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Natural Resources Based Green Trade Model for Green Growth in Brazil, Russia, Indonesia, Singapore, India and China (BRISIC)

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Abstract. *Researchers in this study aim to determine the Natural Resources-Based Green Trade Model for Green Growth in Brazil, Russia, Indonesia, Singapore, India and China (BRISIC). The method in this research is using the ARDL Panel method. The variables used in this research are Green Growth, Green Trade, Natural Resources, Financial Inclusion, Green Innovation, Digital Economy. The results of this research are from the Green Trade Model Based on Natural Resources on Green Growth in Brazil, Russia, Indonesia, Singapore, India and China (BRISIC) using the panel method, it can be concluded that in BRISIC countries the variable that has an overall influence is green trade. and Natural resources both Short Run Equation and Long Run Equation.*

Keywords: *Green Growth, Green Trade, Natural Resources, Financial Inclusion, BRISIC.*

Abstrak. Peneliti dalam penelitian ini bertujuan untuk mengetahui Model Green Trade Berbasis Natural Resources Terhadap Green Growth Di Brazil, Rusia, Indonesia, Singapura, India Dan China (BRISIC). Metode dalam penelitian ini yaitu menggunakan metode Panel ARDL. Variabel yang digunakan dalam penelitian ini adalah Green Growth, Green Trade, Natural Resources, Financial Inclusion, Green Innovation, Economy Digital. Hasil dalam penelitian ini yaitu dari Model Green Trade Berbasis Natural Resources Terhadap Green Growth Di Brazil, Rusia, Indonesia, Singapura, India Dan China (BRISIC) dengan menggunakan metode panel bahwa dapat ditarik kesimpulan bahwa pada negara BRISIC variabel yang berpengaruh secara keseluruhan yaitu green trade dan Natural resources baik Short Run Equation dan Long Run Equation.

Kata kunci: Pertumbuhan Hijau, Perdagangan Hijau, Sumber Daya Alam, Inklusi Keuangan, BRISIC.

1. BACKGROUND

Green trade is the incorporation of green concepts in the practice of trading green resources or technology through green transportation methods. Environmental damage can be reduced by creating or increasing reserves of natural resources that provide clean energy by obtaining resources (X. Xu, 2022b).

Green growth is a strategy for investing in human and natural capital to make "green" a driver of environmentally sustainable economic growth (OECD, 2011). The incorporation of green growth on the one hand reduces the use of natural resource commodities such as coal, oil and gas while generating reserves of other natural resources or human resources to maintain economic growth (Hu et al., 2024).

Likewise, natural resources (NR) significantly shape GRG by influencing economic development and environmental sustainability (Meran, 2023). The abundant potential of Natural Resources (NR) in encouraging GRG, it is essential to implement careful planning, sustainable practices, and effective governance (Sohag et al., 2019).

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Likewise, investment in renewable energy, energy-saving infrastructure, is a major opportunity in GRG (X. Xu, 2022b). GRG encourages the potential productivity of Natural Resources (NR) to overcome urgent environmental challenges, and transition towards a circular economy (Anderson et al., 2016). Therefore, by integrating environmental considerations into economic policies and strategies, GRG is able to minimize and promote a more sustainable and resilient future (Song et al., 2024).

In addition, technological innovation increases resource efficiency, reduces adverse impacts on Natural Resources (NR) potential and promotes GRG through advances in environmentally friendly technology, manufacturing practices, product design and renewable energy sources (Jin et al., 2023). Another important factor in GRG is influential environmental governance, which has a positive impact on its development (Lv & Chen, 2024). Implementing a robust monitoring system that encourages economic activity in an environmentally responsible manner is critical to promoting GRG (Aisbett et al., 2023). In addition, participatory decision-making processes involving stakeholders from various sectors contribute to the development of a conducive environment for GRG (Chien et al., 2023).

Investment in Natural Resources (NR), is very important in achieving an analysis that links green investment, GDP per capita, greenhouse gas emissions, and renewable energy with sustainable development (Z. Li et al., 2023). Their findings reveal a positive relationship between green investments and GDP per capita as well as the influence of renewable energy and greenhouse gas emissions on GDP. Another important factor that determines GRG is the implementation of environmentally friendly practices. For example, incorporating internal environmentally friendly practices such as pollution prevention and supply chain management will significantly influence environmental driving factors in financial performance (Nasution et al., 2023).

However, external environmentally friendly practices such as product development only play a small role, thus underlining the importance of implementing internal environmentally friendly practices to improve financial performance. In addition, income inequality also affects GRG (Wu et al., 2024). Research shows that higher income inequality in BRISIC countries is correlated with lower levels of GRG,

thus highlighting the potential contribution of reducing income inequality in achieving reduced inequality and environmental sustainability (Capasso et al., 2019). In the long term environmental innovation and patents are significantly positive, ensuring that environmentally related technologies help in achieving green growth in BRISIC countries

(Rui Chen, et al. 2023).

The implementation of a green growth strategy should be carried out by considering various aspects that can support the implementation of the strategy. First, a green growth strategy can be said to be a step that contributes to the construction and development of a new framework for the national interest that takes into account environmental and social issues. Second, we need to provide real tools and recommendations that governments can develop into national policies to transform their economies sustainably and achieve sustainable development (Y. Zhang & Qu, 2024). Third, it should be a source of information on how to support environmentally friendly growth in developing countries. Fourth, this strategy must focus on employment issues, including the possibility of creating new jobs and most importantly pay attention to social aspects and sustainable development (Mensah et al., 2019). In other words, the aim of the National Green Growth Strategy is to encourage the equitable transfer of jobs, capital and technology to motivate businesses and consumers to engage in more environmentally friendly activities and provide appropriate incentives. We provide support in the context of developing environmental innovation (Houssam et al., 2023). Thus the author limits the problem only to the "Green Trade Model Based on Natural Resources for Green Growth in Brazil, Russia, Indonesia, Singapore, India and China (BRISIC).

2. THEORETICAL STUDY

Green Trade

Green trade refers to the practice of integrating environmental considerations into international trade policies and agreements to promote sustainable development. Green innovation is also a key driver in encouraging green economic growth (Dewi Mahrani Rangkuty et al, 2024).

Green Growth

Green growth is a strategy for investing in human and natural capital to make "green" a driver of environmentally sustainable economic growth (OECD, 2011). The incorporation of green growth on the one hand reduces the use of natural resource commodities such as coal, oil and gas while generating reserves of other natural resources or human resources to maintain economic growth (Hu et al., 2024).

Natural Resources

The use of natural resources such as fossil fuels which cause environmental damage can be reduced by creating or increasing natural resource reserves that provide clean energy

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by obtaining resources that require a minimum of coal, oil or gas (X. Xu, 2022b).

3. RESEARCH METHODS

ARDL Panel Model

Panel data, namely, data across time and between regions or countries used in this research. By assuming the existence of cointegration at the long-term lag of each variable, ARDL panel regression is used to provide estimation findings for each individual characteristic independently. Pesaran, Shin, and Smith (2001) proposed Autoregressive Distributed Lag (ARDL) in Russia in (2014). With this method, each lag variable at I(1) or I(0) is examined. Meanwhile, the test statistic that can compare two asymptotic critical values is the ARDL regression result.

Panel Regression Testing with the formula:

$GGit = \alpha + \beta 1GTit + \beta 2NRit + \beta 3FIit + \beta 4GIt + \beta 5EDit$

The following is the panel regression formula based on country:

GGBrazil $= \alpha + \beta 1GTit + \beta 2NRit + \beta 3FIit + \beta 4Giit + \beta 5EDit + e$ GGRussia $= \alpha + \beta 1GTit + \beta 2NRit + \beta 3FIit + \beta 4GIit + \beta 5EDit + e$ GGIndonesia $= \alpha + \beta 1GTit + \beta 2NRit + \beta 3FIit + \beta 4GIit + \beta 5EDit + e$ GGSingapore $= \alpha + \beta 1GTit + \beta 2NRit + \beta 3FIit + \beta 4GIit + \beta 5ED\ it + e$ GGIndia $= \alpha + \beta 1GTit + \beta 2NRit + \beta 3FIit + \beta 4GIit + \beta 5ED\ it + e$ GGChina $= \alpha + \beta 1GTit + \beta 2NRit + \beta 3FIit + \beta 4GIit + \beta 5ED\ it + e$

Information

GG	= Green Growth (%)
GT	= Green Trade
NR	= Natural Resources (%)
FI	= Financial Inclusion
GI	= Green Innovation (Million USD)
ED	= Digital Economy
€	= error term
β	= regression coefficient
α	= constant
i	= number of observations (6 countries)
t	= number of years 3 years (36 months)

4. ESULTS AND DISCUSSION

Stationarity Test

Table 1 Stationarity Test

Intermediate ADF test results ED				
Cross section	Prob.	Lag	Max Lag	Obs
BRAZIL	0.3458	0	10	35
RUSSIA	0.0145	1	10	34
INDONESIA	0.3932	0	10	35
SINGAPORE	0.1035	0	10	35
INDIA	0.2184	0	10	35
CHINA	0.0485	0	10	35

Source: Eviews data processing results. 2025.

Based on the ADF test results, the probability value is less than y = 5% because all variables, both dependent and independent, are stable at the first difference level at y = 5%. Because the data is stationary in the first differential, it is assumed that cointegration or a long-term relationship occurs. Therefore, the Johansen Test cointegration test can take the form of the following test.

Johansen Cointegration Test

Table 2 Johansen Cointegration Test

Dependent Variable:
D(GG)
Method: ARDL
Date: 01/27/25 Time:
16:56
Sample: 2021M04
2023M12

Included observations: 206
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): NR GT FI GI ED

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Fixed regressors: C

Number of models evalulated: 1

Selected Model: ARDL(1, 1, 1, 1, 1, 1)

Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
		Long Run Equation		
NR	0.025053	0.048550	0.516021	0.6065
GT	0.088449	0.054568	1.620905	0.1069
FI	5.985351	4.315217	1.387034	0.1673
GI	-0.473888	0.548685	-0.863680	0.3890
ED	-0.856339	0.475579	-1.800622	0.0736
		Short Run Equation		
COINTEQ01	-0.393217	0.102022	-3.854251	0.0002
D(NR)	-3.494899	12.63254	-0.276658	0.7824
D(GT)	0.073972	0.044685	1.655393	0.0997
D(FI)	-14.20191	1452.159	-0.009780	0.9922
D(GI)	43.53689	1515.933	0.028720	0.9771
D(ED)	-4.864393	5.324329	-0.913616	0.3622
C	1870.490	120298.3	0.015549	0.9876
Mean dependent var	-37.01456	S.D. dependent var		13543.72
S.E. of regression	11792.72	Akaike info criterion		19.97728
Sum squared resid	2.31E+10	Schwarz criterion		20.71897
Log likelihood	-2080.580	Hannan-Quinn criter.		20.27702

*Note: p-values and any subsequent tests do not account for model selection.

Source: Eviews data processing results. 2025.

Assuming the coefficient value has a negative slope with a significance level of less than 5%, the ARDL Panel Model is approved if it has a cointegrated lag.

The ARDL panel model used in this study is considered acceptable based on the results above which indicate that the model conditions have been met: it has a negative value (-0.393217) and is significant (prob value <0.05, 0.0002). Data analysis was carried

out using panels for each country based on how well the model was accepted.

Table 3: Brazilian ARDL Panel Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.216513	0.011175	-19.37415	0.0003
D(NR)	-20.61549	106.0952	-0.194311	0.8583
D(GT)	0.057409	0.006184	9.283737	0.0026
D(FI)	-1284.733	8108819.	-0.000158	0.9999
D(GI)	262.8831	315338.9	0.000834	0.9994
D(ED)	0.165937	0.541872	0.306229	0.7795
C	80480.04	3.67E+10	2.19E-06	1.0000

Source: Eviews data processing results. 2025.

1. Based on the Prob sig value > 0.05, namely 0.8583 in Brazil, Natural Resources (NR) have a negative influence (-20.61549) and are not significant on Green Growth (GG).
2. Based on the Prob sig value <0.05, namely 0.0026 in Brazil, Green Trade (GT) has a positive (0.057409) and significant influence on Green Growth (GG).
3. Prob sig value > 0.05 or 0.9999 in Brazil indicates that Financial Inclusion (FI) has a negative influence (-1284.733) and is not significant on Green Growth (GG).
4. Based on the Prob sig value > 0.05, namely 0.9994 in Brazil, Green Innovation (GI) has a positive influence (262.8831) but is not significant on Green Growth (GG).
5. Prob sig value > 0.05 or 0.7795 in Brazil shows that the Digital Economy (EC) has a positive (0.165937) but not significant influence on Green Growth (GG).

Table 4: Russian ARDL Panel Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.094563	0.008286	-11.41227	0.0014
D(NR)	0.010707	0.000810	13.22161	0.0009
D(GT)	0.255873	0.023343	10.96163	0.0016
D(FI)	-30.75023	470.7019	-0.065328	0.9520
D(GI)	0.478682	0.046629	10.26586	0.0020
D(ED)	-31.46946	267.6751	-0.117566	0.9138
C	-956.4831	12713920	-7.52E-05	0.9999

Source: Eviews data processing results. 2025.

1. Based on the Prob sig value <0.05, namely 0.0009 in Russia, Natural Resources (NR)

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have a large and positive influence (0.010707) on Green Economic Growth (GG).

2. Based on the Prob sig value <0.05, namely 0.0016 in Russia, Green Trade (GT) has a large and positive impact (0.255873) on Green Growth (GG).
3. Prob sig value > 0.05 or 0.9999 in Russia indicates that Financial Inclusion (FI) has a negative influence (-30.75023) and is not significant on Green Growth (GG).
4. Prob sig value <0.05 or 0.0020 in Russia indicates that Green Innovation (GI) has a significant and positive influence (0.478682) on Green Growth (GG).
5. Based on the Prob sig value > 0.05, namely 0.9138 in Russia, the Digital Economy (EC) has a negative influence (-31.46946) and is not significant on Green Growth (GG).

Table 5: Indonesian ARDL Panel Test Results

Variable	Coefficient		Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.357463		0.014528	-24.60588	0.0001
D(NR)	47.09953		4154.969	0.011336	0.9917
D(GT)	0.036910		0.002357	15.66089	0.0006
D(FI)	1440.837		3972584.	0.000363	0.9997
D(GI)	0.146596		0.615066	0.238342	0.8270
D(ED)	0.000690		0.617701	0.001118	0.9992
C	-165545.4		4.66E+10	-3.55E-06	1.0000

Source: Eviews data processing results. 2025.

1. The Prob sig value > 0.05 or 0.9917 in Indonesia shows that Natural Resources (NR) have a positive influence (47.09953) but are not significant on Green Economic Growth (GG).
2. Based on the Prob sig value <0.05, namely 0.0006 in Indonesia, Green Trade (GT) has a fairly large and positive influence (0.036910) on Green Growth (GG).
3. The Prob sig value > 0.05 or 0.9997 in Indonesia shows that Financial Inclusion (FI) has a positive influence (1440.837) but is not significant on Green Growth (GG).
4. Based on the Prob sig value > 0.05, namely 0.8270 in Indonesia, Green Innovation (GI) has a positive influence (0.146596) but is not significant on Green Growth (GG).
5. The Prob sig value > 0.05, namely 0.9992 in Indonesia, shows that the Digital Economy (EC) has a positive (0.000690) but not significant influence on Green Growth (GG).

Table 6: Singapore ARDL Panel Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.776900	0.026850	-28.93432	0.0001
D(NR)	-47.08719	6588.153	-0.007147	0.9947
D(GT)	0.145763	1.980384	0.073603	0.9460
D(FI)	-5543.457	28469365	-0.000195	0.9999
D(GI)	-5869.747	16143168	-0.000364	0.9997
D(ED)	0.919798	1.333075	0.689983	0.5398
C	499003.8	1.37E+11	3.64E-06	1.0000

Source: Eviews data processing results. 2025.

For the results of the ARDL panel test in Singapore, the variables Natural Resources (NR), Green Trade (GT), Financial Inclusion (FI), Green Innovation (GI) and Digital Economy (ED) show that they are not significant for Green Growth (GG) as indicated by the Prob sig value > 0.05 in Singapore in this study.

Table 7: ARDL India Panel Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.589641	0.020957	-28.13600	0.0001
D(NR)	-0.391493	0.080280	-4.876564	0.0165
D(GT)	-0.025989	0.000726	-35.80352	0.0000
D(FI)	5367.082	47711755	0.000112	0.9999
D(GI)	5867.702	57033325	0.000103	0.9999
D(ED)	1.104072	6.434361	0.171590	0.8747
C	-388733.6	2.25E+11	-1.73E-06	1.0000

Source: Eviews data processing results. 2025.

1. Based on the Prob sig value <0.05, namely 0.0165 in India, Natural Resources (NR) have a negative (-0.391493) and significant influence on Green Economic Growth (GG).
2. Based on the Prob sig value <0.05, namely 0.0000 in India, Green Trade (GT) has a negative (-0.025989) and significant influence on Green Growth (GG).
3. Based on the Prob sig value > 0.05, namely 0.9999 in India, Financial Inclusion (FI) has a positive influence (5367.082) but is not significant on Green Growth (GG).
4. Prob sig value > 0.05 or 0.9999 in India indicates that Green Innovation (GI) has a

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positive (5867.702) and insignificant influence on Green Growth (GG).

5. Based on the Prob sig value > 0.05, namely 0.8747 in India, the Digital Economy (EC) has a positive (1.104072) but not significant influence on Green Growth (GG).

Table 8: China ARDL Panel Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.324221	0.008560	-37.87715	0.0000
D(NR)	0.014543	0.000168	86.74876	0.0000
D(GT)	-0.026135	0.000162	-161.7186	0.0000
D(FI)	-34.19035	131.9201	-0.259175	0.8123
D(GI)	-0.241617	0.065706	-3.677225	0.0348
D(ED)	0.092609	0.039952	2.317985	0.1033
C	-13025.42	90015778	-0.000145	0.9999

Source: Eviews data processing results. 2025.

1. Based on the Prob sig value < 0.05, namely 0.0000 in China, Natural Resources (NR) have a positive influence of 0.014543) and are significant on Green Economic Growth (GG).
2. Based on the Prob sig value <0.05, namely 0.0000 in China, Green Trade (GT) has a negative (-0.026135) and significant influence on Green Growth (GG).
3. Based on the Prob sig value > 0.05, namely 0.8123 in China, Financial Inclusion (FI) has a negative influence (-34.19035) and is not significant on Green Growth (GG).
4. The Prob sig value <0.05, namely 0.0348 in China, shows that Green Innovation (GI) has a negative (-0.241617) and significant influence on Green Growth (GG).
5. Based on the Prob sig value > 0.05, namely 0.1033 in China, the Digital Economy (EC) has a positive (0.092609) but not significant influence on Green Growth (GG).

Discussion

The ADF test results show that all variables, both dependent and independent, are stationary with probability values smaller than y = 5%. The stationarity test results show that all variables, namely Green Growth, Green Trade, Natural Resources, Financial Inclusion, Green Innovation, Digital Economy are stationary after the first differencing (I(1)I(1)). This finding is consistent with time series theory which states that economic data is often non-stationary at one level but becomes stationary after differentiation (Gujarati, 2009). Stationary data is needed to prevent biased and inconsistent regression results, so that it can be used for further analysis.

From the Natural Resources Based Green Trade Model on Green Growth in Brazil, Russia, Indonesia, Singapore, India and China (BRISIC) using the panel method, it can be concluded that in BRISIC countries the variables that have an overall influence are green trade and natural resources. This is in line with research (X. Xu, 2022a) which states that Green Growth (GRG) is very important in Green Trade and Natural Resources. GRG is very positive in increasing economic growth and encouraging social welfare (Liu et al., 2023).

Natural resources (NR) significantly shape GRG by influencing economic development and environmental sustainability (Meran, 2023). However, over-reliance on resource extraction can have adverse consequences, commonly known as the "resource curse", characterized by environmental degradation, social inequality, and economic instability. To harness the abundant potential of NR in driving GRG, it is essential to implement careful planning, sustainable practices, and effective governance (Sohag et al., 2019). Countries that depend on a single or limited resource will face resource depletion, which can hinder GRG.

Therefore, economic diversification and reducing dependence on non-renewable resources are important strategies that contribute to more resilient and environmentally friendly growth (Ashfaq et al., 2023). (Rusiadi et al., 2024). reveals evidence of asymmetric effects of oil and natural gas consumption on economic growth and carbon emissions in all selected countries except Algeria. Although positive changes in non-renewable energy consumption hinder growth in Nigeria, they can reduce emissions. (Zuo et al., 2023) found that long-term causality shows that natural gas does not contribute to economic growth and CO2 emission reduction like nuclear energy and renewable energy. However, except for natural gas, the expansion and improvement of renewable energy and nuclear energy is very important to protect the environment and encourage economic growth (Amato & Korhonen, 2021).

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5. CONCLUSION

This research is to see the influence of the Natural Resources Based Green Trade Model on Green Growth in Brazil, Russia, Indonesia, Singapore, India and China (BRISIC). The analysis model used by the author is the Autoregressive Distributed Lag (ARDL) model. The variables used in this research are Green Growth, Green Trade, Natural Resources, Financial Inclusion, Green Innovation, Digital Economy.

After going through several stages of testing, the author can draw conclusions from the findings of this research, including: in Brazil, only the Green Trade variable is significant for Green Growth (GG) as indicated by the Prob sig value < 0.05, namely 0.0026. The Natural Resources, Financial Inclusion, Green Innovation and Digital Economy variables are not significant to Green Growth. Furthermore, in this research, the ARDL panel method was tested in Russia, which significantly influenced the Green Growth variables in this research, namely the Natural Resources, Green Trade and Green Innovation variables. Meanwhile, the other two variables, namely the Finnacial Inclusion and Digital Economy variables, do not have a significant effect on Green Growth in this research.

In Indonesia, the only thing that has a significant effect on green growth is Green Trade, while the rest does not have a significant effect on green growth. For the results of the ARDL panel test in Singapore, the variables Natural Resources (NR), Green Trade (GT), Financial Inclusion (FI), Green Innovation (GI) and Digital Economy (ED) show that they are not significant for Green Growth (GG) as indicated by the Prob sig value > 0.05 in this study. In India, the variables that have a significant influence on Green Growth are the Natural Resources and Green Trade variables. The remaining variables, Financial Inclusion, Green Innovation and Digital Economy, do not have a significant influence on Green Growth (GG). Finally, in China, the countries that have a significant influence on Green Growth (GG) using the ARDL panel method are Natural Resources and Green Trade. The remaining variables are Financial Inclusion, Green Innovation and Digital Economy.

REFERENCES

Aisbett, E., Raynal, W., Steinhauser, R., & Jones, B. (2023). International green economy collaborations: Chasing mutual gains in the energy transition. *Energy Research & Social Science, 104*(October), 1–27. https://doi.org/10.1016/j.erss.2023.103249

Amato, D. D., & Korhonen, J. (2021). Integrating the green economy, circular economy, and bioeconomy in a strategic sustainability framework. *Resources, Conservation and Recycling, 188*(October), 1–34. https://doi.org/10.1016/j.resconrec.2021.106515

Anderson, Z. R., Kusters, K., McCarthy, J., & Obidzinski, K. (2016). Green growth rhetoric versus reality: Insights from Indonesia. *Global Environmental Change, 38*(May), 30–40. https://doi.org/10.1016/j.gloenvcha.2016.02.008

Ashfaq, S., Liangrong, S., Waqas, F., Gulzar, S., Mujtaba, G., & Nasir, R. M. (2023). Renewable energy and green economic growth nexus: Insights from simulated dynamic ARDL. *Gondwana Research, 103*(August), 1–6. https://doi.org/10.1016/j.gr.2023.08.014

Efendi, B. (2019). Simultaneity model of growth economic and workforce based financial inclusion in North Sumatera. *International Journal for Innovative Research Multidisciplinary Field, 5*(4), 13–16.

Capasso, M., Hansen, T., Heiberg, J., Klitkou, A., & Steen, M. (2019). Green growth – A synthesis of scientific findings. *Technological Forecasting & Social Change, 146*(September), 390–402. https://doi.org/10.1016/j.techfore.2019.06.013

Chen, Y., Pei, Y., Zhuang, W., Zuo, Y., & Zhi, K. (2023). Combining the effects of trade openness and the development of natural resources on economic growth: New data from asymmetric and linear analysis. *Resources Policy, 83*(November), 1–6. https://doi.org/10.1016/j.resourpol.2023.103538

Chien, F. S., Paramaiah, C., Joseph, R., Pham, H. C., Phan, T. T. H., & Ngo, T. Q. (2023). The impact of eco-innovation, trade openness, financial development, green energy, and government governance on sustainable development in ASEAN countries. *Renewable Energy, 211*(July), 259–268. https://doi.org/10.1016/j.renene.2023.04.109

Damanik, R., Rangkuty, D. M., & Abdiyanto, A. (2024). Analisis kebijakan moneter dan fiskal terhadap green trade di Indonesia. *JEMSI (Jurnal Ekonomi, Manajemen, dan Akuntansi), 10*(4), 2770–2780. https://doi.org/10.35870/jemsi.v10i4.2929

Dewi Mahrani Rangkuty, Rusiadi, L. N. N., & Wahyu Indah Sari, R. D. (2024). Monetary, fiscal and green trade indicators in Indonesia. *EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi dan Bisnis, 5*(1), 1–23.

Gujarati, D. (2009). *Dasar-Dasar Ekonometrika (Edisi 5)*. Salemba Empat.

Houssam, N., Ibrahiem, D. M., Sucharita, S., El-Aasar, K. M., Esily, R. R., & Sethi, N. (2023). Assessing the role of green economy on sustainable development in developing countries. *Heliyon, 9*(6), 1–13.

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https://doi.org/10.1016/j.heliyon.2023.e17306

Hu, Y., Li, B., & Ahmad, M. (2024). Green trading and ecological sustainability under macroeconomic policy framework. *Geoscience Frontiers*, *15*(3), 1–27. https://doi.org/10.1016/j.gsf.2023.101776

Jin, C., Luo, S., & Sun, K. (2023). Energy resources trade and investments for green growth: The case of countries in the Asia-Pacific Economic Cooperation. *Resources Policy*, *82*(May), 1–6. https://doi.org/10.1016/j.resourpol.2023.103535

Li, Z., Wu, Y., Rasoulinezhad, E., Sheng, Y., & Bi, C. (2023). Green economic recovery in central Asia by utilizing natural resources. *Resources Policy*, *83*(June), 1–6. https://doi.org/10.1016/j.resourpol.2023.103621

Liu, Z., Zhang, M., Li, Q., & Zhao, X. (2023). The impact of green trade barriers on agricultural green total factor productivity: Evidence from China and OECD countries. *Economic Analysis & Policy*, *78*(June), 319–331. https://doi.org/10.1016/j.eap.2023.03.011

Lv, L., & Chen, Y. (2024). The collision of digital and green: Digital transformation and green economic efficiency. *Journal of Environmental Management*, *351*(February), 119906. https://doi.org/10.1016/j.jenvman.2023.119906

Mensah, C. N., Long, X., Dauda, L., Boamah, K. B., Salman, M., Appiah-Twum, F., & Tachie, A. K. (2019). Technological innovation and green growth in the Organization for Economic Cooperation and Development economies. *Journal of Cleaner Production*, *240*(December), 1–7. https://doi.org/10.1016/j.jclepro.2019.118204

Meran, G. (2023). Is green growth possible and even desirable in a spaceship economy? *Ecological Economics*, *213*(November), 4–9. https://doi.org/10.1016/j.ecolecon.2023.107947

Nasution, U. I., K., K., & Rahmani, N. A. B. (2023). The influence of financial inclusion and financial literacy on financial performance: Case study of Bank Sumut

Syariah Panyabungan. *EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi dan Bisnis*, *12*(1), 1–10. https://doi.org/10.37676/ekombis.v12i1.4845

OECD. (2011). *Towards green growth*. OECD. https://www.oecd.org/greengrowth Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis

of level relationships. *Journal of Applied Econometrics*, *16*(3), 289–326.

Qu, Y., & Zhang, Y. (2024). Has the consumption of impoverished and subsistence households increased as a result of the digital economy? *Economic Review of China*, *83*(February), 1–5. https://doi.org/10.1016/j.chieco.2023.102083

Rusiadi, Hidayat, M., Rangkuty, D. M., Ferine, K. F., & Saputra, J. (2024). The influence of natural resources, energy consumption, and renewable energy on economic growth in ASEAN region countries. *International Journal of Energy Economics and Policy*, *14*(3), 332–338. https://doi.org/10.32479/ijeep.15917

Sohag, K., Taşkın, F. D., & Malik, M. N. (2019). Green economic growth, cleaner energy, and militarization: Evidence from Turkey. *Resources Policy*, *63*(October), 1–6. https://doi.org/10.1016/j.resourpol.2019.101407

Song, Y., Gong, Y., & Song, Y. (2023). The influence of digital financial development on the green economy: An analysis based on a volatility perspective. *Journal of Cleaner Production*, *434*(January), 1–33. https://doi.org/10.1016/j.jclepro.2023.140051

Xu, X. (2022). The impact of natural resources on green growth: The role of green trade. *Resources Policy*, *78*(August), 1–7. https://doi.org/10.1016/j.resourpol.2022.102720

Zhang, W., Liu, X., Wang, D., & Zhou, J. (2022). Digital economy and carbon emission performance: Evidence at China's city level. *Energy Policy*, *165*(June), 1–7. https://doi.org/10.1016/j.enpol.2022.112927

Zhang, Y., Wu, T., & Yi, M. (2024). The combined impact of environmental rules and economic growth ambitions is driving communities toward "green growth." *Journal of Environmental Management*, *146*, 1–6. https://doi.org/10.1016/j.jenvman.2023.106889

Zhang, Z., Fu, W. K., & Ma, L. (2022). The impact of digital economy on green development in China. *Frontiers in Environmental Science*, *10*(1), 1–20. https://doi.org/10.3389/fenvs.2022.991278

Zou, Z., & Ahmad, M. (2023). Economic digitalization and energy transition for green industrial development pathways. *Ecological Informatics*, *78*(December), 1–7. https://doi.org/10.1016/j.ecoinf.2023.102323

Received: December 15, 2024; Revised: December 30, 2024; Accepted: January 30, 2025; Published: February 01, 2025