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RESEARCH REVIEW

Green Economy Implementation and Sustainable Development in Emerging Economies: A Critical Evidence Synthesis

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Developing Countries; Green Economy; Green Finance; Green Innovation; Just Transition; Sustainable Development

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ABSTRACT
This study critically examines how green-economy policy instruments contribute to sustainable development in emerging economies, addressing gaps in understanding the institutional conditions and distributional consequences of sustainability transitions. Employing a critical narrative evidence-synthesis approach, the study evaluates Scopus-indexed literature published between 2013 and 2026, focusing on renewable energy, green innovation, green finance, fiscal interventions, and infrastructure. The synthesis compares economic, environmental, and social outcomes while assessing differences in methodological credibility, contextual relevance, and institutional capacity. The findings indicate that renewable energy and green innovation exhibit relatively consistent positive associations with economic and environmental performance, whereas the effectiveness of green finance and fiscal instruments is more dependent on regulatory credibility, financial-market development, and policy coordination. Evidence concerning employment creation, poverty reduction, and distributional equity remains less conclusive, highlighting potential trade-offs between environmental progress and socioeconomic inclusion. The study contributes a governance-centred and distribution-sensitive conceptual framework linking policy instruments, implementation mechanisms, institutional conditions, and development outcomes. Its principal theoretical contribution is distinguishing transition scale, measured through green investment and technological adoption, from transition quality, reflected in environmental effectiveness and equitable socioeconomic benefits. For Indonesia and comparable emerging economies, the findings emphasise the importance of institutional coordination, credible sustainable-finance governance, and just-transition policies to ensure that green-economy expansion translates into inclusive and sustainable development.

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1. INTRODUCTION

Climate change, environmental degradation, resource insecurity, and persistent socioeconomic inequality have intensified the need to reconcile economic development with ecological sustainability. The green economy has emerged as an important policy framework promoting low-carbon, resource-efficient, and socially inclusive development while reducing environmental risks (Ali et al., 2021; D'Amato & Korhonen, 2021; Khoshnava et al., 2019; Zhu et al., 2023). Its policy relevance increased following

the 2008 global financial crisis and the Rio+20 process, as governments and international organisations increasingly linked economic recovery, environmental transformation, and sustainable-development objectives (Ali et al., 2021; Chaaben et al., 2022; D'Amato & Korhonen, 2021).

Despite growing policy recognition, the green economy remains conceptually contested. Green economy, green growth, circular economy, and bioeconomy represent overlapping but distinct approaches to sustainability. While growth-oriented perspectives emphasise technological innovation, investment, and resource efficiency, transformative perspectives prioritise structural changes in production and consumption, ecological limits, and distributive justice (Bina, 2013; Borel-Saladin & Turok, 2013; Georgeson et al., 2017; Loiseau et al., 2016; Merino-Saum et al., 2019). These differences create considerable variation in how green-economy performance is measured. Improvements in investment, renewable-energy capacity, or technological innovation may indicate transition progress without necessarily demonstrating reductions in environmental pressures or improvements in social equity.

These concerns are particularly relevant to emerging economies, where sustainability transitions must coexist with employment creation, infrastructure development, energy security, and poverty reduction. Compared with advanced economies, many emerging economies face greater financing constraints, uneven technological capabilities, and institutional limitations that may restrict policy effectiveness. Their dependence on carbon-intensive industries and vulnerability to socioeconomic adjustment costs further complicate the transition (Ali et al., 2021; Ferreira et al., 2023; Houssam et al., 2023; Tawiah et al., 2021). Consequently, green-economy policies that generate favourable outcomes in advanced economies may not produce equivalent results under different institutional and developmental conditions.

Existing studies have examined the contributions of renewable energy, green innovation, finance, and environmental policies to sustainable development. However, three interrelated gaps remain. First, conceptual and measurement inconsistencies limit comparisons across studies and development contexts. Second, the predominance of observational research and composite indicators complicates causal interpretation and obscures the mechanisms linking policy interventions with outcomes. Third, existing analyses frequently prioritise aggregate economic and environmental performance, while institutional moderators, employment adjustment, distributional inequalities, and the quality of green transitions receive less systematic attention (Georgeson et al., 2017; Herman et al., 2023; Sarkodie et al., 2023).

Although existing reviews provide valuable insights into individual instruments and sustainability dimensions, a more integrated assessment is needed to explain how policy instruments interact with governance conditions and why their economic, environmental, and social outcomes differ across emerging economies. In particular, the expansion of green investment and technological adoption should be distinguished from the achievement of environmentally effective and socially inclusive development.

Against this background, this study addresses three research questions: (1) Which green-economy policy instruments demonstrate the most consistent associations with sustainable-development outcomes? (2) How do governance quality, institutional capacity, and development conditions shape these relationships? (3) What distributional consequences and evidence gaps limit the achievement of a just and inclusive transition?

This study contributes a governance-centred and distribution-sensitive evidence synthesis that connects renewable energy, green innovation, green finance, fiscal policy, and infrastructure through their implementation mechanisms and institutional conditions. Its principal conceptual contribution is the distinction between transition scale, reflected in expanding green investment and technological adoption, and transition quality, reflected in environmental effectiveness, employment outcomes, and distributive equity. By critically examining these dimensions, the study provides a framework for interpreting heterogeneous findings and identifying policy priorities for Indonesia and comparable emerging economies, where institutional coordination and regional socioeconomic differences are central to sustainable transformation.

2. CONCEPTUAL BACKGROUND

2.1. Green Economy as a Contested Development Framework

The green economy has emerged as a development framework that seeks to reconcile economic growth, environmental sustainability, and social well-being. However, its conceptual foundations remain contested, particularly regarding the relative importance of economic expansion, ecological transformation, and distributive justice. Growth-oriented perspectives emphasise investment, productivity, technological innovation, and new market opportunities, whereas transformative perspectives prioritise absolute reductions in environmental pressures, structural changes in production and consumption, and equitable access to development benefits. Merino-Saum et al. (2019), examining 140 definitions, identified substantial variation in green-economy objectives and priorities. Similarly, Georgeson et al. (2017) highlighted persistent fragmentation in conceptualisation and measurement.

These differences have important implications for evaluating green-economy performance. Studies focusing on renewable-energy investment, green patents, or environmentally oriented financial flows may identify positive developments without adequately capturing employment displacement, household energy costs, or regional inequalities. Conversely, multidimensional assessments may reveal trade-offs between environmental progress and socioeconomic outcomes. Consequently, improvements in individual green-economy indicators should not automatically be interpreted as evidence of sustainable and inclusive development.

A critical assessment must therefore distinguish among three analytical dimensions: policy inputs, implementation mechanisms, and development outcomes.

Policy inputs include public investment, financial incentives, regulations, and infrastructure expenditure. Implementation mechanisms encompass technological diffusion, energy substitution, resource efficiency, and institutional coordination. Development outcomes include economic performance, emissions reduction, employment, poverty, and income distribution. This distinction provides the conceptual foundation for evaluating both the scale of green-economy expansion and the quality of the resulting development transition.

2.2. Green Economy as a Contested Development Framework

The literature identifies five major instruments supporting green-economy implementation: renewable-energy policies, green innovation and digitalisation, green finance, fiscal interventions, and green infrastructure (Adamowicz, 2022; Khoshnava et al., 2020; Rasoulinezhad & Taghizadeh-Hesary, 2022; Wang et al., 2022). Although these instruments pursue complementary environmental and economic objectives, their effectiveness depends on different transmission mechanisms and implementation conditions.

Renewable-energy policies facilitate energy substitution and may reduce dependence on fossil fuels, while green innovation promotes technological development, resource efficiency, and new economic opportunities. Green finance seeks to redirect investment towards environmentally sustainable activities, whereas fiscal instruments, including environmental taxation, subsidies, and green budgeting, influence production incentives and public resource allocation. Green infrastructure supports these transitions through investments in energy, transport, water, and urban systems (Adamowicz, 2022; Khoshnava et al., 2020; Rasoulinezhad & Taghizadeh-Hesary, 2022; Wang et al., 2022).

However, these instruments do not necessarily generate uniform development outcomes. Renewable-energy expansion may encounter grid-capacity constraints, while green-finance initiatives require credible classification and monitoring systems. Similarly, innovation incentives may disproportionately benefit technologically advanced firms, and environmental taxation may impose higher adjustment costs on vulnerable households or carbon-dependent regions. These possibilities illustrate why the presence of green-economy instruments alone cannot establish policy effectiveness.

The interaction among policy instruments is therefore particularly important. Renewable-energy investment requires complementary infrastructure, green innovation depends partly on financial accessibility, and fiscal reforms may require social protection to mitigate unequal adjustment costs. Green-economy implementation should consequently be understood as an interconnected policy process in which coordination, sequencing, and institutional compatibility influence the translation of interventions into development outcomes.

2.3. Governance, Capacity, and a Just Transition

Governance and institutional capacity are central to understanding why similar green-economy instruments may produce different development outcomes across countries. Regulatory quality, administrative effectiveness, policy consistency, financial-market development, and institutional coordination influence the capacity of governments and other stakeholders to implement environmental policies effectively. These conditions are especially relevant in emerging economies, where financial constraints, uneven technological capabilities, and differences in administrative capacity may affect policy implementation.

A governance-centred perspective suggests that institutional arrangements shape the mechanisms through which policy instruments influence economic, environmental, and social outcomes. Effective governance may improve policy coordination, strengthen accountability, encourage private investment, and support the diffusion of green technologies. Conversely, institutional fragmentation, weak regulatory enforcement, and limited implementation capacity may reduce policy effectiveness or create unintended consequences. Governance should therefore be considered a potential moderator of green-economy outcomes rather than merely an accompanying institutional characteristic.

Beyond implementation effectiveness, the distribution of transition costs and benefits is equally important. A just transition requires attention to workers, households, firms, and regions that may experience unequal consequences from decarbonisation and industrial restructuring. Although green investment may create new economic opportunities, employment gains in emerging industries do not necessarily compensate for losses in carbon-intensive sectors, particularly when workers face geographical, occupational, or skills-related barriers. Similarly, higher energy prices and unequal access to green financing may intensify existing socioeconomic disparities.

These challenges are particularly relevant to emerging economies with substantial regional inequalities, fossil-fuel dependence, and uneven institutional capacity. In the Indonesian context, differences in regional economic structures, access to finance, and implementation capabilities provide important considerations for evaluating the inclusiveness of green-economy policies. However, the magnitude and direction of these effects must be assessed using context-specific empirical evidence rather than inferred from aggregate international findings.

Building on these considerations, this review develops a governance-centred conceptual framework linking green-economy instruments, implementation mechanisms, institutional conditions, and sustainable-development outcomes. The framework advances three analytical propositions:

Proposition 1. Green-economy policy instruments are more likely to generate favourable environmental and economic outcomes when supported by complementary infrastructure, technological capabilities, and coordinated implementation mechanisms.

Proposition 2. Governance quality and institutional capacity condition the effectiveness of green-economy policies by influencing regulatory enforcement, financial mobilisation, policy coordination, and implementation consistency.

Proposition 3. Improvements in aggregate green-economy indicators do not necessarily translate into inclusive development unless transition policies address employment adjustment, affordability, and the distribution of costs and benefits.

These propositions are intended as interpretive guides for the subsequent evidence synthesis rather than as hypotheses tested directly in this review. Together, they distinguish the expansion of green-economy activities from the quality of the resulting transition and provide a basis for examining why development outcomes differ across institutional and socioeconomic contexts.

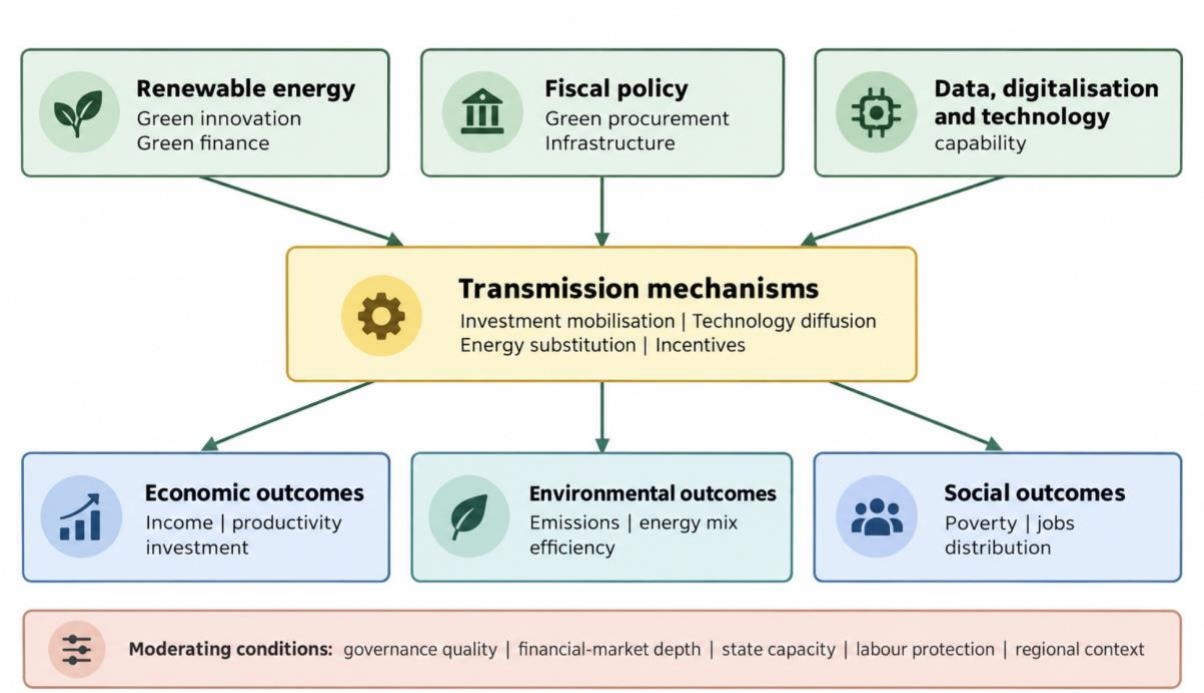


Figure 1. Conceptual framework linking green-economy instruments to sustainable-development outcomes. Source: developed from the cited literature.
Source: Authors' conceptual synthesis based on the reviewed literature.

3. METHODOLOGY

3.1. Review Design and Evidence Base

This study employs a critical narrative evidence-synthesis approach to examine the relationships between green-economy implementation, governance conditions, and sustainable development outcomes. The literature was drawn primarily from Scopus-indexed publications covering 2013–2026, using combinations of keywords related to

green economy, green growth, renewable energy, green innovation, green finance, environmental policy, economic growth, employment, inequality, carbon emissions, and institutional quality.

The evidence base encompasses conceptual studies, cross-country analyses, systematic reviews, bibliometric studies, and country-level empirical research. Studies were considered relevant when addressing green-economy policy instruments, implementation mechanisms, institutional conditions, or development outcomes. The synthesis distinguishes evidence from emerging economies from broader international findings to avoid inappropriate generalisation.

The literature was organised into five analytical dimensions: economic outcomes, environmental outcomes, social and distributional effects, policy instruments, and institutional conditions. Findings were critically compared across methodological approaches and geographical contexts, with particular attention to consistency, contradictory evidence, and limitations in causal inference.

3.2. Analytical Procedure

The analysis followed three stages. First, studies were classified by policy instrument, including renewable energy, green innovation, digitalisation, green finance, fiscal policy, and infrastructure. Second, findings were grouped into economic, environmental, social, and institutional outcomes. Third, the synthesis examined how governance quality, financial development, technological capacity, and development levels shaped variations in reported outcomes.

Evidence strength was assessed qualitatively based on methodological credibility, consistency across independent studies, geographical relevance, and the presence of contradictory findings. Evidence was classified as comparatively strong when supported by multiple credible and consistent studies; moderate when findings were context-dependent or methodologically constrained; and weak or inconclusive when evidence was limited, inconsistent, or insufficient for reliable interpretation.

The synthesis distinguishes statistical associations from causal relationships and evaluates whether green-economy expansion translates into inclusive and equitable development outcomes.

4. RESULTS

4.1. Development Outcomes

The reviewed literature indicates that green-economy implementation is associated with economic and environmental improvements, although the strength and consistency of these relationships vary across development contexts, policy instruments, and research designs. Table 1 summarises the principal instruments, transmission mechanisms, and implementation constraints identified in the literature. The evidence classifications represent qualitative assessments of reported consistency rather than pooled effect estimates or established causal relationships.

Table 1. Green-economy policy instruments, transmission mechanisms, and evidence qualifications

Instrument	Primary mechanism	Evidence consistency	Main qualification
Renewable energy	Changes the energy mix; reduces fossil-fuel dependence	Comparatively strong	Needs grid capacity, investment, and policy stability
Green innovation	Improves resource efficiency and supports new products	Comparatively strong	Benefits depend on technology diffusion and firm capability
Green finance	Mobilises capital for low-carbon investment	Moderate	Taxonomies, disclosure, and market depth constrain effectiveness
Fiscal policy and procurement	Changes incentives and directs expenditure	Moderate	Distributional effects vary with subsidy and tax design
Green infrastructure	Enables efficient transport, energy, water, and urban systems	Moderate	High up-front cost and coordination needs

Source: Authors' synthesis of the cited literature (2026)

Cross-country findings provide qualified support for the economic and environmental contributions of green-economy implementation. Houssam et al. (2023), examining 60 developing countries using 2018 cross-sectional data, reported positive associations between green-economy indicators and GDP per capita and unemployment, alongside a negative association with poverty. Importantly, the positive relationship with unemployment contradicts a straightforward job-creation interpretation. The study therefore supports a more cautious conclusion concerning labour-market outcomes. Similarly, Lyeonov et al. (2019) associated green investment in European Union countries with higher GDP per capita, lower greenhouse-gas emissions, and greater renewable-energy use. However, evidence from advanced institutional settings should not be generalised directly to emerging economies.

Other studies highlight substantial contextual differences. Ferreira et al. (2023) reported variation in green-growth outcomes across development levels, while Neumann (2022) found that green entrepreneurship contributed to economic and social development without consistently significant environmental effects. These findings challenge the assumption that individual green-economy interventions automatically generate simultaneous economic, environmental, and social benefits.

Table 2 presents a comparative synthesis of the principal empirical findings, emphasising geographical context, reported outcomes, and limitations affecting their interpretation.

Table 2. Comparative synthesis of empirical findings on green-economy implementation

Study / evidence	Context / instrument	Main finding	Interpretation / qualification
Houssam et al. (2023)	60 developing countries; broad green-economy indicators	Green-economy indicators were positively related to GDP per capita and total unemployment, and negatively related to poverty.	Supports income and poverty-reduction benefits, but the labour-market interpretation is uncertain because the unemployment result conflicts with a job-creation claim.
Lyeonov et al. (2019)	European Union; green investment	Green investment was associated with higher GDP per capita, lower greenhouse-gas emissions, and a larger renewable-energy share.	Provides comparatively clear evidence of combined economic and environmental benefits.

Study / evidence	Context / instrument	Main finding	Interpretation / qualification
Tawiah et al. (2021); Candra et al. (2023); Liao et al. (2025)	Developed and developing economies; renewable energy	Renewable-energy deployment was repeatedly linked with green growth and sustainable-development outcomes.	Renewable energy is among the most consistent transition drivers, subject to grid capacity, investment, and policy stability.
Fernandes et al. (2021); Luo et al. (2022)	Technology transfer, innovation, and digitalisation	Green technology and innovation support productivity, resource efficiency, and industrial transformation; digitalisation can strengthen green innovation.	Benefits depend on technology diffusion, firm capability, skills, infrastructure, and governance; trade-offs remain possible.
Wang et al. (2022); Rasoulinezhad & Taghizadeh-Hesary (2022)	Global evidence; green finance	Green finance was linked with sustainable development, renewable-energy development, and improvements in energy efficiency.	Finance can accelerate transition, but taxonomies, disclosure quality, regulation, financing costs, and market depth condition effectiveness.
Li et al. (2025); Ortega Carrasco et al. (2024)	Green budgeting, fiscal policy, and public procurement	Fiscal and procurement instruments can redirect public and private expenditure towards more sustainable activities.	Policy design matters because taxes, subsidies, and expenditure shifts can generate uneven distributional effects.
Khoshnava et al. (2019; 2020)	Green infrastructure	Green infrastructure supports lower-resource-intensity transport, energy, water, and urban systems and links infrastructure strategy with sustainable development.	Infrastructure is an enabling mechanism, although high up-front costs and coordination requirements can constrain implementation.
Neumann (2022)	Green entrepreneurship	Green entrepreneurship supported economic and social development, while its environmental effect was not consistently significant.	A single intervention does not automatically deliver a complete economic-social-environmental win.
Ferreira et al. (2023)	Cross-country green-growth measures across development levels	The contribution of green-growth measures to economic performance differed across levels of development.	Results are context-dependent and should not be transferred mechanically from high-capacity to lower-income economies.
Aldieri & Vinci (2018); Anwar et al. (2023)	Innovation and labour-market adjustment	Green innovation can create new opportunities while also displacing labour in incumbent industries and changing skill requirements.	Job creation should be assessed together with displacement, job quality, training needs, regional effects, and transition protection.

Source: Authors' synthesis of the cited literature (2026)

Taken together, the findings suggest that economic and environmental improvements are more frequently documented than equitable social outcomes. This distinction reinforces the importance of evaluating not only green-economy expansion but also the institutional and distributional conditions under which its benefits materialise.

4.2. Renewable Energy and Green Innovation

Renewable energy and green innovation emerge as recurring mechanisms associated with green-economy development. Tawiah et al. (2021) identified renewable energy as an important correlate of green growth across developed and developing countries. Similarly, Candra et al. (2023) and Liao et al. (2025) linked renewable-energy deployment to sustainable-development outcomes. These relationships are commonly explained through changes in the energy mix, reduced fossil-fuel dependence, and increased investment in cleaner technologies.

However, renewable-energy expansion does not necessarily translate into equivalent environmental or economic gains across countries. Electricity-grid capacity, financing availability, regulatory stability, and existing energy structures may influence implementation. Consequently, renewable-energy deployment should be interpreted

alongside complementary infrastructure and institutional readiness rather than as an independently sufficient condition for sustainable development.

Green innovation provides another potential pathway through improvements in productivity, resource efficiency, and industrial transformation. Fernandes et al. (2021) demonstrated the relevance of sustainable technology transfer and innovation while identifying trade-offs between conventional and green growth. Luo et al. (2022) reported that digitalisation can support green innovation in China. More recent literature identifies digital technologies, fintech, artificial intelligence, and Industry 4.0 or 5.0 as potential enablers of monitoring, innovation, and green financing (Dar et al., 2024; Dhayal et al., 2023; John et al., 2025).

Nevertheless, technological benefits depend on firms' absorptive capacity, workforce skills, infrastructure availability, and institutional support. These conditions are particularly important in emerging economies, where unequal access to technology and financing may concentrate innovation benefits among larger or more established enterprises. The evidence therefore supports a conditional relationship between technological advancement and inclusive green development.

4.3. Green Finance and Fiscal Instruments

Green finance is increasingly recognised as a mechanism for mobilising investment in renewable energy, cleaner production, and resource-efficient infrastructure. Rasoulinezhad and Taghizadeh-Hesary (2022) and Wang et al. (2022) linked green finance with sustainable-development and energy-efficiency outcomes. Dar et al. (2024) further identified fintech as a potential means of improving financial accessibility and sustainability-related monitoring.

However, the effectiveness of green finance depends on financial and institutional conditions. Inadequate taxonomies, inconsistent disclosure requirements, limited financial-market depth, and regulatory uncertainty may weaken capital mobilisation or increase greenwashing risks. Financing constraints are especially relevant in developing economies, where borrowing costs and limited access to long-term capital can restrict environmentally sustainable investment (Ali et al., 2021; Elimam, 2023; Raman et al., 2025).

Fiscal instruments may complement private green finance through environmental taxation, targeted subsidies, green budgeting, and sustainable public procurement. Li et al. (2025) and Ortega Carrasco et al. (2024) highlight the potential role of public financial instruments in redirecting expenditure towards sustainability objectives. Nevertheless, their social and economic consequences depend on policy design, fiscal capacity, and the availability of compensatory measures.

Overall, the evidence suggests that green finance and fiscal instruments are enabling mechanisms rather than automatic determinants of sustainable-development outcomes. Their effectiveness depends on credible governance, coordinated public–private financing, and the capacity to manage distributional trade-offs.

4.4 Employment, Poverty, and Distribution

Evidence on the social consequences of green-economy implementation is less consistent than findings concerning investment, energy transition, and environmental performance. Although green policies may generate new employment opportunities and contribute to poverty reduction, these benefits are not necessarily distributed evenly across industries, workers, or regions.

Aldieri and Vinci (2018) and Anwar et al. (2023) highlight the importance of considering employment opportunities alongside technological substitution, changing skill requirements, and labour-market adjustment. Job creation in emerging green industries may coexist with employment losses in carbon-intensive sectors, particularly when affected workers cannot readily transfer their skills or relocate.

The findings of Houssam et al. (2023) further illustrate the need for cautious interpretation. Although the study reported favourable associations between green-economy indicators and income and poverty outcomes, its positive association with unemployment does not establish a corresponding employment benefit. This inconsistency reinforces the importance of evaluating labour-market outcomes separately from aggregate economic performance.

Moreover, employment totals alone provide an incomplete measure of transition quality. Wages, job security, informality, occupational mobility, access to retraining, and regional differences are also relevant to assessing whether green transformation is socially inclusive. The reviewed evidence provides a less developed basis for drawing firm conclusions on these distributional dimensions.

These findings support a distinction between the scale and quality of green-economy transitions. Increased investment and technological adoption may indicate transition progress, but inclusive development requires attention to the allocation of benefits, adjustment costs, and the protection of vulnerable workers and households.

4.5 Barriers and Cross-Country Heterogeneity

The literature identifies several recurring barriers to green-economy implementation, including financing constraints, institutional fragmentation, political resistance, technological limitations, and weak policy coordination (Ali et al., 2021; Batrancea et al., 2021; Kumar et al., 2023; Raman et al., 2025). These barriers can constrain implementation even when policies have clearly defined environmental objectives.

Green transitions may also generate concentrated adjustment costs through stranded assets, industrial restructuring, and reduced competitiveness in carbon-intensive activities. Pegels and Altenburg (2020) and Soderholm (2020) highlight the political and economic challenges associated with such structural changes. These pressures help explain why potentially beneficial reforms may face resistance from affected industries, workers, and regions.

Geographical coverage further limits generalisation. The reviewed literature includes substantial evidence from China, Europe, Asia, and OECD economies, while

coverage of Africa, Latin America, fragile economies, and informal sectors is less developed (Ferraz & Pyka, 2023; Tamasiga et al., 2023; Usman et al., 2024).

These differences indicate that green-economy policy effectiveness should be evaluated within specific institutional and socioeconomic contexts. Fiscal space, regulatory capacity, energy dependence, labour-market structures, and technological readiness may influence both implementation outcomes and the distribution of transition costs.

Overall, the findings are consistent with the governance-centred framework developed in Section 2. Policy instruments may contribute to sustainable development, but their effectiveness and inclusiveness depend on complementary capabilities, institutional coordination, and context-sensitive transition arrangements. These relationships should be interpreted as evidence-informed explanations rather than universally established causal effects.

5. DISCUSSION

5.1 Interpreting the Evidence

The findings suggest that green-economy implementation can contribute to sustainable development, although its outcomes depend on policy design, institutional capacity, and socioeconomic conditions. Renewable energy and green innovation exhibit relatively consistent positive associations with economic and environmental performance (Tawiah et al., 2021; Candra et al., 2023; Fernandes et al., 2021; Liao et al., 2025). Green finance and fiscal instruments may further support these outcomes by mobilising investment and modifying economic incentives, but their effectiveness depends on regulatory credibility, financial-market development, and institutional coordination (Rasoulinezhad & Taghizadeh-Hesary, 2022; Wang et al., 2022).

These findings support the governance-centred framework proposed in Section 2. Policy instruments influence development outcomes through energy substitution, technological diffusion, investment mobilisation, and behavioural incentives. However, these mechanisms operate within institutional environments that may facilitate or constrain implementation. For example, limited grid capacity can restrict renewable-energy integration, while regulatory uncertainty and insufficient financial oversight may undermine green investment. Such conditions offer plausible explanations for variations in policy performance across development contexts (Ali et al., 2021; Ferreira et al., 2023; Raman et al., 2025).

Importantly, the evidence does not establish an automatic relationship between green-economy expansion and inclusive development. Houssam et al. (2023) reported a positive association between green-economy indicators and unemployment, alongside favourable associations with income and poverty outcomes. The unemployment finding contradicts a straightforward job-creation interpretation and illustrates the limitations of treating aggregate economic improvements as evidence of employment benefits.

Similarly, Neumann (2022) reported economic and social contributions from green entrepreneurship without consistently significant environmental effects.

Taken together, these findings support three conditional interpretations: policy complementarities matter for implementation; institutional conditions may influence policy effectiveness; and aggregate green-economy performance does not necessarily reflect equitable development. Nevertheless, these relationships should be interpreted cautiously because much of the available evidence remains observational and geographically heterogeneous.

5.2 Theoretical Contribution: Governance and Transition Quality

This review contributes to the literature by integrating instrument-based explanations with institutional and distributional perspectives. Previous studies have examined renewable energy, green innovation, green finance, and fiscal instruments as important components of sustainable development (Fernandes et al., 2021; Rasoulinezhad & Taghizadeh-Hesary, 2022; Tawiah et al., 2021; Wang et al., 2022). Building on these findings, the proposed framework explains green-economy outcomes through four connected elements: policy instruments, transmission mechanisms, development outcomes, and institutional moderators.

The framework identifies governance quality, administrative capacity, financial-market depth, and regulatory coordination as conditions that may influence the effectiveness of policy instruments. This interpretation is consistent with evidence that green-growth outcomes vary across development levels and institutional settings (Ferreira et al., 2023; Kumar et al., 2023). Rather than assuming that similar policies produce comparable results, the framework emphasises differences in implementation capacity and institutional compatibility.

A second contribution is the distinction between transition scale and transition quality. Transition scale refers to the expansion of renewable-energy capacity, green investment, and environmentally oriented innovation. Transition quality concerns whether this expansion produces measurable environmental improvements, stable employment, equitable opportunities, and manageable adjustment costs. The distinction is important because green innovation may generate new economic activities while simultaneously creating labour displacement and uneven adjustment pressures (Aldieri & Vinci, 2018; Anwar et al., 2023).

These findings reinforce the three propositions introduced in Section 2.3: complementary capabilities shape instrument effectiveness; institutional conditions moderate policy outcomes; and distributional protection is essential to inclusive transitions. The contribution of the framework is therefore to explain why the expansion of green-economy activities may differ from the achievement of sustainable and equitable development. These propositions remain theoretically informed interpretations requiring further empirical testing.

5.3 Implications for Indonesia and Comparable Emerging Economies

Indonesia provides a relevant setting for examining the interaction between green-economy instruments, institutional capacity, and distributional outcomes. The country's energy transition involves not only renewable-energy investment but also the economic and social implications of dependence on coal and other carbon-intensive activities. Indonesia's Just Energy Transition Partnership Comprehensive Investment and Policy Plan identifies electricity-sector transition pathways, financing requirements, policy reforms, and a just-transition framework. This policy architecture illustrates the importance of coordinating energy planning, investment mobilisation, and social considerations.

The distributional challenge is particularly significant in coal-dependent regions. The World Bank's assessment of the social dimensions of Indonesia's coal transition identifies potential employment and livelihood disruptions in areas such as East Kalimantan and South Sumatra, where local economic activities are linked to coal mining and associated services. Consequently, national decarbonisation objectives should be complemented by regional economic diversification, workforce retraining, social protection, and employment-transition strategies. These measures are consistent with broader evidence that technological change may create new employment opportunities while displacing workers in established industries (Aldieri & Vinci, 2018; Anwar et al., 2023).

Sustainable finance represents another important implementation mechanism. Indonesia's Taxonomy for Sustainable Finance (TKBI), including Version 3 issued by the Financial Services Authority, provides a national classification framework for environmentally sustainable economic activities. However, the existence of a taxonomy does not itself establish financing additionality or environmental effectiveness. Evaluation should distinguish classified financing, actual disbursement, additional investment, and verified environmental outcomes. Particular attention should also be given to smaller enterprises, which may face greater constraints in accessing finance, technology, and regulatory information (Ali et al., 2021; Raman et al., 2025).

Subnational implementation capacity further conditions policy effectiveness. Differences in infrastructure, administrative resources, local industrial structures, and financing access may affect how national policies translate into regional outcomes. Indonesia's green-economy evaluation should therefore incorporate provincial and sectoral indicators rather than relying exclusively on national investment, GDP, or renewable-energy statistics.

For Indonesia and comparable emerging economies, the policy priority is not simply to expand green investment but to strengthen the institutional mechanisms connecting investment with environmental additionality and equitable development. Relevant indicators include verified emissions reductions, household energy affordability, employment displacement and re-employment, job quality, SME participation, and regional distribution of transition benefits. These recommendations

should be evaluated through direct empirical studies rather than assumed to produce uniform outcomes across regions.

5.4 Research Agenda

The synthesis identifies persistent gaps in causal identification, distributional measurement, green-finance additionality, and institutional heterogeneity. Although existing studies document associations between green-economy interventions and development outcomes, evidence concerning their causal mechanisms and distributional consequences remains less developed (Ferreira et al., 2023; Houssam et al., 2023; Neumann, 2022).

Table 3. Research agenda for Indonesia and comparable emerging economies. Source: developed from the supplied evidence synthesis.

Research gap	Why it matters	Recommended design
Distribution and job quality	Aggregate employment masks displacement, informality, wages, and regional effects	Worker and household panels; regional difference-in-differences
Additionality of green finance	Commitment volumes may not equal new low-carbon investment	Firm-level loan and investment data; matched comparisons
Institutional heterogeneity	Similar policies perform differently across governance and market conditions	Cross-country interaction models; comparative case studies
Measurement consistency	Composite indices mix policy inputs with outcomes	Transparent indicator construction and sensitivity analysis
Indonesia and subnational variation	National aggregates obscure provincial capacity and sectoral exposure	Province- and sector-level policy evaluation

Source: Authors' synthesis of the cited literature (2026)

Future research should prioritise causal and distribution-sensitive evaluations of specific green-economy policies. Longitudinal and quasi-experimental studies could examine how renewable-energy programmes, green financing, and fiscal incentives affect firm behaviour, emissions, employment, and household welfare. Such approaches would help distinguish policy effects from broader macroeconomic and institutional influences.

Research on just transitions should move beyond aggregate job creation to examine worker displacement, re-employment, wages, informality, occupational mobility, and the duration of adjustment. For Indonesia, comparative studies of coal-dependent and less coal-dependent regions would be particularly relevant to understanding how industrial structure and local institutional capacity shape transition outcomes.

Green-finance studies should distinguish policy commitments, financing disbursement, investment additionality, and verified environmental impacts. Comparative institutional research should also examine whether stronger governance improves implementation under different levels of financial and technological development.

Finally, green-economy measurement should distinguish policy inputs, transmission mechanisms, and final economic, environmental, and social outcomes. This approach would allow future research to test the governance-centred framework more rigorously and clarify whether greater transition scale produces better transition quality across emerging economies.

6. CONCLUSION

This review examined how green-economy policy instruments contribute to sustainable development and how institutional conditions shape their effectiveness across emerging economies. The synthesis indicates that renewable energy and green innovation exhibit relatively consistent associations with economic and environmental improvements, while the contributions of green finance and fiscal instruments depend more strongly on regulatory credibility, financial-market development, and policy coordination. However, evidence concerning employment, poverty reduction, and distributional outcomes remains less conclusive. These findings suggest that green-economy implementation does not automatically produce simultaneous economic, environmental, and social benefits.

The study contributes to the literature by developing a governance-centred and distribution-sensitive framework linking policy instruments, implementation mechanisms, institutional conditions, and development outcomes. Its central contribution is the distinction between transition scale and transition quality. Expanding renewable-energy capacity, green investment, or technological innovation does not necessarily ensure measurable environmental improvements or equitable socioeconomic benefits. Institutional capacity, policy complementarities, and distributional safeguards are therefore essential considerations in evaluating green-economy performance.

For Indonesia and comparable emerging economies, the findings highlight the importance of integrating energy-transition policies with credible sustainable-finance standards, infrastructure investment, technological support for smaller enterprises, and just-transition measures. Particular attention should be given to coal-dependent regions, workforce adjustment, household affordability, and differences in subnational implementation capacity.

These conclusions must be interpreted in light of the heterogeneous research designs, geographical coverage, and outcome indicators represented in the literature. Much of the available evidence is observational, limiting causal interpretation and generalisability. Future research should employ longitudinal and quasi-experimental approaches to evaluate policy additionality, institutional moderation, labour-market adjustment, and regional distributional impacts. Such evidence would help determine not only whether green economies expand, but whether their development outcomes are environmentally effective, economically resilient, and socially inclusive

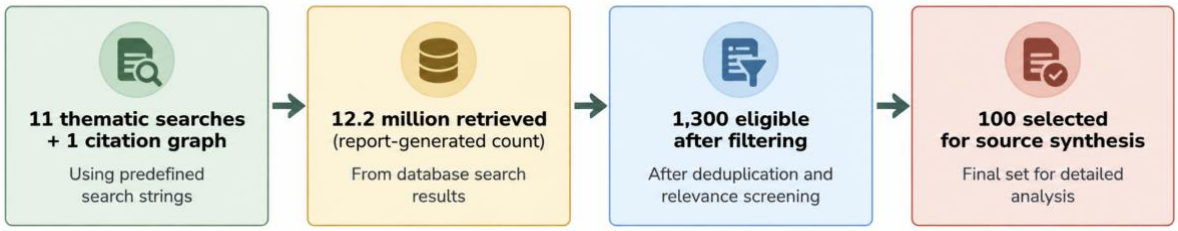


Figure 2. Reported evidence-selection flow. Source: supplied Consensus export; author verification required before submission.

Author Contributions

H.A.M: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Supervision, Validation, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing.

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