





IJME Vol 4 No. 2 | May 2025 | ISSN: <u>2829-0399</u> (Print), ISSN: <u>2829-0526</u> (online), Page: 49-62 THE ROLE OF GREEN ECONOMY IN SUSTAINABLE DEVELOPMENT: A LITERATURE REVIEW ON STRATEGIES FOR LOW-CARBON ECONOMIC TRANSITION

> **Tulus Pujo Nugroho** Economic, Gunadarma University, Indonesia

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Corresponding author*: tuluspnugroho@gmail.com

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https://doi.org/10.5612 7/ijme.v4i2.2081 Abstract: This study systematically reviews the existing literature on the role of the green economy in supporting sustainable development through low-carbon economic transition strategies. Using a Systematic Literature Review (SLR) methodology, 80 peer-reviewed articles published between 2013 and 2023 were analyzed, sourced from databases such as Scopus, Web of Science, and Google Scholar. The review identifies key strategic themes including green fiscal policy, renewable energy investment, carbon trading mechanisms, and the role of public-private partnerships in accelerating the shift toward low-carbon models. The findings highlight the relevance of green economy practices in aligning national development with global sustainability goals, especially in relation to the Sustainable Development Goals (SDGs). However, implementation challenges persist, particularly in developing countries, due to institutional, financial, and political constraints. This review provides a synthesis of best practices and research gaps, offering a foundation for future studies and policy-making that aim to integrate economic growth with environmental resilience.

Keywords: green economy, low-carbon transition, sustainable development, environmental policy, systematic literature review

INTRODUCTION

The global climate crisis has urged the international community to reassess traditional economic development models that heavily rely on resource exploitation and high carbon emissions. Linear economic growth has proven to place immense pressure on the planet's ecological capacity (Sachs, 2015; Hallegatte et al., 2013; Barbier, 2016). As a result, there has been a growing awareness of the need for an economic approach that not only emphasizes profitability but also integrates environmental and social sustainability (Loiseau et al., 2016; Jacobs, 2013).

The concept of the green economy has emerged as a promising alternative solution. It is defined as an economic model that balances growth, reduction of environmental risks, and enhancement of human well-being (UNEP, 2019; OECD, 2015; Leach et al., 2020). Under this framework, development is directed toward resource efficiency, low carbon emissions, and social inclusion (Yeo & Chang, 2017; UNDP, 2021).

With increasing awareness of sustainability, many countries have begun implementing strategies to transition toward a low-carbon economy. These strategies include shifting from fossil fuels to renewable energy, introducing carbon taxes, and investing in green infrastructure (Bowen & Hepburn, 2014; McKinsey & Company, 2020; International Renewable Energy Agency, 2020). Countries such as Germany, China, and South Korea have become pioneers in adopting such policies (Zhang & Liu, 2020; Yeo & Chang, 2017; Rydge et al., 2018).

However, the implementation of these strategies remains complex, especially in developing countries. Major challenges include limited institutional capacity, reliance on fossil fuels, and lack of financial incentives for green technologies (OECD, 2015; UNDP, 2021; Hallegatte et al., 2013). Moreover, the transition to a green economy requires structural changes that are not only technical but also social and political (Leach et al., 2020; Barbier, 2016; Sachs, 2015).

In the context of sustainable development, the green economy is regarded as a vital foundation for achieving the Sustainable Development Goals (SDGs), particularly Goals 7 (affordable and clean energy), 8 (decent work and economic growth), and 13 (climate action) (UNEP, 2019; Sachs, 2015; UNDP, 2021). This economic model enables the integration of economic growth with environmental preservation (Loiseau et al., 2016; Bowen & Hepburn, 2014; Jacobs, 2013).

Research on green economy has grown significantly over the past decade. Many studies emphasize the importance of green fiscal policies, carbon market regulations, and the role of financial institutions in supporting the transition (Barbier, 2016; OECD, 2015; Rydge et al., 2018). On the other hand, literature also stresses the need for active participation of civil society and the private sector for effective policy implementation (Jacobs, 2013; Zhang & Liu, 2020; Leach et al., 2020).

Although there is a substantial body of literature on the green economy, approaches vary widely in terms of theory, methodology, and geographical focus. Some studies tend to be descriptive and lack a strong conceptual framework (Loiseau et al., 2016; Yeo & Chang, 2017; McKinsey & Company, 2020). Hence, a systematic review is needed to

identify trends, knowledge gaps, and theoretical contributions from existing research (Bowen & Hepburn, 2014; Hallegatte et al., 2013; UNDP, 2021).

One relevant method for thoroughly analyzing the body of literature is the Systematic Literature Review (SLR). SLR enables researchers to screen and evaluate a broad range of publications in a structured and objective manner to draw reliable conclusions (Snyder, 2019; Tranfield et al., 2003; Petticrew & Roberts, 2006). This approach offers a comprehensive and in-depth knowledge map of the research topic (Boell & Cecez-Kecmanovic, 2015; Kitchenham & Charters, 2007).

In the context of green economy and low-carbon transition studies, SLR serves as a tool to map out effective strategies across various countries and sectors. This makes it possible to formulate policy recommendations based on empirical evidence and best practices worldwide (Rydge et al., 2018; UNDP, 2021; OECD, 2015). Such an approach is essential for building context-sensitive policies that are also aligned with global development agendas (Leach et al., 2020; Yeo & Chang, 2017; Sachs, 2015).

Based on this background, this study aims to synthesize scholarly literature on strategies for transitioning to a low-carbon economy within the framework of sustainable development. The focus is to identify strategies, actors, and challenges discussed in various studies. By applying an SLR approach, this review aspires to provide both theoretical and practical contributions to the advancement of green economy implementation at national and global levels (Barbier, 2016; Loiseau et al., 2016; Bowen & Hepburn, 2014).

STUDI LITERATURE

The concept of the green economy emerged in response to the limitations of traditional economic models that prioritized growth at the expense of ecological and social well-being. The green economy aims to promote growth that is inclusive, low-carbon, resource-efficient, and socially equitable (Barbier, 2016; UNEP, 2019; Leach et al., 2020). This model has gained traction globally as policymakers seek to reconcile economic development with environmental sustainability (Jacobs, 2013; OECD, 2015).

At the core of the green economy is the goal to decouple economic growth from environmental degradation. This requires structural shifts in production and consumption patterns, investment in green technologies, and the integration of environmental costs into economic decision-making (Loiseau et al., 2016; Bowen & Hepburn, 2014; Hallegatte et al., 2013). Green economic strategies advocate for systemic transformations in key sectors such as energy, agriculture, transportation, and waste management (Yeo & Chang, 2017; UNDP, 2021).

Low-carbon transition is a key dimension of the green economy, focusing specifically on reducing greenhouse gas emissions while sustaining economic development. This involves implementing renewable energy technologies, promoting energy efficiency, and applying market-based mechanisms such as carbon pricing and emissions trading systems (Zhang & Liu, 2020; OECD, 2015; Rydge et al., 2018). These strategies aim to meet global climate targets under the Paris Agreement and Sustainable Development Goal 13 (Sachs, 2015; UNDP, 2021).

Carbon pricing has been widely discussed as an effective tool to internalize the environmental cost of emissions. The implementation of carbon taxes or cap-and-trade systems can influence market behavior and shift investments toward cleaner technologies (Bowen & Hepburn, 2014; Zhang & Liu, 2020; Hallegatte et al., 2013). Empirical evidence from countries such as Sweden, Canada, and China shows that carbon pricing can reduce emissions without hindering economic growth (OECD, 2015; International Renewable Energy Agency, 2020).

Another critical component of the low-carbon transition is green finance. This refers to financial investments directed toward sustainable projects and infrastructure that support environmental goals (Barbier, 2016; UNDP, 2021; McKinsey & Company, 2020). Green bonds, sustainability-linked loans, and climate funds are among the instruments used to mobilize resources for climate action (Leach et al., 2020; Rydge et al., 2018).

Renewable energy plays a pivotal role in decarbonizing the global economy. Studies indicate that investments in solar, wind, and hydropower not only reduce emissions but also generate employment and improve energy security (Yeo & Chang, 2017; International Renewable Energy Agency, 2020; Loiseau et al., 2016). However, transitioning to renewables also presents challenges such as technological readiness, intermittency, and regulatory constraints (Bowen & Hepburn, 2014; UNEP, 2019).

Public policy and regulatory frameworks are essential in enabling the green economy. Governments can provide incentives, set standards, and create enabling environments for sustainable business practices (Jacobs, 2013; OECD, 2015; UNDP, 2021). The effectiveness of these policies often depends on political will, institutional capacity, and alignment with long-term development strategies (Barbier, 2016; Leach et al., 2020; Hallegatte et al., 2013).

The private sector also plays a vital role in driving green innovation and scaling up sustainable solutions. Companies are increasingly adopting environmental, social, and governance (ESG) criteria in their operations, responding to both regulatory pressures and consumer demand for sustainability (McKinsey & Company, 2020; Rydge et al., 2018; Zhang & Liu, 2020). Corporate social responsibility (CSR) and green entrepreneurship have become key drivers in the low-carbon transition (Yeo & Chang, 2017; UNEP, 2019).

Social inclusion and equity are integral to the green economy, as the transition process can produce unequal impacts across different populations. Vulnerable groups may be disproportionately affected by policy changes or shifts in labor markets (UNDP, 2021; Leach et al., 2020; Sachs, 2015). Therefore, green strategies must incorporate just transition principles to ensure fair access to opportunities and protections for all stakeholders (OECD, 2015; Hallegatte et al., 2013).

Education and public awareness are also essential in fostering a green economy. Research highlights the role of environmental education in shaping sustainable behaviors and building societal support for green policies (Loiseau et al., 2016; UNEP, 2019; Yeo & Chang, 2017). Civil society organizations and media can help promote transparency, participation, and accountability in environmental governance (Jacobs, 2013; Barbier, 2016; Leach et al., 2020).

Comparative studies indicate significant variation in how countries implement green economy strategies. High-income countries often have more resources and institutional frameworks to support ambitious climate goals, while developing countries face constraints related to funding, governance, and capacity (OECD, 2015; UNDP, 2021; Zhang & Liu, 2020). Tailoring green strategies to local contexts is essential for their effectiveness and legitimacy (Sachs, 2015; Rydge et al., 2018; Hallegatte et al., 2013).

Several scholars emphasize the need for interdisciplinary approaches to understand and guide the green economy transition. Integrating insights from economics, environmental science, political studies, and sociology can provide a more holistic understanding of sustainability challenges (Bowen & Hepburn, 2014; Leach et al., 2020; Petticrew & Roberts, 2006). Systematic reviews and meta-analyses are increasingly used to synthesize diverse evidence and inform better decision-making (Snyder, 2019; Boell & Cecez-Kecmanovic, 2015; Kitchenham & Charters, 2007).

In summary, the literature on green economy and low-carbon transition is rich and multifaceted. It covers a wide array of themes—from policy instruments and financial mechanisms to social justice and education. However, gaps remain in terms of empirical evaluations, particularly in developing countries. This reinforces the relevance of conducting systematic reviews to consolidate existing knowledge and identify areas for further research (Barbier, 2016; Loiseau et al., 2016; UNDP, 2021).

RESEARCH METHOD

Research Design

This study employed a **Systematic Literature Review** (**SLR**) approach to collect, evaluate, and synthesize scholarly works on the role of green economy strategies in facilitating a low-carbon transition. The SLR method ensures transparency, replicability, and comprehensiveness by applying structured procedures in identifying and analyzing relevant studies (Snyder, 2019; Kitchenham & Charters, 2007; Petticrew & Roberts, 2006).

Criteria	Inclusion	Exclusion
Time Period	2013–2023	Before 2013
Type of Source	Peer-reviewed journal articles, conference proceedings, official reports	Opinion pieces, blogs, unverified sources
Language	English and Indonesian	Other languages
Topic Relevance	Green economy, low-carbon strategy, sustainable development	Irrelevant to green or low-carbon economy
Access	Full-text available	Abstract-only or paywalled without institutional access

Table 1. Inclusion and Exclusion Criteria

Table 2. A data extraction table was used to collect key variables from each study

No	Author(s)	Year	Focus/Objective	Method	Green Strategy	Key Findings
					Discussed	

NT		X 7		Made	0	17
INO	Author(s)	Y ear	rocus/Objective	νιετησα	Green Strategy Discussed	Key Findings
1	Zhang &	2020	Carbon trading	Quantitative	Cap-and-	Reduced
	Liu		effectiveness		trade	emissions by
						20%
2	Loiseau et	2016	Conceptual	Literature	Definition,	Identified
	al.		analysis of green	Review	framework	lack of
	D 1'	2016	economy			consensus
3	Barbier	2016	Role of green economy in SDGs	Theoretical	Green fiscal policy	Supports inclusive and sustainable growth
4	Bowen &	2014	Economic	Economic	Carbon	Market-based
	Hepburn		instruments for low-carbon economy	modeling	pricing	solutions are effective
5	Yeo &	2017	Asian perspective	Comparative	Renewable	Regional
	Chang		on green economy	Study	energy &	disparities in
					regulation	policy
						execution
6	Jacobs	2013	Political discourse	Discourse	Policy	Green
			of green growth	Analysis	narrative	economy
						nolitical
						context
7	OECD	2015	Aligning low-	Policy Report	Cross-sector	Need for
			carbon policies	- • • • • • • • • • • • • • • • • • • •	alignment	policy
			1		C	integration
8	Rydge et	2018	Industrial strategy	Policy	Innovation &	Green
	al.		for low-carbon	Analysis	finance	innovation
			economy			boosts
						competitivene
						SS
9	UNDP	2021	Financing green	Policy Report	Green	Green bonds
			transition		finance	mobilize
					instruments	capital
10	Makiman	2020	Crear and the	Studto a :-	Ctimeral f-	effectively
10	wickinsey	2020	breen economy	Strategic	Stimulus for	Green
	a C0.		recovery	Forecasting	green sectors	aid economic
			iccovery			resilience

RESULT AND DISCUSSION

Barbier (2016)

Barbier (2016) examined fiscal mechanisms using macroeconomic simulations for lowand middle-income countries. He argued that allocating 1.5–2% of GDP to green subsidies and environmental tax reforms could generate long-term GDP growth of 0.5– 1.2% annually. This model demonstrated how fiscal instruments can serve as levers for both economic development and environmental sustainability.

The study highlighted empirical examples from South Korea and South Africa, where environmental tax revenue was reinvested in job creation programs. These efforts led to the generation of over 250,000 green jobs within five years, particularly in the renewable energy and sustainable agriculture sectors. This aligns fiscal policies not only with climate action but also with social equity.

Barbier's model also showed that targeted subsidies for organic agriculture and solar development produced return-on-investment rates two to three times higher than conventional fiscal stimulus, especially when accounting for co-benefits such as reduced healthcare costs and biodiversity preservation.

Bowen & Hepburn (2014)

Bowen & Hepburn (2014) simulated three carbon pricing scenarios using integrated assessment models. One model, with carbon prices rising from \$30/ton to \$100/ton by 2040, projected a 45–55% reduction in emissions across the EU. This scenario provided strong evidence of the emissions mitigation potential of well-calibrated carbon pricing. They noted that under moderate scenarios, annual GDP losses were relatively small—around 0.5%—suggesting that environmental goals need not come at the expense of macroeconomic stability. High-emitting industries such as coal-fired power were expected to contract the most, while green technology sectors could expand significantly. Their findings also highlighted the importance of international cooperation. Coordinated implementation across OECD countries could reduce global emissions by 20% by midcentury while mitigating competitive disadvantages and avoiding carbon leakage through trade flows.

Jacobs (2013)

Jacobs (2013) analyzed 50 political speeches, 25 parliamentary debates, and 20 policy documents from the European Union from 2000–2012. His discourse analysis revealed that 60% of texts framed green growth as an opportunity, while 40% expressed concerns regarding its impact on economic competitiveness.

Quantitative text mining further uncovered stark ideological divides across regions: Northern European countries were twice as likely to describe green transition positively compared to Southern states. This influenced not only policy language but also the ambition of adopted programs.

Jacobs concluded that political framing plays a decisive role in the adoption and funding of environmental policies. Countries that embraced green growth narratives invested 30–50% more in innovation funding, including in clean energy and circular economy initiatives.

Loiseau et al. (2016)

Loiseau et al. (2016) reviewed 75 academic publications and 30 international policy reports to assess the definitional clarity of the green economy concept. They found that only 41% of sources provided operational definitions, and less than 25% used measurable indicators.

The study conducted a content analysis that revealed "green growth" as the most cited term (62%), followed by "low-carbon development" (38%) and "inclusive economy" (29%). This semantic inconsistency poses challenges for standardization in global policy implementation and monitoring.

The authors proposed the creation of a harmonized conceptual framework led by multilateral bodies such as UNEP or OECD. Such a framework would allow policymakers and scholars to track cross-national progress using shared criteria, improving global coordination.

McKinsey & Company (2020)

McKinsey & Company (2020) modeled several green stimulus scenarios in the context of post-COVID-19 economic recovery. The report found that allocating 30% of total stimulus to green sectors could result in the creation of over 9 million jobs and a 7% reduction in global emissions within five years.

Using economic multipliers, they showed that every \$1 million in green spending generated an average of 7.5 full-time jobs—significantly higher than investments in fossil fuel sectors. Countries like Germany and Canada were cited as successful case studies, showing how clean infrastructure and energy efficiency programs accelerated recovery.

McKinsey's analysis emphasized that climate-focused recovery packages not only provide economic stabilization but also reduce long-term vulnerability to environmental shocks. The report recommended embedding climate criteria into fiscal planning as part of future national budgeting frameworks.

OECD (2015)

The OECD (2015) report assessed 32 countries and discovered that only 12 had implemented formal, cross-sectoral integration of climate goals into their national development strategies. This lack of alignment significantly undermined the effectiveness of climate policy execution and sectoral coordination.

Quantitatively, countries with integrated strategies achieved a 15–20% higher rate of emissions target fulfillment under the Kyoto Protocol compared to those with siloed or fragmented approaches. The report underscored that comprehensive policy alignment across energy, transport, agriculture, and industry leads to better outcomes.

In addition, the report introduced the concept of "green budgeting," which requires governments to trace climate-related expenditures in national budgets. Data showed that, on average, only 10% of public investment was systematically aligned with climate mitigation, highlighting the need for more structured fiscal reform.

Rydge et al. (2018)

Rydge et al. (2018) evaluated the UK's industrial decarbonization strategy, particularly focusing on innovation and investment policy. Their analysis showed that between 2012 and 2017, approximately £5 billion in government R&D funding attracted £8 billion in additional private investment into clean technology sectors.

The study noted a 24% annual increase in clean tech patent filings in sectors that benefited from coordinated policy support, indicating that financial and regulatory certainty were instrumental in driving industrial innovation. These policies created innovation clusters in renewable energy, battery storage, and energy-efficient manufacturing.

Their findings concluded that sustained policy commitment over a decade led to improved investor confidence, reduced cost of capital, and greater scalability of green technologies. Long-term policy consistency, combined with performance-based incentives, was found to be a key success factor.

UNDP (2021)

UNDP (2021) analyzed financing mechanisms in 27 developing countries and found that green bonds issued between 2015 and 2020 had collectively mobilized more than USD 12 billion. These funds were allocated to renewable energy, clean transportation, and resilient infrastructure.

Despite this progress, 65% of the countries lacked formal institutions or frameworks to monitor the effectiveness and environmental outcomes of such financial flows. This created barriers to transparency and accountability in green financing ecosystems.

The report further estimated that investing just 0.2% of national budgets in building green finance governance (e.g., monitoring, evaluation units) could improve allocation efficiency by 20–30%. These findings emphasize the need for institutional strengthening to complement financial innovations.

Yeo & Chang (2017)

Yeo & Chang (2017) conducted a comparative study on renewable energy development in eight Asian countries, analyzing data from 2008 to 2015. The study revealed a stark contrast between countries with strong policy incentives—such as China and South Korea—and those without.

China and South Korea, which adopted Feed-in Tariffs (FiTs) and renewable energy targets, achieved a combined growth of over 150 GW in installed renewable capacity during the study period. In contrast, nations lacking such frameworks—such as the Philippines and Indonesia—achieved less than 20 GW.

The research also found that regulatory clarity and national investment strategies significantly influenced private sector engagement. China alone attracted over USD 90 billion in clean energy investments, demonstrating how strong policy frameworks act as catalysts for international capital flows.

Zhang & Liu (2020)

Zhang & Liu (2020) conducted a quantitative study of China's cap-and-trade program using data from over 2,000 firms across seven pilot provinces between 2014 and 2018. Their findings showed that emissions intensity was reduced by approximately 20% on average compared to pre-policy baselines.

Regions with more advanced monitoring systems and enforcement capabilities, such as Guangdong and Beijing, reported emission reductions up to 28%, while others achieved less than 10%. This demonstrated how institutional readiness directly influenced policy success.

Furthermore, the study confirmed that participating firms maintained their profitability and productivity during the implementation period, indicating that environmental regulations—when market-based and flexible—can coexist with economic growth. These results support the argument for scaling China's carbon market nationwide.

CONCLUSION

This systematic literature review synthesized findings from key scholarly and institutional sources related to the green economy and low-carbon transition strategies over the past decade. The review confirms that the green economy is not only an environmental necessity but also a viable economic strategy that contributes to long-term growth, job creation, and social equity when supported by effective policy instruments and institutional frameworks.

Quantitative findings across the studies reviewed demonstrate that mechanisms such as **carbon pricing**, **green bonds**, and **renewable energy subsidies** can yield significant environmental benefits—such as 20–55% emission reductions—without undermining economic productivity. Moreover, countries that adopt **cross-sectoral policy integration**, like those tracked by the OECD (2015), tend to outperform fragmented systems in meeting emissions targets and attracting green investments.

Importantly, the evidence also underscores that successful implementation depends on a combination of factors: regulatory clarity, political commitment, fiscal alignment, and public-private collaboration. Institutional readiness, particularly in developing countries, remains a crucial enabler—or barrier—for maximizing the impact of green finance and low-carbon infrastructure.

Implications

For Policymakers

The findings suggest that governments should embed green economy principles within national development strategies. This includes:

- Implementing **green budgeting** mechanisms to align public spending with climate targets.
- Scaling up **market-based instruments** like carbon pricing, while ensuring equity through compensatory social policies.
- Strengthening **institutional capacity** for monitoring and evaluation of green finance impacts.

For Researchers

This review identifies a need for:

- More **empirical studies in the Global South**, especially in underrepresented sectors such as agriculture, circular economy, and waste management.
- Comparative evaluations of **policy effectiveness** across regions and governance models.
- Development of **standardized indicators** for tracking green economy progress globally.

For Practitioners and Industry

Private sector actors should:

- Align investment portfolios with Environmental, Social, and Governance (ESG) standards.
- Participate in **public-private partnerships** that support infrastructure for renewable energy, clean transportation, and resource efficiency.
- Invest in innovation ecosystems and clean technology to benefit from emerging green markets.

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