and more dispersed numbers, as represented by the small number of pink bubbles. This indicates that, despite its relevance in the context of climate change mitigation, carbon trading has not been a major topic in digital conversation compared to green investment.

Overall, this topic map shows that the digital discourse on green investment is broad and strategic, encompassing economic, environmental, and geopolitical aspects, with a global scope and future orientation. In contrast, carbon trading remains a more specific and limited topic, but it remains important in the context of climate policy and emissions reduction.

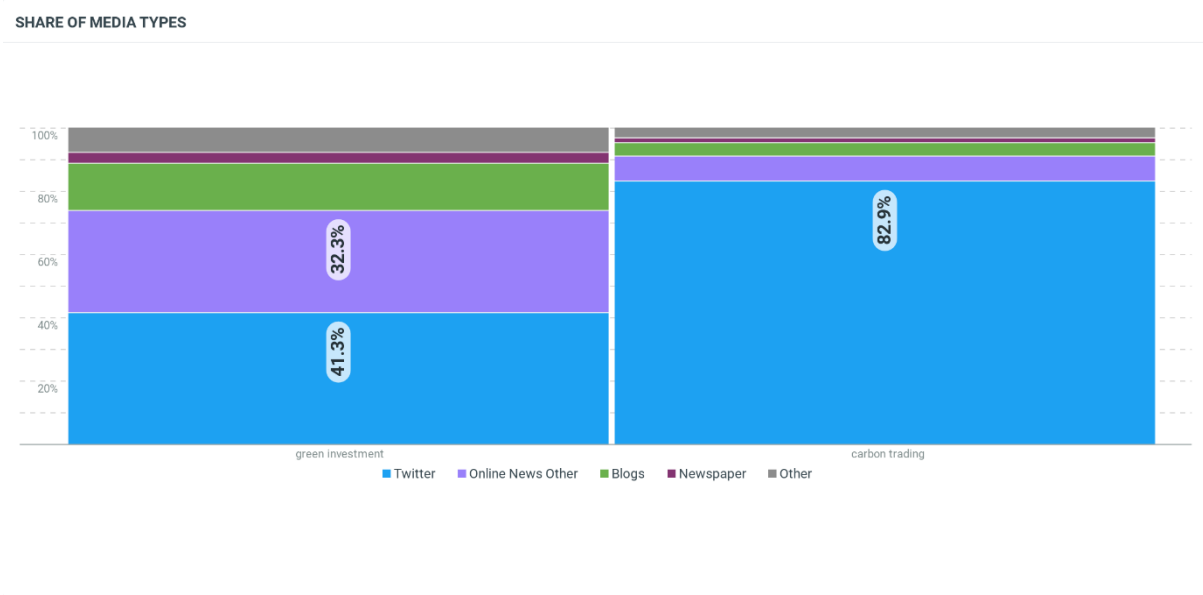


Figure 3. Influencers

This figure shows a comparison between ‘Green Investment’ and ‘Carbon Trading’. This graph uses a multilevel bar chart to illustrate the percentage for each. In the ‘Green Investment’ category, it can be seen that the majority of discussions related to this topic are spread through the Talkwalker media, with a percentage reaching 41.3%. Then, ‘Online News Other’ media also has a significant contribution with 32.3%, while ‘Blogs’ media plays a smaller role, which is around 32.3%. ‘Newspaper’ and ‘Other’ media recorded much lower contributions.

As for the ‘Carbon Trading’ category, the difference is striking, with Talkwalker media recording the largest contribution of 82.9%. This indicates that discussions and information on ‘Carbon Trading’ are more dominant on social media platforms such as Twitter than on other media.

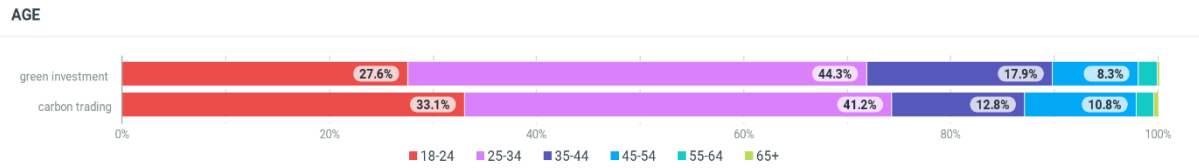


Figure 4. Demographics AGE

This figure shows the gender distribution for two topics, namely ‘Green Investment’ and ‘Carbon Trading’. In the ‘Green Investment’ category, the proportion of men reached 62.9%, while that of women accounted for 37.1%. This shows that more men are engaged in or exposed to this topic than women.

Meanwhile, in the ‘Carbon Trading’ category, men also dominated, with a percentage of 64.6%, while women recorded a figure of 35.4%. While both topics show male dominance, the difference between genders on these two topics is relatively small, with a slightly higher percentage of men on ‘Carbon Trading’ than on ‘Green Investment’. Overall, this graph illustrates that both topics tend to be of greater interest or are more frequently discussed by men, although women also contribute significantly to both topics.

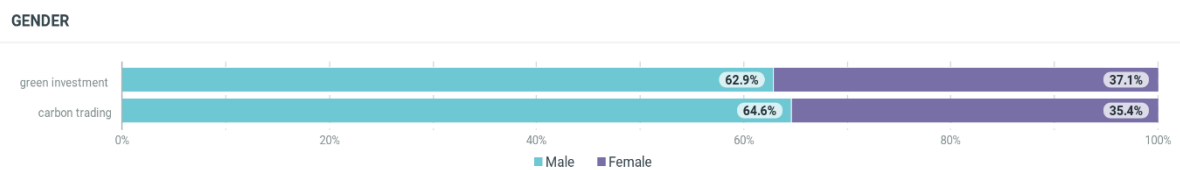
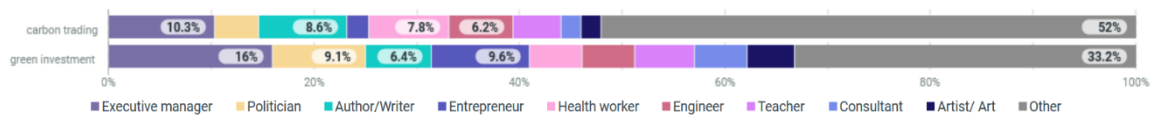


Figure 5. Demographics Gender

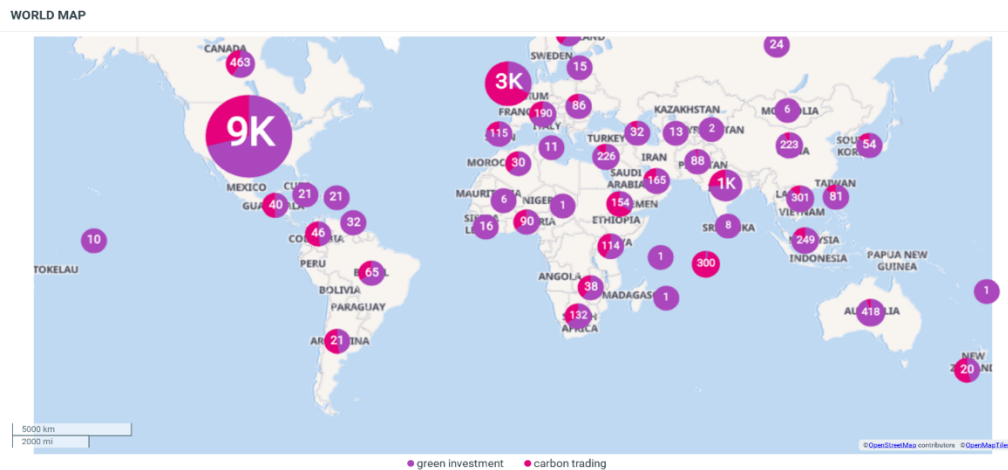
This figure shows the age distribution on two topics, namely ‘Green Investment’ and ‘Carbon Trading.’ In the ‘Green Investment’ category, the 25-34 age group dominated with a percentage of 44.3%, followed by the 18-24 age group, which recorded 27.6%. The 35-44 age group accounted for 17.9%, while the 45-54 age group only accounted for 8.3%. The older age groups (55-64 years and 65+ years) contributed very little to this topic.

Meanwhile, in the ‘Carbon Trading’ category, the 25-34 age group also dominated (41.2%), followed by the 18-24 age group (33.1%). The 35-44 age group accounted for 12.8%, while the 45-54 age group accounted for 10.8%. Just like in the ‘Green Investment’ category, the older age group had a very low percentage. Overall, these two topics tended to be more heavily followed by the young to young adult age groups, with 25-34 year olds being the most dominant group on both topics. Older age groups showed lower engagement in both topics.



This figure shows the distribution of professions on two topics: ‘carbon trading’ and ‘green investments’. In the ‘Carbon Trading’ category, the most dominant profession is ‘Executive Manager’ with a percentage of 52%, followed by ‘Entrepreneur’, which accounts for 10.3%. Some of the other professions involved in this topic are ‘Consultant’ (8.6%), ‘Politician’ (7.8%), and ‘Engineer’ (6.2%). There were also contributions from professions such as ‘Author/Writer’ and ‘Health Workers,’ albeit with smaller percentages.

As for the category of ‘Green Investment,’ the profession of ‘Executive Manager’ also dominates, with a percentage of 33.2%. Followed by ‘Politician’ (9.1%) and ‘Entrepreneur’ (9.6%), “Engineer” and ‘Teacher’ contributed 6.4% and 6.2% respectively. ‘Consultant’ also contributed with 6%, while other professions such as ‘Artist/Art’ and ‘Health Worker’ recorded lower percentages. Overall, the profession of ‘Executive Manager’ had the largest contribution in both topics, but there were other variations in the professions involved between the two categorie.



This image displays a world map showing the distribution of data related to two topics, 'green investment' and 'carbon trading,' using numbers that represent the volume related to each topic in different countries. On this map, it appears that the country with the highest number of green investments is the United States, with 9,000, followed by other major countries, such as India (1,000), Canada (463), and Australia (418). Meanwhile, Europe also shows significant numbers, with France (3,000), Germany (226), and the UK (115) registering major contributions.

For ‘Carbon Trading,’ the United States also dominated with 3,000, followed by India (1,000) and China (300). European countries, such as Germany and the UK, also recorded significant contributions of 90 and 190, respectively. Southeast Asia, including Indonesia (249), Vietnam (301), and China, made major contributions to carbon trading-related discussions and activities. The map provides a clear visual representation of how these two topics are spread across the globe, with larger contributions seen in developed countries, such as the United States and Europe, while some countries in Asia and South America also show significant.

5. Relationship With Maqasid Shariah

The analysis of digital sentiment towards the two main topics, Carbon Trading and Green Investment, reveals a significant alignment with the primary objectives of Maqasid Shariah (the goals of Islamic law). Green Investment, in particular, explicitly supports environmental protection (Hifz al-Bī'ah), a key aspect of Maqasid Shariah. Investments aimed at sustainability and environmental preservation are consistent with Islamic principles advocating ecological balance and responsible stewardship of natural resources. Furthermore, Green Investment aligns with the protection of wealth (Hifz al-Māl) by promoting ethical, equitable, and productive use of funds, which ensures economic benefit while simultaneously fostering social and environmental welfare. A healthy economy always generates profits in the right way, and prevents economic activities that can tarnish personal property and the property of others such as *tadlis*, *gharar*, *usury* and others. (Iskandar, 2019)

Carbon Trading, despite ongoing debates regarding its ethical permissibility within Islamic law, primarily targets reducing air pollution and mitigating climate change impacts. These objectives are fundamentally in harmony with the principle of safeguarding human life (Hifz al-Nafs) by minimizing health risks associated with environmental degradation. Additionally, both topics, especially Green Investment, directly address the protection of future generations (Hifz al-Nasl) by ensuring environmental sustainability and the preservation of natural resources, allowing subsequent generations access to a healthy environment and adequate resources.

Table 1. The Alignment With Maqasid Sharia

Maqasid Principle	Shariah	Green Investment	Carbon Trading
Environmental Protection (Hifz al-Bī'ah)		Strong alignment through sustainable practices and preservation	Moderate alignment through emission reduction and climate mitigation
Wealth Protection (Hifz al-Māl)		Strong alignment through ethical, productive investment	Moderate alignment depending on ethical regulatory frameworks
Protection of Life (Hifz al-Nafs)		Strong alignment by promoting a healthy environment	Strong alignment by reducing pollution and health hazards

Protection of Future Generations (Hifz al-Nasl)	Strong alignment by ensuring long-term sustainability	Moderate alignment contingent on effective implementation of sustainability criteria
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The table 1 below summarizes the alignment of the discussed topics with the Maqasid Shariah. Overall, Green Investment exhibits strong congruence with the principles of Maqasid Shariah across environmental, economic, and social dimensions, while Carbon Trading, though requiring careful ethical considerations, also maintains relevance in supporting key Shariah objectives when appropriately managed.

The concept of Green Economy and Islamic Economics is a concept that has many of the same values, especially in the Maqashid Sharia perspective, namely the development of humans, nature, and also aims for human welfare. An implementable, reliable and comprehensive model of Green Economy implementation in Indonesia is an economic model that is truly green and relevant to the characteristics of the Indonesian nation based on Islamic Eco-ethics philosophy that is in harmony with the sociocultural of Indonesian society and has a legal basis. From this, it is clear that the real Green Economy is an economic activity that prioritises the maintenance of religion, soul, mind, property, offspring and property. Therefore, the real Green Economy is reflected in Islamic Economics. (Iskandar, 2019)

6. Conclusions And Recommendations

This research reveals the Muslim community's perception of the concept of green finance through a social media-based sentiment analysis using the Talkwalker platform. Two important components of green finance that are widely discussed are carbon trading and green investment, as well as how they are understood and assessed from the perspective of Islamic values, especially within the framework of Maqashid Sharia.

The concept of the green economy is an effort to combine the balance between human welfare and social development by reducing or minimising environmental risks and ecological scarcity. Green investment consistently receives positive support because it is in line with Islamic financial principles. Green investment is also associated with the concept of the caliph's responsibility and is seen as a form of social worship that brings benefits to people.

In contrast, carbon trading has sparked debate and remains a controversial topic in Islamic finance. Negative sentiments emerged because of the assumption that this mechanism is understood as an effort to mitigate climate change. On the other hand, many posts questioning the suitability of the carbon trading system have the potential to contain speculative elements and uncertainty with Sharia principles.

By integrating Maqashid Sharia, carbon trading reflects the low-carbon principle of preserving life and reason, while resource efficiency goes hand in hand with the preservation of offspring and wealth. This Sharia-based green economy approach addresses the problem of inequality arising from the unequal distribution of green factors of production, guided by the principles of justice, public interest, and equality.

Therefore, specific, strict and transparent regulations are needed to regulate Sharia standards in carbon trading, green investment, and the use of environment-based funds to maintain trust in the community. Thus, if green finance is designed and socialised with a complete Islamic approach, then green finance from an Islamic perspective will not only be a solution to the challenges of climate change, but can also strengthen the position of Sharia finance as a fair, ethical, and sustainable system.

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