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Inclusive Policies and Distribution of Green Economic Transformation of Mining Areas: A Regional Development Perspective

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Abstract

Purpose: This study examines the impact of inclusive policies and green transformation on regional development of mining areas. **Research design, data and methodology:** We designed and utilized a structured questionnaire to collect data from a population of 300 individuals. The questionnaire was disseminated through Google Forms and consisted of five questions for each research variable. A total of 210 respondents completed the questionnaire, yielding a response rate of 70%. The sample was diverse in terms of gender and educational level Of the 210 respondents, 113 were female (53.8%) and 97 were male (46.2%). In terms of educational background, the sample was composed as follows: 13 individuals with a Doctorate degree (6.2%), 56 with a Master's degree (26.7%), 97 with a Bachelor's degree (46.2%), 22 with a Diploma (10.5%), and 22 with a High School education (10.5%). **Results:** The research outcomes highlight the significant influence of inclusive policies on driving the Distribution of green economic transformation. Emphasizing the pivotal role of inclusive distribution strategies, especially within the context of mining areas, the study sheds light on their crucial contribution to fostering regional development. **Conclusion:** These findings hold valuable implications for policymakers, industry stakeholders, and academics promoting environmentally conscious economic transformations.

Keywords: Regional Development#1; Inclusive policies #2; Green Economy Transformation #3; Mining Areas #4; Exploration #5; Green Accounting# 6

JEL Classification Code: D3, D78, L91, O4,Q32

1. Introduction

In recent years, the global discourse on sustainable development has intensified, with a particular emphasis on the transformation of economic activities towards green practices. In this context, mining areas stand out as focal points for examination due to their substantial environmental impact and economic significance. This study delves into the pivotal intersection of inclusive policies and the Distribution of green economic transformation of mining areas, offering a nuanced perspective from the realm of regional development.

The extractive nature of mining activities often poses challenges to both the environment and local communities. Recognizing this, inclusive policies have emerged as potential instruments for steering the trajectory of Distribution of green economic transformation within these areas. The delicate balance between economic growth, environmental stewardship, and social equity necessitates a comprehensive regional development perspective.

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The rationale behind this research lies in the need to comprehensively understand how inclusive policies contribute to the broader objective of fostering Distribution of green economic transformation in mining regions. By adopting a regional development lens, this study aims to untangle the intricate dynamics involved, shedding light on the interconnectedness of economic, environmental, and social facets.

The primary objective of this research is to empirically investigate the impact of inclusive policies on the Distribution of green economic transformation of mining areas, considering their implications for regional development. Through a meticulous examination of these dynamics, the study seeks to contribute valuable insights to the evolving field of distribution science.

As the global community grapples with the imperative to reconcile economic development with environmental and social responsibility, this study's findings are poised to provide actionable insights for policymakers, industry stakeholders, and academics. By bridging the gaps in our understanding of inclusive policies within the context of mining areas, this research contributes to the ongoing dialogue on sustainable regional development.

2. Literature review

2.1. Green Economy

The transition towards a green economy has been a focal point in recent research (Feng et al.,2018; Paunović, et al., 2022; Shang et al., 2022). Green economy principles stress the alignment of economic growth (Su & Zhang, 2020b; Shen et al., 2022; X. Xu et al., 2022b; Mehmood et al., 2023). The adoption of green economic policies within mining concessions aligns with the broader shift towards sustainable development, as detailed in studies by Gouvea et al. (2013b); Pratama, et al. (2022) and Xu et al. (2023).

In a domestic context, the green economy has been receiving growing attention and commitment from various sectors in Indonesia. According to a study by Prasetyo et al. (2019) in the Indonesian Journal of Economics and Policy, the integration of environmentally friendly practices within the economic structure has been shown to create new job opportunities and drive innovation. This national perspective emphasizes the relevance of green economy strategies not only for environmental conservation but also for social and economic development (Gouvea et al., 2013b; Chen et al., 2020b).

Internationally, the green economy has been increasingly recognized as a pathway towards sustainable development. A comprehensive analysis by Han and Liu (2022b) and Yang (2022) highlights the success of China in implementing green economic policies to reduce carbon emissions and energy consumption. These initiatives have contributed to more efficient use of resources and the development of a circular economy, where waste materials are reused or recycled.

Building upon this international discourse, a recent study by Chen et al. (2021), Xu et al. (2022b) and, Brown and Olsson (2021) in the journal emphasizes the crucial role of government policies in guiding the transition to a green economy. Their research across multiple European countries illustrates the effectiveness of regulatory measures and financial incentives in stimulating investment in renewable energy, improving energy efficiency, and fostering a culture of environmental responsibility.

2.2. Mining Concessions

Mining activities contribute significantly to economic growth but pose challenges to environmental preservation (Tang & Xu, 2023). Research within the context of mining concessions and their regulation has expanded, focusing on sustainable practices and community engagement (Schütz et al., 2019; Sulaiman et al., 2022) .

Mining activities indeed contribute significantly to economic growth but often pose serious challenges to environmental preservation, as highlighted by Wang et al. (2021). The complex relationship between mining and the environment necessitates a balanced approach that considers both economic benefits and ecological responsibility. Recent research within the context of mining concessions and their regulation has expanded, focusing on sustainable practices and community engagement (Feng et al., 2018; Xu et al., 2022b; Luo et al., 2023).

In a study conducted by Global Green Growth Institute (2015) in the Indonesian context, the authors emphasized the need for strict regulations and proper implementation to minimize the negative environmental effects of mining. They argue for a comprehensive framework that not only sets guidelines for sustainable mining practices but also actively involves the local community in decision-making processes (Su & Zhang, 2020b).

Further, collaborative research by Yongabo and Göktepe-Hultén (2021b) in the South African context, published in the Journal of Sustainable Mining, explores innovative methods to transform mining practices. Their findings suggest that the adoption of environmentally friendly technologies and increased transparency between mining companies, governments, and communities leads to a more sustainable mining sector.

These perspectives, both from national and international sources, present a more nuanced view of mining activities. They emphasize the importance of responsible mining that aligns with broader sustainability goals, the essential role of government regulations, and the significant value of

community engagement in shaping a green economy within the mining industry.

2.3. Government Policy

Local government's role in regulating and monitoring mining activities has been emphasized in recent studies (Xu et al., 2022b; Feng et al., 2023; Lu et al., 2023a; Zhang et al., 2023). Effective policies and stringent regulations have been identified as critical to achieving sustainable mining practices (Lu et al., 2023b). In a comprehensive study by Purnamasari et al. (2022) in Indonesia, the researchers examined the local government's role in environmental protection within mining areas. They concluded that proper guidelines and their effective implementation at the local level can significantly reduce environmental damage while maintaining economic gains. The study also stressed the importance of collaboration between local governments, mining companies, and communities, and recommended stronger legal frameworks for increased accountability.

The international perspective on local government's role in green economy and sustainable mining was articulated by Lavrinenko et al. (2019). The study, focusing on several European countries, highlighted that the effectiveness of local policies and regulations is greatly influenced by national directives and international agreements. They found that standardized regulations, combined with flexibility to adapt to local needs, led to better environmental outcomes and were instrumental in achieving green transformation in mining sectors.

In a collaborative effort, Dmuchowski et al. (2021b) explored the relationship between local government regulation and green economic growth in the context of Latin American mining practices. Their research, published in the Journal of Cleaner Production, provides evidence that well-designed policies, robust monitoring systems, and active local community engagement play an essential role in enhancing sustainable mining. The study further emphasizes that local governments are uniquely positioned to bridge global sustainability goals with practical on-the-ground applications.

These national and international studies underscore the pivotal role of local governments in transitioning towards a green economy. They emphasize the need for clear policies, stringent regulations, and active community engagement, all balanced with the flexibility to address the unique local contexts. This combined effort can lead to a more sustainable approach to mining, fostering a green economy that aligns with global sustainable development goals.

2.4. Regional Development

The integration of sustainability principles within regional development has been extensively examined (Paunović et al., 2022b; Wikarta, 2022; Mondal et al., 2023b). Research focusing on mining regions underscores the importance of coordinated strategies that ensure long-term environmental, social, and economic sustainability (Wikarta, 2022; An-Bao & Xu, 2023b; Zhan et al., 2023).

In the context of national research, a notable study by Prasetyo et al. (2021) in Indonesia examined the alignment of mining activities with sustainable regional development. They emphasized that a well-coordinated strategy involving government, industry, and community is key to achieving a balance between economic growth and environmental preservation. The study concluded that consistent policy enforcement and local community involvement could lead to responsible mining practices, fostering a green economy and contributing positively to regional development (Wikarta, 2022).

On the international front, a comprehensive analysis by Zhang et al. (2019) and Frantál et al. (2022b), explored the transformation of mining regions in several developed countries towards sustainable development (Zhu et al., 2022b). They found that the integration of green economic principles was crucial in ensuring long-term environmental, social, and economic sustainability (Zhao et al., 2018c). Their findings highlight the importance of a shared vision among stakeholders, coupled with investment in technology and innovation, to advance responsible mining practices and create a sustainable future.

2.5. Community Engagement

Inclusive policies that engage communities within mining areas are vital for sustainable development. Community engagement fosters transparency, collaboration, and social acceptance (D'Amato & Korhonen, 2021b; Witt, 2021).

The literature indicates an ongoing dialogue about the multifaceted interactions between government policies, mining concessions, and sustainable regional development. However, a detailed examination of these components within the specific context of the Luwu Raya region remains an unexplored area, thus forming the basis for the current study.

Inclusive distribution policy, as elucidated by previous researchers, embodies a strategic approach to resource allocation and economic development that aims to benefit a broad spectrum of stakeholders, ensuring equitable access and participation. Scholars such as Li and Pang (2023b), Johansson (2023b), Yin and Yang (2023b) have emphasized the multifaceted nature of inclusive distribution policies, which extends beyond mere economic considerations to encompass social and environmental dimensions. Mura et al. (2023b), in their seminal work, defines inclusive policies as mechanisms designed to mitigate disparities in resource

allocation, ensuring that the benefits of economic activities are shared inclusively among various segments of society. This perspective aligns with the broader concept of sustainable development, emphasizing not only economic growth but also social equity and environmental stewardship.

Building upon this foundation, Chang et al. (2023b) delves into the intricacies of inclusive distribution by highlighting the role of policies that actively promote fair and accessible economic opportunities. According to Johansson (2023b), such policies go beyond conventional wealth distribution models, addressing systemic barriers and fostering an environment where diverse communities can actively participate in and benefit from economic activities.

The concept of inclusive distribution policy, as elucidated by these previous researchers, encapsulates a comprehensive strategy aimed at fostering not only economic growth but also social inclusivity and environmental sustainability. The nuances of these policies underscore the importance of considering a holistic approach to resource allocation within the framework of regional development.

2.6. Framework

This study aims to investigate how a green economy can be implemented in mining concession areas in Luwu Raya. The research framework consists of several main components:

Independent Variables:

1. Government Policy (Regulation, Incentives)
2. Community Participation (Involvement, Education)
3. Industy in Mining Practices (Green Technology, Resource Management)
4. Academy (Green Economy Concept)

Mediating Variable:

Distribution of green economic transformation (Application of Green Economic Principles)

Dependent Variable:

Sustainable Regional Development (Economic Growth, Environmental Sustainability, Social Welfare)

2.7. Hypotheses

H1: Effective government policy positively impacts Distribution of green economic transformation.

H2: Active community participation positively impacts Distribution of green economic transformation.

H3: Sustainable mining practices positively impact Distribution of green economic transformation.

H4: Distribution of green economic transformation positively impacts sustainable regional development.

3. Methods

3.1. Data Collection

The study employed a cross-sectional design and utilized a structured questionnaire to collect data from a population of 300 individuals. The questionnaire was disseminated through Google Forms and consisted of five questions for each research variable. A total of 210 respondents successfully completed the questionnaire, yielding a response rate of 70%.

3.2. Sample Demographics

The sample was diverse in terms of gender and educational level. Of the 210 respondents, 113 were female (53.8%) and 97 were male (46.2%). In terms of educational background, the sample was composed as follows: 13 individuals with a Doctorate degree (6.2%), 56 with a Master's degree (26.7%), 97 with a Bachelor's degree (46.2%), 22 with a Diploma (10.5%), and 22 with a High School education (10.5%).

3.3. Analytical Technique

Structural Equation Modeling (SEM) was used to analyze the data, as it allows for the examination of complex relationships between multiple variables simultaneously.

This study adopts a mixed-methods approach to explore the transformative process of green economics in mining concession areas within the Luwu Raya region. A sequential exploratory strategy is implemented, integrating both qualitative and quantitative data to gain a comprehensive understanding of the subject. The qualitative phase includes Focus Group Discussions (FGDs) and in-depth interviews, allowing for a deeper exploration of the themes and insights generated. The quantitative phase employs an online questionnaire to quantify patterns and relationships between variables (Dawadi et al., 2021b; Stern *et al.*, 2021).

4. Results

4.1. Implementation of Green Economy Concept in the Luwu Raya Mining Concession Area by PT Vale Indonesia, Sorowako: A Case Study

PT Vale Indonesia in Sorowako has actively undertaken the implementation of the green economy concept within the Luwu Raya mining concession area. This case study highlights the concrete initiatives, policies, and practices employed by the company to foster economic growth while

minimizing environmental impact and enhancing the well-being of the local community.

1. Sustainable Economic Growth: PT Vale Indonesia has adopted a sustainable business model prioritizing economic growth. This includes diversifying the local economy, developing non-mining sectors, and empowering small and medium-sized enterprises in the vicinity of the concession area.
2. Environmental Conservation: The company emphasizes responsible and sustainable mining practices. This encompasses post-mining land restoration, nature conservation, and prudent water management to minimize adverse environmental impacts.
3. Community Engagement: Active involvement with the local community is a cornerstone of PT Vale Indonesia's approach. They engage local residents in decision-making processes, provide training and education, and create sustainable employment opportunities, aiming to build the capacity of the local community and improve their well-being.
4. Innovation and Green Technology: The company embraces state-of-the-art, environmentally friendly technologies to optimize their operations. This includes the use of renewable energy, increased energy efficiency, and the application of eco-friendly technologies in the mining process.
5. Partnerships with Government and NGOs: PT Vale Indonesia collaborates with local governments and non-governmental organizations (NGOs) to formulate policies and programs supporting the green economy concept. This collaboration ensures that the company's actions align with sustainable development goals.

The implementation of the green economy concept in the Luwu Raya mining concession area by PT Vale Indonesia serves as a sample of tangible steps taken to not only optimize economic outcomes but also positively impact the environment and the local community. These strategies reflect the company's commitment to achieving a balance between economic growth, environmental sustainability, and community well-being (Johansson, 2023b).

4.2. Measurement Model Validation Measurement Model (Outer Model)

The criteria for assessing the structural model (outer model) using SEM-PLS are (i) convergent validity which can be seen from the value of loading factor and AVE, (ii) discriminant validity can be seen from the value of the square root of AVE and the correlation between latent constructs, (iii) for reliability tests can be seen from the value of composite reliability and Cronbach's alpha.

Assessing the Outer Model with Convergent Validity and Discriminant Validity

Convergent validity relates to the principle that the manifest variables of a construct should be highly correlated. The convergent validity test is carried out by looking at the loading factor value and compared with the rule of thumb (> 0.60), then looking at the value of average variance extracted (AVE) and compared with the rule of thumb (> 0.50). The discriminant validity test is carried out by looking at the value of the square root of AVE and the correlation between latent constructs with the rule of thumb of the square root of AVE > the correlation between latent constructs (Hair et al., 2011; Ghozali et al., 2015).

Based on the results of the convergent validity test (Table 4) for the loading factor value in each construct, namely Government which consists of three measurement indicators, each of which has a value of (G1 = 0.799; G2=0.805; and G3=0.778); Industry Awerness (IA1=0.825; IA2=0.863; IA3=0.731; and IA4=0.761); for the Community construct (C1=0.784; C2=0.869 and C3=0.869); for the Academy construct (A1=0.747; A2=0.868; A3=0.844; and A4=0.721); for the construct of the Central Government Regulation (CGR1=0.800; CGR2=0.869; CGR3=0.800); and for the Sustainability Green Economy construct (SGE1=0.796; SGE2=0.808; SGE3=0.779; dan SGE4=0.798) has a value greater than the rule of thumb value (> 0.60). For the average variance extracted (AVE) value for each construct, Government = 0.631; Industry Awerness=0.634; Community=0.709; Academy=0.636; Central Government Regulation=0.678; and Sustainability Green Economy = 0.663 has a greater value than the rule of thumb (> 0.50).

We perform two criteria to evaluate the validity of discriminants. First, we apply the Fornell and Larcker (1981) criterion, in which the square root of the variable AVE must be higher than its correlation with other variables. Second, we assessed the heterotraite-monotraite ratio (HTMT) of correlation. According to Henseler, Ringle & Sarstedt (2015), HTMT is more sensitive to the lack of discriminant validity compared to other criteria. To demonstrate discriminant validity, the HTMT between two constructs must be less than 0.90. Both criteria support discriminant validity on all our variables (Table. 3).

Table 1: Measurement Model

	1	2	3	4	5	6
Academy (1)	0,797	0.366	0.457	0.284	0.448	0.456
Central Government Regulation (2)	0,293	0,824	0.340	0.322	0.511	0.739
Community (3)	0,387	0,269	0,842	0.881	0.301	0.257
Government (4)	0,197	0,247	0,662	0,794	0.508	0.506
Industry Awerness (5)	0,377	0,410	0,250	0,213	0,796	0.636
Sustainability Green Economy (6)	0,372	0,584	0,409	0,423	0,523	0,795

Note: Values on the diagonal in bold are the square root of the Average Variance Extracted (AVE) of each factor. Values below the diagonal are correlations between factors and values above the diagonal are the HTMT ratios. Source: SmartPLS 3, 2023 (processed by author)
1 Heterotrait-monitrait; the criteria confidence interval does not include 1; $HTMT_{90}$ – (Henseler et al., 2014b).

Table 2: Research Variables, Indicators, Loading Factor Value, Average Variance Extracted (AVE), and Composite Reliability

Constructs	Items	Indicator	Factor Loading's	CR		AVE
Government	Policy	G1	0.799	0.837		0.631
	Regulation	G2	0.805			
	Law	G3	0.778			
Industry Awerness	Training	IA1	0.825	0.874		0.634
	Collaborate	IA2	0.863			
	Protection	IA3	0.731			
	Business Climate	IA4	0.761			
Community	Potential Users	C1	0.784	0.879		0.709
	Culture	C2	0.869			
	Communication Media	C3	0.869			
Academy	Innovative R&D	A1	0.747	0.874		0.636
	Management Concept	A2	0.868			
	Mentoring	A3	0.844			
	Networking	A4	0.721			
Central Government Regulation	Responses	CGR1	0.800	0.863		0.678
	Backing	CGR2	0.869			
	Impact	CGR3	0.800			
Sustainability Green Economy	Natural Assets	SGE1	0.796	0.873		0.633
	Efficiency and Decoupling Resources	SGE2	0.808			
	Opportunities and Efforts Economics	SGE3	0.779			
	Risk and Resilience	SGE4	0.798			
Assessing the Outer Model with Reliability	Opportunities and Efforts Economy			SGE3	0.779	
	Risk and Resilience			SGE4	0.798	

Source: SmartPLS 3, 2023 (processed by author)

4.2. Assessing the Outer Model with Reliability

Furthermore, assessing the outer model through reliability tests with the aim of proving the accuracy, consistency, and accuracy of the instrument in measuring constructs. The reliability test is carried out by looking at the value of composite reliability (Table 2) then compared with the rule of thumb (> 0.70) (Hair et al., 2011b; Gozali et al., 2015; Henseler et al., 2014b; Leguina, 2015b). From the reliability test results for the composite reliability value of each construct, namely Government = 0.837; Industry Awareness = 0.874; Community = 0.879; Academy = 0.874; Central Government Regulation = 0.863; and Sustainability Green Economy = 0.873 was able to produce a > value from the rule of thumb value (> 0.70).

structural Model (*Inner Model*)

The criteria for assessing the structural model (inner model) using SEM-PLS are (i) R-square for dependent constructs; (ii) looking at the significance value through a bootstrapping procedure (t-value 1.96 (significant level = 5%). The following results of structural model evaluation (inner model) through bootstrapping procedures for hypothesis testing proposed in this study are presented in (Figure 2) and (Table 2).

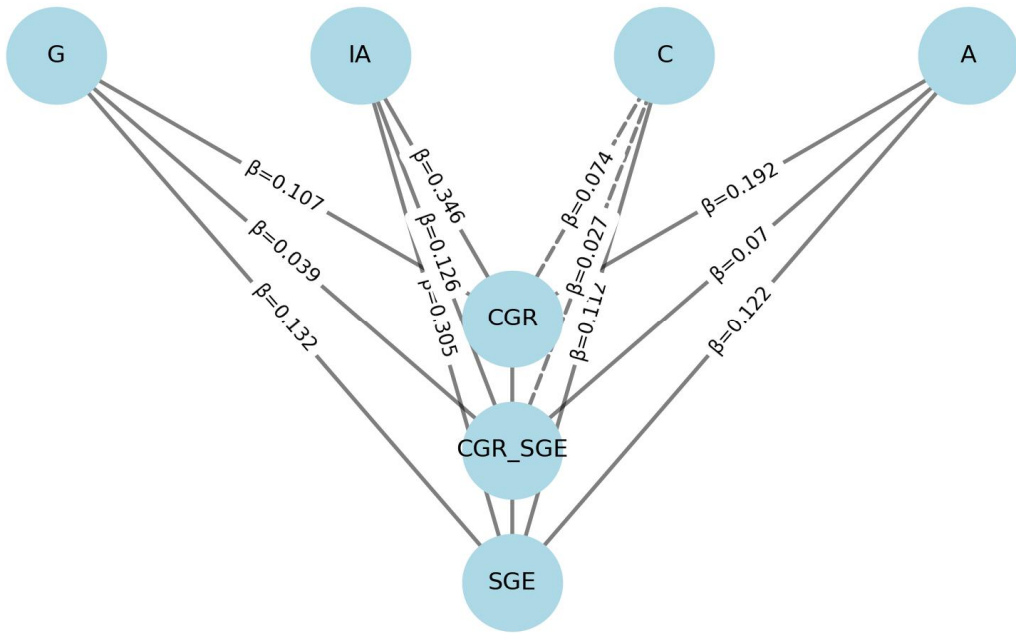

Figure 1: Framework for Quadrant Helix Models

4.3. Evaluation of R Square and Q2 Values

The structural or inner model is evaluated by looking at the percentage of variance described by looking at the value of R Square and the value of Q2 for the dependent latent construct. According to Hair et al. (2011b) Gozali et al. (2015), Henseler et al. (2014b), Leguina (2015b), The rule of thumb value for R Square is 0.75 which is categorized as strong; 0.50 is moderate, and 0.25 is weak. For the rule of thumb values for Q2 > 0 indicates the model has predictive relevance, and for the rule of thumb values for Q2 < 0 indicates the model lacks predictive relevance. From the results of the analysis (Table 4) obtained the R Square value for the satisfaction construct of 0.512, which means that the variability of Green Economy Sustainability which can be explained by the variables Government, Industry Awerness, Community and Academy in the model is 51.2% and is included in the moderate model category. For Q2 value the Sustainability Green Economy construct is 0.313 > 0, which means that the model has predictive relevance.

Table 3: R Square and Q2

	Original Sample (O)	***Q2***
Sustainability Green Economy	0.512	0.313

Evaluation of Significance Value (t-value 1.96 and significan level = 5%).

Evaluation of significance value is by observing the value of the path coefficient from the test results *with Partial Least Square* (PLS) with *bootstrapping calculations* (Table 3). From the results of *the path coefficient*, it can be seen that for (H1a) *Government* has a significant positive effect on the *Sustainability Green Economy* with a significance value of 0.006 < from an *alpha* level of 5% and also indicated by a statistical T value of 2,773 > of 1.96. For (H2a) *Industry Awareness* has a positive and significant effect on *Sustainability Green Economy* with a significance value of 0.001 < from an *alpha* level of 5% and also indicated by a statistical T value of 4.417 > from 1.96. For (H3) *Community* has an insignificant effect on *the Sustainability Green Economy* with a significance value of 0.766 > from an *alpha* level of 5% and also indicated by a statistical T value of 0.443 < of 1.96. For (H4a) *Academy* has an insignificant effect on the *Sustainability Green Economy with a significance value of 0.254 > from an* alpha level of *5% and also indicated by a statistical T value of 0.254 < of 1.96.*

Furthermore, for (H1b) the effect of the moderation variable of the relationship between *Government and* Sustainability Green Economy *is not significant* with a significance value of 0.749 > from an alpha level *of 5% and also indicated by a statistical T value of 0.321 < of 1.96.* For (H2b) the effect of the moderation variable of the relationship between *Industry Awareness* and Sustainability Green Economy *is not significant* with a significance value of 0.715 > from an alpha level of 5% and also indicated by a statistical T value of 0.474 < of 1.96. Furthermore, for (H4b) the effect of the moderation variable of the relationship between the *Academy and* Sustainability Green Economy *was not significant* with a significance value of 0.222 > from an alpha level of 5% and also indicated by a statistical T value of 0.824 < of 1.96.

Table 4: Hipotesis, Path Coefficients (Direct, Indirect, and Total effect), T Statistik, dan P Values

Hypotheses	Relationships	Path Coefficients	T statistics	P values	Decision
Main model					
H1a	G -> SGE	0.210	2.773**	0.006	Supported
H2a	IA -> SGE	0.256	4.417**	0.001	Supported
H3	C -> SGE	0.065	0.766*	0.443	Not Supported
H4b	A -> SGE	0.093	1.140*	0.254	Not Supported
Moderating effect of central government regulation					
H1b	G *CGR -> SGE	0.051	0.321*	0.749	Not Supported
H2b	IA*CGR -> SGE	(-0.077)	0.715*	0.474	Not Supported
H4b	A *CGR -> SGE	(-0.029)	0.222*	0.824	Not Supported

Note: ** statistically significant at the 5 percent and * not significant

5. Discussion

5.1. Hypotheses Testing Results

Our analysis revealed varying degrees of support for the hypotheses proposed at the beginning of this study. Specifically:

H1a: Government to Sustainable Green Economy (SGE)
The results indicate that government policy has a significant positive impact on sustainable green economy ($\beta = 0.210$, $p < 0.01$). This supports Hypothesis H1a and aligns with the literature emphasizing the pivotal role of government initiatives in fostering Distribution of green economic transformation.

H2a: Industry Awareness to SGE
Industry awareness was also found to be a significant predictor of sustainable green economy ($\beta = 0.256$, $p < 0.01$), confirming Hypothesis H2a. This suggests that as industries become more aware of their environmental footprint, they are more likely to adopt sustainable practices that contribute to a green economy.

H3: Community to SGE
Contrary to our expectations, community participation did not significantly impact sustainable green economy ($\beta = 0.065$, $p > 0.05$), leading to the rejection of Hypothesis H3. This may point to the limitations of grassroots movements in the face of larger systemic challenges.

H4b: Academy to SGE
The role of academic support was not found to be statistically significant in influencing sustainable green economy ($\beta = 0.093$, $p > 0.05$), leading to the rejection of Hypothesis H4b. This could suggest that academic endeavors alone may not be sufficient to drive real-world changes in green economic practices.

5.2. Moderating Effects of Central Government Regulation

Central government regulation did not significantly moderate the relationships between local government policy, industry awareness, community participation, and academic support toward a sustainable green economy. These findings could imply that central government policies may not necessarily align with or enhance regional or industry-specific efforts towards sustainability.

5.2.1. Limitations

One limitation of this study is the cross-sectional design, which prevents the establishment of causal relationships. Additionally, the study relied on self-reported data, potentially introducing bias. The study's generalizability may also be limited due to the specific context of mining areas.

This study offers nuanced insights into the role of various stakeholders in influencing the transition towards a sustainable green economy, particularly in mining areas.

H1a: Government's Role in SGE
The empirical evidence shows a significant positive association between government policies and the green economy, reinforcing the notion that targeted government interventions can spur sustainable practices. This aligns with the global movement toward integrating sustainability into public policy.
Implications: Government agencies should prioritize creating frameworks that encourage green initiatives.
Limitations: It may be challenging to isolate the specific types of government policies that are most effective.

H2a: Industry Awareness and SGE
The data confirm that as industry players become more ecologically aware, there is a corresponding positive effect on the green economy. This establishes the urgency for awareness campaigns aimed at the corporate sector.

Implications: This calls for strategic collaborations between businesses and sustainability advocates.
Limitations: Further research is needed to identify which sectors within the industry are more responsive to green awareness.

H3: Community Involvement in SGE
Interestingly, community engagement did not show a statistically significant impact on the green economy. This suggests that while grassroots initiatives are important, they may not be sufficient to cause large-scale transformation.
Implications: A multi-layered approach involving various stakeholders may be more effective.
Limitations: The research may not capture the full range of community initiatives that impact the green economy.

H4b: Academy and SGE
Our study found that academic input is not a significant catalyst for green economic change, posing questions about how academia can better contribute to real-world sustainability issues.
Implications: Academic institutions may need to rethink how their research is applied in practice.
Limitations: The impact of academic input might manifest over a longer term, which this study may not capture.

5.2.2. Broader Context

The failure of central government regulation to serve as an effective moderator suggests that a top-down approach may not be sufficient. This warrants further investigation into how policies at different levels of governance can harmonize to achieve sustainability goals. The are there limitation:

1. Sample Size and Diversity: The research may lack representatives across various sectors and regions.
2. Methodological Constraints: Potential biases in the collection, interpretation, or presentation of data.
3. Generalizability: The findings may be specifically tailored to the context and not directly applicable to other areas or industries.

6. Conclusion and suggestions

This study has highlighted several critical insights:

1. Government Policy Impact: A positive correlation between government policy effectiveness and Distribution of green economic transformation underscores the necessity for coherent, comprehensive policies that align with sustainable goals (H1).
2. Community Participation Influence: The significant association between active community participation and Distribution of green economic transformation emphasizes the importance of engaging various stakeholders in sustainable practices (H2).
3. Mining Practices' Effect: The findings related to sustainable mining practices reiterate the need for environmentally responsible methods in contributing positively to Distribution of green economic transformation (H3).
4. Distribution of green economic transformation's Role: The study conclusively demonstrates that Distribution of green economic transformation plays a vital role in sustainable regional development (H4).

6.1. Suggestions for Future Research and Practice

This study used a minimum sample size of 210. For further research, it can increase the ideal number of samples for structural models, which is 350 samples. Further research can also add a new construct, namely media. Assuming that more news about *green economy* policies obtained through the media, it will have an impact on policy implementation in mining concession areas.

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References

An-Bao, T., & Xu, N. (2023). The Impact of Environmental Regulation on Urban Green Efficiency—Evidence from Carbon Pilot. *Sustainability*, *15*(2), 1136. https://doi.org/10.3390/su15021136

Chang, K., Liu, L., Luo, D., & Xing, K. (2023). The impact of green technology innovation on carbon dioxide emissions: The role of local environmental regulations. *Journal of Environmental Management*, *340*, 117990. https://doi.org/10.1016/j.jenvman.2023.117990

Chen, X., Cao, J., & Kumar, S. (2020). Government regulation and enterprise decision in China remanufacturing industry: evidence from evolutionary game theory. *Energy, Ecology and Environment*, *6*(2), 148–159. https://doi.org/10.1007/s40974-020-00198-8

D'Amato, D., & Korhonen, J. (2021). Integrating the green economy, circular economy and bioeconomy in a strategic sustainability framework. *Ecological Economics*, *188*, 107143. https://doi.org/10.1016/j.ecolecon.2021.107143

Dawadi, S., Shrestha, S., & Giri, R. A. (2021). Mixed-Methods Research: A Discussion on its Types, Challenges, and Criticisms. *Journal of Practical Studies in Education*, *2*(2), 25-36. https://doi.org/10.46809/jpse.v2i2.20

Dmuchowski, P., Dmuchowski, W., Baczewska-Dąbrowska, A. H., & Gworek, B. (2021). Green economy – growth and maintenance of the conditions of green growth at the level of polish local authorities. *Journal of Cleaner Production*, *301*, 126975. https://doi.org/10.1016/j.jclepro.2021.126975

Frantál, B., Frajer, J., Martinát, S., & Brisudová, L. (2022). The curse of coal or peripherality? Energy transitions and the socioeconomic transformation of Czech coal mining and post-mining regions. *Moravian Geographical Reports*, *30*(4), 237–256. https://doi.org/10.2478/mgr-2022-0016

Global Green Growth Institute (2015) Mewujudkan Pertumbuhan Ekonomi Hijau untuk Indonesia yang Sejahtera, *Global Green Growth Institute*,1–21. Available at: www.ggp.bappenas.go.id.

Gouvea, R., Kassicieh, S. K., & Montoya, M. (2013). Using the quadruple helix to design strategies for the green economy. *Technological Forecasting and Social Change*, *80*(2), 221-230. https://doi.org/10.1016/j.techfore.2012.05.003

Gozali, I. and Lantan, H. (2015) *Konsep, teknik, aplikasi menggunakan Smart PLS 3.0 untuk penelitian empiris*. Semarang: BP Undip. https://onesearch.id/Record/IOS3107.UMS:57482/Preview

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: indeed a silver bullet. *Journal of Marketing Theory and Practice*, *19*(2), 139-152. https://doi.org/10.2753/mtp1069-6679190202

Han, D., & Liu, M. (2022). How does the digital economy empower green development? from the perspective of the division of labor in new classical economics. *Sustainability*, *14*(23), 15740. https://doi.org/10.3390/su142315740

Henseler, J., Ringle, C. M., & Sarstedt, M. (2014). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Johansson, A. (2023). Managing Intractable Natural Resource conflicts: Exploring possibilities and conditions for reframing in a mine establishment conflict in northern Sweden. *Environmental Management*, *72*(4), 818-837. https://doi.org/10.1007/s00267-023-01838-5

Lavrinenko, O. *et al.* (2019) The role of green economy in sustainable development (Case study: The eu states), *Entrepreneurship and Sustainability Issues*, *6*(3), 1113-1126. doi: 10.9770/jesi.2019.6.3(4).

Leguina, A. (2015). A primer on partial least squares structural equation modeling (PLS-SEM). *International Journal of Research & Method in Education*, *38*(2), 220-221. https://doi.org/10.1080/1743727x.2015.1005806

Li, W., & Pang, W. (2023). The impact of digital inclusive finance on corporate ESG performance: based on the perspective of corporate green technology innovation. *Environmental Science and Pollution Research*, *30*(24), 65314-65327. https://doi.org/10.1007/s11356-023-27057-3

Ma, L., Li, D., Ma, R., & Wang, P. (2023). Heterogeneous environmental regulation tools and green economy development: evidence from China. *Environmental Research Communications*, *5*(1), 015007. https://doi.org/10.1088/2515-7620/acb1f9

Ma, L., Li, D., Ma, R., & Wang, P. (2023b). Heterogeneous environmental regulation tools and green economy development: evidence from China. *Environmental Research Communications*, *5*(1), 015007. https://doi.org/10.1088/2515-7620/acb1f9

Luo, Y., Lu, Z., Wu, C., & Mensah, C. N. (2023). Environmental Regulation effect on green total Factor Productivity: Mediating role of foreign direct investment quantity and quality. *International Journal of Environmental Research and Public Health*, *20*(4), 3150. https://doi.org/10.3390/ijerph20043150

Mehmood, S., Zaman, K., Khan, S., Zohaib, A., & Khan, H. U. R. (2024c). The role of green industrial transformation in mitigating carbon emissions: Exploring the channels of technological innovation and environmental regulation. *Energy and Built Environment*, *5*(3), 464-479. https://doi.org/10.1016/j.enbenv.2023.03.001

Mondal, C., Al-Kfairy, M., & Mellor, R. B. (2023). Developing Young Science and Technology Parks: Recent Findings from Industrial Nations Using the Data-Driven Approach. *Sustainability*, *15*(7), 6226. https://doi.org/10.3390/su15076226

Mura, M., Longo, M., Zanni, S., & Toschi, L. (2023). Exploring socio-economic externalities of development scenarios. An analysis of EU regions from 2008 to 2016. *Journal of Environmental Management*, *332*, 117327. https://doi.org/10.1016/j.jenvman.2023.117327

Paunović, I., Müller, C., & Deimel, K. (2022). Building a culture of entrepreneurial initiative in rural regions based on sustainable development goals: a case study of University of Applied Sciences–Municipality Innovation Partnership. *Sustainability*, *14*(19), 12108. https://doi.org/10.3390/su141912108

Prasetyo, B. *et al.* (2019) The Social Security Models for State Civil Apparatus in the Concept of the State of Welfare, *3rd International Conference on Globalization of Law and Local Wisdom (ICGLOW 2019) The*, 145-147.

Prasetyo, B., Utami, S., Abdusshomad, A., Wijaya, M., & Kalbuana, N. (2021). Effect of Company Value, Leverage, and Company Size on Profit Persistence in Jakarta Islamic Index (Jii) Listed Companies. *International Journal of Economics, Business and Accounting Research*, *5*(1). https://doi.org/10.29040/ijebar.v5i1.2164

Pratama, F. C., Purnomo, A. and Maulana, F. I. (2022) Building Two Decade of Green Economy Research Theme Map for Sustainability Using a Bibliometric Approach, *Proceedings of the International Conference on Industrial Engineering and Operations Management*, 4560-4569. Available at: https://ieomsociety.org/proceedings/2022istanbul/881.pdf.

Purnamasari, P., Amran, N. A., Nu'man, A. H., Frendika, R., Nor, M. N. M., & Ismail, M. S. (2022). Penta-Helix model of E-Government in combating corruption in Indonesia and Malaysia: Religiosity as a moderating role. *F1000Research*, *11*, 932. https://doi.org/10.12688/f1000research.121746.1

Schütz, F., Heidingsfelder, M. L., & Schraudner, M. (2019). Co-shaping the Future in Quadruple Helix Innovation Systems: Uncovering Public Preferences toward Participatory Research and Innovation. *She Ji: The Journal of Design, Economics, and Innovation*, *5*(2), 128-146. https://doi.org/10.1016/j.sheji.2019.04.002

Shang, Y., Guoqing, L., & Mi, Z. (2022). Green Technology Transfer, Environmental Regulation, and Regional Green Development Chasm: Based on the Empirical Evidence from Yangtze River Delta. *International Journal of Environmental Research and Public Health*, *19*(21), 13925. https://doi.org/10.3390/ijerph192113925

Shen, Y., & Zhang, X. (2022). Study on the Impact of Environmental Tax on Industrial Green Transformation. *International Journal of Environmental Research and Public Health*, *19*(24), 16749. https://doi.org/10.3390/ijerph192416749

Stern, C., Lizarondo, L., Carrier, J., Godfrey, C., Rieger, K. L., Salmond, S., Apóstolo, J., Kirkpatrick, P., & Loveday, H. (2021). Methodological guidance for the conduct of mixed methods systematic reviews. *JBI Evidence Implementation*, *19*(2), 120-129. https://doi.org/10.1097/xeb.0000000000000282

Su, S., & Zhang, F. (2020). Modeling the role of environmental regulations in regional green economy efficiency of China: Empirical evidence from super efficiency DEA-Tobit model. *Journal of Environmental Management*, *261*, 110227. https://doi.org/10.1016/j.jenvman.2020.110227

Sulaiman, A. I., Masrukin, M., & Putri, D. D. (2022). Community empowerment program based on green economy in preserving herbs as local wisdom. *Sustainable Development Research*, *4*(2), p14. https://doi.org/10.30560/sdr.v4n2p14

Wikarta, E. K. (2022). Towards Green Economy : The Development of Sustainable Agricultural and Rural Development Planning, the Case on Upper Citarum River Basin West Java Province Indonesia. *Ecodevelopment*, *3*(1). https://doi.org/10.24198/ecodev.v3i1.39115

Witt, U. (2021). Does sustainability-promoting policy making reduce our welfare? *Ecological Economics*, *188*, 107130. https://doi.org/10.1016/j.ecolecon.2021.107130

Xu, J., Yang, Y., Jia, Z., Chang, G., Zhang, Y., Zhao, M., & Wang, W. (2023). A Systematic Government-Driven Green Development Transformation Strategy with Chinese Characteristics: The Case Study of the Xining Metropolitan Area. *International Journal of Environmental Research and Public Health*, *20*(2), 1321. https://doi.org/10.3390/ijerph20021321

Xu, X., Jing, R., & Lu, F. (2022). Environmental Regulation, Corporate Social Responsibility (CSR) Disclosure and Enterprise Green Innovation: Evidence from Listed Companies in China. *International Journal of Environmental Research and Public Health*, *19*(22), 14771. https://doi.org/10.3390/ijerph192214771

Xu, Y., Liang, J., Dong, Z., & Shi, M. (2022). Can environmental regulation promote green innovation and productivity? The Moderating role of government Interventions in Urban China. *International Journal of Environmental Research and Public Health*, *19*(21), 13974. https://doi.org/10.3390/ijerph192113974

Yin, Y., & Yang, B. (2023). Environmental Protection or Development? Multiple Policy effects Evaluation of the resource tax collection reform for iron ore enterprises in China. *International Journal of Environmental Research and Public Health*, *20*(5), 3976. https://doi.org/10.3390/ijerph20053976

Yongabo, P., & Göktepe-Hultén, D. (2021). Emergence of an agriculture innovation system in Rwanda: Stakeholders and policies as points of departure. *Industry and Higher Education*, *35*(5), 581–597. https://doi.org/10.1177/0950422221998610

Zhan, L., Guo, P., & Pan, G. (2022). The effect of mandatory environmental regulation on green development efficiency: evidence from China. *Environmental Science and Pollution Research*, *30*(4), 9782-9792. https://doi.org/10.1007/s11356-022-22815-1

Zhang, C., Zhao, Y., & Zhang, X. (2019). An improved association rule mining-based method for discovering abnormal operation patterns of HVAC systems. *Energy Procedia*, *158*, 2701-2706. https://doi.org/10.1016/j.egypro.2019.02.025

Zhang, L., Zhang, Z., Bieryt, K., & Aftab, S. (2023). Sustainable green financial system perspective of environmental protection investment and the government's environmental policy or public participation: evidence from Chinese A-share listed companies. *Ekonomska Istrazivanja-economic Research*, *36*(2). https://doi.org/10.1080/1331677x.2023.2178019

Zhao, F., Zeng, B., & Ming, Q. (2018). Environmental regulation, Two-Way foreign direct investment, and green innovation efficiency in China's manufacturing industry. *International Journal of Environmental Research and Public Health*, *15*(10), 2292. https://doi.org/10.3390/ijerph15102292

Zhu, F., Cheng, S., Qu, G., Cui, Y., & Ye, J. (2022). Research on Theoretical Mechanism and Promotion Path of Digital Economy Driving China's Green Development under "Double Carbon" Background. *International Journal of Environmental Research and Public Health, 20*(1), 437. https://doi.org/10.3390/ijerph20010437