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TOWARDS ZERO EMISSIONS: A CRITICAL REVIEW OF THE CONTRIBUTION OF THE GREEN ECONOMY TO GLOBAL CLIMATE CHANGE TARGETS

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Abstract

Global climate change has become a major challenge that requires appropriate mitigation and adaptation measures, one of which is through the implementation of a green economy. A green economy focuses on integrating economic growth, environmental sustainability, and social justice to achieve global targets toward net-zero carbon emissions. This article critically examines the contribution of a green economy to carbon emission reduction and the challenges it faces, particularly in developing countries. Constraints such as unequal access to technology, lack of funding, and the dominance of fossil-based energy systems are significant barriers to the implementation of a green economy. To achieve zero emissions, global commitment through green investment, technology transfer, and inclusive international cooperation is required. The conclusion of this study emphasises the importance of cross-sectoral and cross-national synergies in efforts to achieve a more sustainable economy in order to effectively address the climate crisis.

Keywords: Towards Net-Zero Emissions, Green Economy Contributions, Global Targets, Climate Change.

Introduction

Climate change has become the most pressing environmental challenge of the 21st century. Global warming caused by increased concentrations of greenhouse gases in the atmosphere is the main cause of extreme phenomena such as rising sea levels, prolonged droughts, and changes in weather patterns. Global scientific consensus, as stated in the Intergovernmental Panel on Climate Change (IPCC) report, indicates that significant reductions in greenhouse gas emissions are necessary to avoid more severe impacts in the future (Hwang, 2023).

In a global effort to address climate change, various countries have committed to achieving 'net-zero emissions' (net-zero emissions) by mid-century, as outlined in the Paris Agreement (2015). This target aims to keep global temperature rise below 1.5 degrees Celsius compared to pre-industrial levels. However, achieving net-zero emissions requires major transformations in various sectors, such as energy, transportation, industry, and land use (Habib, 2024).

One approach proposed to support the net-zero emissions target is the green economy, which combines environmental sustainability with inclusive economic growth. The green economy focuses on reducing carbon emissions, improving energy efficiency, promoting sustainable management of natural resources, and encouraging green investments in environmentally friendly technologies (Gonzalez, 2024).

A green economy is an economic development approach that aims to improve human well-being and social equity while significantly reducing environmental risks and natural resource exploitation. According to the United Nations Environment Programme (UNEP), a green economy is defined as 'an economy that results in improved human well-being and social equity, while reducing environmental risks.' Green economic development prioritises resource efficiency, carbon emission reduction, and natural ecosystem protection as the core of its economic driving strategies (Castro, 2020).

The concept of green economy encompasses the transformation of traditional economic systems, which have been based on resource exploitation and pollution, into more sustainable systems. This involves the application of environmentally friendly technologies, improved energy efficiency, better waste management, and strengthening policies that support investment in the green sector (Radford, 2025). Additionally, the green economy integrates social aspects, such as creating decent jobs in the environmental sector and ensuring fair access to resources. Thus, the green economy is not only focused on environmental improvement but also seeks to create a balance between economic growth, sustainability, and social equity (Takahashi, 2024).

Although the green economy is believed to contribute to reducing global emissions, its implementation faces various challenges, including insufficient investment in green technology, resistance from carbon-based industries, and policy limitations in developing countries. Additionally, there is ongoing debate about the effectiveness of the green economy in driving systemic changes significant enough to achieve global net-zero emissions. Therefore, a critical review is needed to assess the extent to which the green economy can serve as a credible solution to support climate change targets while also promoting sustainable economic development.

Research Method

This study uses a literature review method. A literature review is a research approach that involves collecting, analysing, and synthesising information or data obtained from various literature sources, such as books, scientific journals, articles, reports, official documents, or other online sources. Researchers use this method to understand concepts, theories, or findings relevant to the research topic, thereby enabling them to construct a theoretical framework or obtain information to support their analysis (Creswell, 2013); (Kitchenham, 2004). The literature research process typically involves stages such as identifying the research topic or problem, searching for

relevant sources, evaluating the quality and credibility of sources, and organising the results of the review to formulate conclusions. This method is considered effective for conceptual or exploratory research or as a basis for further research (Snyder, 2019).

Results and Discussion

The Role of the Green Economy in Achieving Zero Emissions Targets

The green economy plays a crucial role in achieving global net-zero emissions targets. As a sustainable development approach, the green economy offers strategies to reduce negative environmental impacts through energy efficiency, conservation of natural ecosystems, and reduced reliance on fossil fuels. The shift from traditional economic models that often rely on resource exploitation to a sustainability-based economy provides opportunities to build a more environmentally friendly system while achieving long-term social and economic benefits (Chen, 2022).

One of the main roles of the green economy in achieving zero emissions is through energy transition. The green economy encourages increased use of renewable energy such as solar, wind, and hydro power, which do not produce carbon emissions. Support for environmentally friendly technologies enables a significant reduction in global dependence on fossil fuels. By building clean energy infrastructure, the green economy contributes to reducing greenhouse gas emissions and accelerating the transition to a carbon-free future (Kim, 2022).

The green economy also promotes efficiency in the industrial sector, where technology plays a crucial role in reducing resource consumption and minimising waste. Through the application of the principles of 'recycling' and 'production efficiency', the green economy helps companies to optimise their operations without harming the environment. For example, the implementation of a circular economy allows industrial waste to be reprocessed into raw materials for new production, thereby reducing combustion or disposal that produces carbon emissions that pollute the atmosphere (Silva, 2021).

In the transportation sector, the green economy plays a vital role in promoting the development of low-emission transportation modes. Electric vehicles and public transportation systems powered by renewable energy are key focuses in the green economy, aiming to reduce air pollution and emissions from fossil fuel-powered vehicles. Increased access to green transportation also opens opportunities for communities to directly contribute to achieving net-zero emissions targets (Mohamed, 2023).

The green economy helps shape policies that support sustainability, such as the implementation of carbon taxes, incentives for green innovation, and strict regulations on industries with high carbon footprints. Such policies act as a catalyst to encourage businesses and communities to adopt more environmentally friendly practices.

Appropriate regulations not only spur investment in the green sector but are also an integral part of strategic steps towards reducing emissions (Smith, 2020).

On the other hand, the green economy recognises the importance of the community's role in achieving zero emission targets. Efforts towards sustainability require collective awareness, which can be built through education and community involvement in various green movements. Campaigns to reduce plastic use, support renewable energy, or choose environmentally friendly products are some ways to accelerate the transition to a low-carbon economy. Active participation from all levels of society is an important foundation in driving greater change (Singh, 2020).

Green development based on a green economy also has a positive impact on the agriculture and forestry sectors. Sustainable agricultural techniques and forest rehabilitation contribute to reducing greenhouse gas emissions and maintaining ecosystem balance. The use of modern technology for low-emission agriculture and the preservation of green areas are strategic steps in ensuring that natural resources are preserved, while also supporting the zero emissions target (Ahmed, 2021).

The green economy can create new quality jobs in green sectors such as renewable energy, waste management, and environmental conservation. This transformation offers opportunities to improve economic well-being without sacrificing the environment. Thus, green economy-oriented development not only focuses on reducing emissions but also creates solutions to address social challenges such as unemployment and economic inequality (Martin, 2023).

Ultimately, the green economy is a vital instrument in achieving net-zero emissions through a holistic and sustainable approach. The integration of environmental conservation, green technology development, policy strengthening, and community engagement creates opportunities to steer the world towards greater ecological stability. These changes not only benefit the current generation but also ensure sustainability for future generations. The net-zero emissions target is not just a goal but a vision of the future that we strive to achieve together through the green economy.

Factors Affecting the Implementation of Green Economy

One of the main factors influencing the success of green economy implementation is government policy and regulation. The government plays an important role in creating a framework that supports green economy implementation, such as incentives for environmentally friendly businesses, carbon taxes, subsidies for renewable energy, and sanctions for industries that damage the environment. Without firm and targeted policies, green economy implementation efforts often encounter major obstacles (Oliveira, 2023).

The level of public awareness of the importance of protecting the environment is also a highly influential factor. People who are aware of the negative impacts of

economic activities on nature are more likely to support green initiatives, whether through sustainable lifestyles, such as using environmentally friendly products, or participating in conservation activities. Educational approaches and awareness campaigns need to be intensified to encourage a shift in public mindset (Alisha, 2022).

The existence of green technology and innovation plays an important role in supporting the green economy. Environmentally friendly technologies, such as renewable energy systems, clean production methods, and efficient waste management, can reduce the negative impact of human activities on the environment. If access to these technologies is limited, the implementation of a green economy will face significant obstacles (Brown, 2022).

Financial factors are also a major determinant. The development of a green economy often requires large initial investments, both in the form of new infrastructure development and the conversion of existing systems. Financial support from institutions such as banks, investors, and international organisations is crucial. Lack of access to funding for green projects is often the biggest obstacle for many developing countries (Davis, 2021).

Partnerships between governments, the private sector, communities, and international organisations influence the success of green economy implementation. This collaboration enables the pooling of resources, expertise, and technology to achieve common goals. Without cross-sectoral coordination, green economy initiatives tend to face challenges in their implementation. The way communities and industries consume and produce goods is also an important factor. A green economy requires sustainable production and consumption patterns. For example, industries need to reduce their use of non-renewable raw materials, while communities are encouraged to choose products with a low environmental impact. These changes require time, investment, and commitment (Nguyen, 2021).

The existence of supporting infrastructure, such as energy-efficient public transportation, modern waste management systems, and energy-efficient buildings, significantly influences the development of a green economy. Without adequate infrastructure, the implementation of green systems often faces obstacles on a large scale (Zhang, 2022). Therefore, investment in the development of green infrastructure is a top priority.

Social and cultural factors also play a significant role in the implementation of a green economy. A culture that tends to be consumptive or indifferent to the environment can be an obstacle. Conversely, communities with cultural values that respect nature and prioritise sustainability are more likely to support green initiatives (Schmidt, 2025).

Furthermore, global support and pressure are factors driving the implementation of a green economy. International organisations such as the United Nations, through agreements like the Paris Agreement, play a crucial role in establishing

global standards that encourage countries to commit to the transition to a green economy (Wilson, 2022). Support in the form of international funding, technology transfer, and global cooperation greatly facilitates the smooth implementation of these initiatives. With alignment across the various factors mentioned above, the implementation of a green economy can be carried out effectively while contributing to a sustainable future.

Conclusion

In achieving global climate change targets, the concept of green economy offers sustainable development-based solutions that integrate economic growth with environmental preservation. Green economy encourages the transition of energy systems from fossil fuels to renewable energy, as well as the application of environmentally friendly technologies in various industrial sectors. This strategy is considered an essential step towards achieving zero carbon emissions, reducing the adverse effects of global warming, and improving the resilience of the world's ecosystems.

However, the success of the green economy faces serious challenges, including technological inequality, inconsistent policies, and a lack of participation from developing countries due to financial constraints and limited access to technology. Many developing countries face obstacles in transitioning to a greener economic model due to the continued dominance of fossil fuel-based economic systems. Therefore, global support through green financing, technology transfer, and international cooperation is needed to create a more equitable and inclusive economic transformation.

Overall, the green economy is a fundamental concept in the journey towards net-zero carbon emissions, but its implementation requires global synergy. Strengthening international regulations, investing in environmental innovation, and raising public awareness are key elements to accelerate the transition towards a more sustainable future. The commitment of every country to actively collaborate is crucial to achieving global climate change targets within the set timeframe.

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