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Green Economy Through Financial Sector Development: The Mediating Role of Economic Freedom and Green Legislation

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Employing a structural equation modeling and focusing on the Republic of Djibouti, the article investigates the effect of financial sector development on green economy when it is mediated by both the level of economic freedom and green legislation. The findings unveil a threefold revelation: (1) a resilient financial sector positively steers the green economy, (2) an effect augmented by the dimensions of economic freedom, (3) while the involvement of Djiboutian green legislation in mediating remains minimal.

I. Introduction

The concept of "green growth" relies on the pursuit of economic growth and developmental objectives while equally ensuring that resources from nature and ecological services (which form the fundamental pillars of our collective well-being), are perpetually protected and balanced. Scholars have methodically reviewed the impact of the financial sector on the economy and environment. First, the issue of green finance was widely discussed in literature. Then later it developed by incorporating complex multidisciplinary studies that involve the juxtaposition of sustainable economy, green finance, energy-poverty and banking (Ahmed et al., 2023; Salman & Ismael, 2023). Evidently, these scholarly endeavors collectively underscore the perception that banking institutions and financial sectors serve as important drivers that channeling resources into ecologically conscientious productive efforts, this positive perception is based on the premise that they use fewer natural resources and lessen the strain on the environment.

Thomas and Twyman (2005) argue that the developing world, particularly the poor, bears the brunt of environmental degradation's consequences. Declining environmental quality in peripheral nations limits their production and consumption capabilities, a problem exacerbated by climate change. Without significant reduction in international CO2 emissions, the material standards of life for many in developing countries may not improve (Wackernagel et al., 2019). Similarly, many emerging regions face severe economic and environmental costs due to environmental deterioration, disproportionately affecting vulnerable communities and poor countries (Schaffartzik et al., 2019). An open economy, focusing on resource-efficient capital goods, can bridge the gap between rich and developing nations. This approach increases productivity and export demand, and alleviates financial limitations with higher foreign currency inflows, fostering a positive turn towards sustainability.

The connection between governance and carbon production in the context of green legislation is still tenuous, particularly in poor countries. The institutions in these developing countries are still in the development stage. To illustrate this, Gani (2012) used North's (1990) claim that these developing countries' poverty is a result of institutional restraints that established rewards for economic and political actions that do not promote ecologically beneficial ones. For instance, environmental restrictions limit the beneficial effects of green digitalization at the expansion of economy and domestic growth. According to empirical research by Liu et al. (2023), it is emphasized that for the nation to achieve green economic growth, the state should give cogent ecological, financial, and digital policy. Other studies have had different results, which adds to the paradoxical aspect of green laws (Chen et al., 2020; Tao et al., 2022).

Prior scholars rarely explored research that juxtaposes green economy and economic freedom. To bridge this gap, our study employs a unique method with two mediating factors. We investigate whether the financial sector's development fosters sustainability and whether the effects of green legislation and economic freedom contribute to accelerating the green economy in Djibouti. Djibouti was chosen not only because this is the first study of its kind in the country but also to fill the existing literature gap. As the nation grapples with climate challenges. Our research aims to provide a comprehensive map for addressing climate mismanagement and promoting sustainable economy.

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This paper enriches current literature in three keyways. Firstly, it empirically explores how evolving financial institutions can drive the realization of a sustainable green economy, offering insights crucial not just for Djibouti's government but also resonates with developing world administrations. It becomes a valuable reference point for formulating energy mitigation strategies, especially given its focus on a lower-middle-income country grappling with economic constraints. Secondly, it evaluates into the mediating roles of economic freedom and green legislation, addressing Djibouti's energy development and poverty gap, and their impact on financial institutions in the green transformation context. Thirdly, employing structural equation modeling with primary data provides a deeper understanding of Djiboutian citizens' perspectives. The study then proposes and assesses the model's validity and consistency, presents empirical results with logical reasoning, and concludes with comprehensive insights.

The rest of the study is structured as follows. Section II discusses the methodology used in this study followed by the discussion of main findings in Section III. Final section concludes the study.

II. Methodology

This study delves into advancing the green economy in Djibouti, focusing on the financial sector's growth and mediating factors of economic freedom and environmental legislation. Using a well-constructed online survey with 301 responses, demographic questions provided additional context. The questionnaire, comprising 16 items for variable analysis, aimed to gain comprehensive insights. To analyze the data, we employed partial least square-sequential equation modeling (PLSSEM) with Smart-PLS 3.2.9. Components of our model were evaluated using measurements from earlier studies.

A. Descriptive Statistics

Following data screening, 301 respondents were selected for analysis, with 53.8% male and 46.1% female participants. Educational qualifications varied, with 44.5% holding college degrees, 37.8% professional diplomas, and 14.2% high school certificates. Respondents with non-formal schooling accounted for 10% of the sample. While in the income distribution category, participants who selected 50-100 Djiboutian francs DF (280-560 USD) revealed to be 44.8%. On the other hand, 33% of the respondents earn 100-250DF (560-1400 USD), while it was noted that 22.2% earn 300 and more (1681 USD). Predominantly, respondents who were identified as students were accounted for 37.5%, while 30.5% were freelancers, and 24.9% worked in the public sector; and only 8.9% were associated with the private sector. Finally, the study utilized a five-point Likert scale for data evaluation.

B. Instrument Development in this Research

We employed a meticulous measurement scale, i.e., a five-point Likert scale (1=strong disagreement, 5=strong agreement), derived from prior research. Construct validity and reliability were assessed using confirmatory factor analysis (CFA) with the partial least squares regression (PLS) algorithm in Smart-PLS and exploratory factor analysis (EFA) in SPSS version 28. These methods ensured a thorough evaluation of construct consistency and revealed latent patterns in the data.

Financial sector development, measured through indicators from Ong et al. (2019) and Agyabeng-Mensah (2020), involved four indicators. Economic freedom used five items from Şahinoğlu & Yakut (2019). Green legislation, based on Liu & Li (2021) and Zhai & An (2020), had a four-item scale. Similarly, green economy development employed four items from Shah et al. (2021) and Ullah et al. (2022). The 16-item measurement model ensured a comprehensive assessment. Cronbach's alpha and construct reliability (CR) exceeded 0.70, indicating good reliability. Average variance extracted values above 0.50 confirmed convergent validity. All values in Table 1 supported the achievement of convergent validity.

The study employs the heterotrait-monotrait (HTMT) ratio to assess discriminant validity, indicating associations between variables and their respective constructs. According to the HTMT the value should not be above 0.90 threshold, in order to maintain discriminant validity. The structural model is evaluated through path analysis (Figure 1), examining the significance of hypothesized relationships using beta values and p-values. R-squared (R2) is also included in the figure.

III. Results and Findings

In total, seven hypotheses were put out in this study; five of them were direct and two were indirect. The initial hypothesis found support in the data, revealing a significant positive impact of financial development on the establishment of a green economy ($\beta = 0.267$; p-value = 0.000). As a result, H1 effectively demonstrates support for building a green economy. With regard to this finding, it is ostensible that an advanced financial system will drive the green growth of many businesses, particularly environmentally friendly and sustainable energy sector (Anh Tu & Rasoulinezhad, 2022). A further factor supporting the deployment of the green economy is the growing introduction of green finance mechanisms (Molla et al., 2019; Zeng et al., 2022). Financial strategies like green loans and green bonds may successfully encourage businesses to invest in sustainable development gear, support the advancement of clean technology, and make it possible for businesses to serve as the basis of green innovation.

Djiboutian governments could harness green financing to rally social groups for environmental protection, as a market-oriented strategy. A sustainable financial system could reduce funding for highly polluting industries, driving economic optimization by phasing out obsolete production in line with green standards. Significant financial development may lead investors to adopt stricter regulations, improving environmental quality and reducing carbon emissions, fostering the state's self-reliance.

Table 1. Measurement Model Results

Constructs	Code	Loading	Cronbach α	CR	AVE
Financial Sector	FNS1	0.783	0.790	0.865	0.618
	FNS2	0.825			
	FNS3	0.860			
	FNS4	0.720			
Economic freedom endorsement	EFE1	0.784	0.830	0.880	0.595
	EFE2	0.805			
	EFE3	0.787			
	EFE4	0.738			
	EFE5	0.740			
Achieving green economy	AGE1	0.710	0.839	0.893	0.677
	AGE2	0.830			
	AGE3	0.877			
	AGE4	0.881			
Green legislation	GL1	0.842	0.862	0.914	0.780
	GL2	0.913			
	GL3	0.893			

Notes: The table reports the constructs validity and internal consistency which is taking the following forms; loading; the confirmatory factor results, CR, construct reliability; AVE, average variance extracted; α, Cronbach alpha.

Table 2. Heterotrait-Monotrait Ratio of Correlations (HTMT)

	Achieving green economy	Economic freedom endorsement	Financial development	Green legislation
Achieving green economy				
Economic freedom endorsement	0.611			
Financial development	0.557	0.653		
Green legislation	0.080	0.210	0.262	

(HTMT) is a statistical measure used to assess discriminant validity in the context of structural equation modeling (SEM). Therefore, before proceeding with the SEM the study checked whether the different constructs correlate less strongly with each other than they do with measures of the same construct. In other words, if the HTMT ratio is less than 1, it indicates that the constructs are distinct from each other, providing evidence of discriminant validity. On the other hand, if the HTMT ratio is close to or greater than 1, it suggests that the constructs may not be distinct from each other, raising concerns about discriminant validity.

Table 3. Direct and Indirect Effects

		(O) Original Sample	Standard Deviation	T Statistics	*P* Values	H
H1	FD → AGE	0.267	0.086	3.103	0.002	Supported
H2	FD → EFE	0.540	0.065	8.250	0.000	Supported
H3	FD → GL	0.222	0.069	3.235	0.001	Supported
H4	EFE → AGE	0.382	0.082	4.642	0.000	Supported
H5	GL → AGE	-0.072	0.053	1.353	0.177	Not supported
H6	FD → EFE → AGE	0.306	0.051	4.043	0.000	Supported
H7	FD → GL → AGE	-0.016	0.014	1.162	0.246	Not supported

Notes: The table reports the direct effect and the indirect effect of the variable. O, original sample or beta coefficient; H., hypothesis of the study; FD, financial development; AGE, achieving green economy; EFE, endorsement of economic freedom; GL, green legislation. The P-value tells you how likely it is to get the results you observed if there's actually no real effect or difference. T statistics, often referred to as t-values, are a measure used in statistics to assess the strength of evidence for or against a null hypothesis in a hypothesis test.

Keeping in line with the result, both economic freedom and environmental legislation are positively impacted by financial development: under $\beta = 0.540$, p-value = 0.000; and $\beta = 0.223$, p-value = 0.001, respectively. Therefore, H2 and H3 were supported. This finding suggests that economic freedom and financial development could be related

for a variety of reasons. Property rights with clear boundaries are a crucial component of monetary transactions. Strong property rights and a legal framework assist in coping with asymmetric knowledge and reducing the expenses involved in financial transactions. The presence of these entities increases the accessibility and effectiveness of external financing and influences the level of appropriation (Fergusson, 2006). Free trade and other forms of economic freedom encourage competitiveness, limit the actions of ruling elites engaged in rent-seeking, and thereby advance the financial sector (Law, 2008).

In the context of green legislation, an advancement of the financial sector will provide the government with the quintessential elements for legislation execution, This is because financial institutions can offer compensation in the event of adverse consequences. Governments must craft and enforce regulations that channel financial resources towards sustainable endeavors, while holding corporations accountable for their environmental impact. However, the so-called green legislation depends entirely on the spectrum of its enforcement and responsible authorities in upholding it. Although support for economic freedom has a good influence on the way to a sustainable economy (β = 0.382; p value = 0.000), green legislation projected a negative negligible effect on doing so (β = 0.382; p–value = 0.000); therefore, only H4 is accepted. Overall, all direct hypotheses except for green legislation on achieving a green economy were accepted.

The indirect hypothesis test results showed that the only approved mediating factors are those related to economic freedom. With = 0.306; p-value = 0.000, hypothesis six was confirmed, demonstrating that economic freedom partially mediates the link between financial advancement and establishing a green economy. According to Svaleryd and Vlachos (2002) free trade (a component of economic openness), is linked to an increased risk resulting from changes in the global economy and may therefore encourage the growth of a financial sector in order to mitigate these risks. Trade openness also fosters financial growth by having a beneficial impact on financial strength and thus facilitates the path for achieving economic freedom. Additionally, financial sector growth may be aided by the economic freedom brought about by sound money since a constant and low rate of inflation increases real returns on assets and prevents adverse selection issues. There is general agreement that governance measures are necessary to properly balance the potential advantages and risks of the financial sector while simultaneously assuring the achievement of a green economy. These mechanisms include an absence of corruption and strong property rights (MacDonald & Hasmath, 2020). Although, for a country like Djibouti, the need for greater economic liberalization and financial inclusion becomes quintessential, calling for a concerted effort to reduce domestic inequalities while simultaneously developing a strategic framework that entirely adopts and incorporates eco-friendly innovations, thereby advancing the development of a sustainable economic paradigm. Paradoxically, there may be barriers to the implementation of the aforementioned conclusion that are related to the current national revenue of the nation. At some point, this aspect could operate as a hindrance to the achievement of the stated goal. Therefore, a more practical strategy would entail encouraging external foreign investment or asking external help, then utilizing these external resources to enhance and hasten the desired growth process.

On the other hand, green legislation does not partially mediate the relationship between financial development and achieving a green economy (β = -0.016; p-value = 0.246). An accurate assessment of environmental stringency is required to evaluate the effects of specific regulations. For instance, variations in environmental legislative stringency may occur if a policy is implemented in a haphazard subset of locations or over time (Dechezleprêtre & Sato, 2017). Indeed, stricter environmental regulations do have enduring effects on green growth, whether at the national or industrial level. Tighter environmental regulations are connected to faster short-term productivity growth, leading to sustained increases. However, most of its effects typically dissipate within 5 years (Goulder et al., 2016). Moreover, as Djibouti continues to view poverty, infectious disease, and environmental degradation as separate threats, and due to the lack of systemic instruments, implementing these environmental laws is challenging. In many cases, these societal burdens, such as poverty and education, overshadow environmental endeavors, making the transition to a green economy quite challenging.

IV. Conclusion

This study makes a major contribution by examining the interaction between the growth of the financial sector and the attainment of the green economy, considering the mediating role of green legislation and economic freedom in Djibouti. Utilizing structural equation modeling in SMART-PLS, the research unveils that financial sector growth notably drives green economy realization, largely mediated by economic freedom. Conversely, the mediating role of green legislation is less prominent.

The study has some important implications. First and foremost, it is advised that governmental regulations on economic endeavors be flexible, especially in light of the analyzed nation's poor status in terms of economic liberty. Furthermore, the geographic situation emerges as a prospective determinant, warranting equitable distribution of trade promotion initiatives to bolster ecologically sustainable practices, including the facilitation of green innovations, technologies and facilitating financial sector activities undertaking. Third, it is quintessential to obtain significant investment from financial institutions. However, it is essential for the Djiboutian government to loosen limits on financial and monetary activities while also creating a crucial portfolio that supports initiatives targeted at attaining goals within the context of a green economy. Finally, there exists the possibility of channeling, green-oriented legislative efforts towards sectors beyond the financial domain, given the limited capacity of such measures to effectively mediate the interface with green economic pursuits. Therefore, it is advised that the creation of green laws be in line with the country's income level and

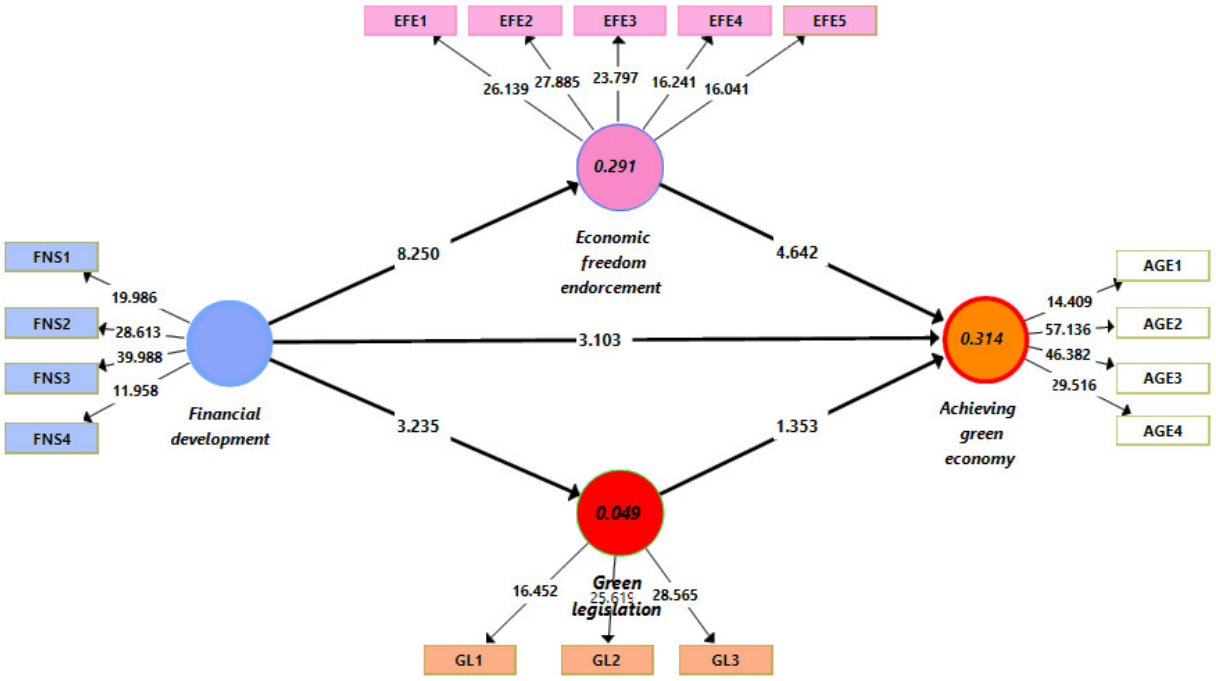

Figure 1. Structural Model Outcomes

Note: 0.049, 0.291 and 0.314 are the Predictive relevance of the model. FNS1-5, AGE1-5, GL1-5, And EFE1-5, refers to components of financial development, green economy, green legislation, and economic freedom enforcement, respectively.

GDP increase, but also prudently dodging strict regulatory frameworks in situations when the country's remedial powers may not be able to sufficiently offset the possible consequences.

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References

Agyabeng-Mensah, Y. A. (2020). Exploring financial performance and green logistics management practices: examining the mediating influences of market, environmental and social performances. *Journal of Cleaner Production*, *258*, 12061. https://doi.org/10.1016/j.jclepro.2020.120613

Ahmed, M., Hafeez, M., Kaium, M. A., Ullah, S., & Ahmad, H. (2023). Do environmental technology and banking sector development matter for green growth? Evidence from top-polluted economies. *Environmental Science and Pollution Research*, *30*(6), 14760–14769. https://doi.org/10.1007/s11356-022-23153-y

Anh Tu, C., & Rasoulinezhad, E. (2022). Energy efficiency financing and the role of green bond: policies for post-Covid period. *China Finance Review International*, *12*(2), 203–218. https://doi.org/10.1108/cfri-03-2021-0052

Chen, Y., Fan, X., & Zhou, Q. (2020). An inverted-U impact of environmental regulations on carbon emissions in China's iron and steel industry: Mechanisms of synergy and innovation effects. *Sustainability*, *12*(3), 1038. https://doi.org/10.3390/su12031038

Dechezleprêtre, A., & Sato, M. (2017). The impacts of environmental regulations on competitiveness. *Journal of the Association of Environmental and Resource Economists*, *1*(4), 521–553. https://doi.org/10.1093/reep/rex013

Fergusson, L. (2006). Institutions for financial development: what are they and where do they come from? *Journal of Economic Surveys*, *20*(1), 27–70. https://doi.org/10.1111/j.0950-0804.2006.00275.x

Gani, A. (2012). The relationship between good governance and carbon dioxide emissions: evidence from developing economies. *Journal of Economic Development*, *37*(1), 77–93. https://doi.org/10.35866/CAUJED.2012.37.1.004

Goulder, L. H., Hafstead, M. A. C., & Williams, R. C., III. (2016). General equilibrium impacts of a federal clean energy standard. *American Economic Journal: Economic Policy*, *8*(2), 186–218. https://doi.org/10.1257/pol.20140011

Law, S. H. (2008). Does a country's openness to trade and capital accounts lead to financial development? Evidence from Malaysia. *Asian Economic Journal*, *22*(2), 161–177. https://doi.org/10.1111/j.1467-8381.2008.00273.x

Liu, H., Zhu, G., & Li, Y. (2021). Research on the impact of environmental risk perception and public participation on evaluation of local government environmental regulation implementation behavior. *Environmental Challenges*, *5*, 100213. https://doi.org/10.1016/j.envc.2021.100213

Liu, Y., Ma, C., & Huang, Z. (2023). Can the digital economy improve green total factor productivity? An empirical study based on Chinese urban data. *Math. Biosci. Eng*, *20*, 6866–6893. http://www.aimspress.com/aimspress-data/mbe/2023/4/PDF/mbe-20-04-296.pdf

MacDonald, A. W., & Hasmath, R. (2020, January). *How citizens order their political mind: contemporary ideology in China*. Southern Political Science Association Annual Conference (San Juan, Puerto Rico). https://doi.org/10.2139/ssrn.3670668

Molla, M. B., Ikporukpo, C. O., & Olatubara, C. O. (2019). Evaluating policy and legal frameworks of urban green infrastructure development in Ethiopia. *Journal of Environmental Assessment Policy and Management*, *21*(03), 1950016. https://doi.org/10.1142/s1464333219500169

North, D. C. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge University Press. https://doi.org/10.1017/cbo9780511808678

Ong, T. S., Lee, A. S., Teh, B. H., & Magsi, H. B. (2019). Environmental innovation, environmental performance and financial performance: Evidence from Malaysian environmental proactive firms. *Sustainability*, *11*(12), 3494. https://doi.org/10.3390/su11123494

Şahinoğlu, K. T., & Yakut, S. G. (2019). Yapısal eşitlik modeli ile özgürlüklerin ekonomik performansa etkisi üzerine bir inceleme. *Ekoist: Journal of Econometrics and Statistics*, *30*, 1–20. https://dergipark.org.tr/en/pub/ekoist/issue/48369/611605

Salman, D., & Ismael, D. (2023). The effect of digital financial inclusion on the green economy: the case of Egypt. *Journal of Economics and Development*, 1859–1879. https://doi.org/10.1108/jed-05-2022-0087/full/html

Schaffartzik, A., Duro, J. A., & Krausmann, F. (2019). Global appropriation of resources causes high international material inequality – Growth is not the solution. *Ecological Economics*, *163*, 9–19. https://doi.org/10.1016/j.ecolecon.2019.05.008

Shah, S. M. A., Jiang, Y., Wu, H., Ahmed, Z., Ullah, I., & Adebayo, T. S. (2021). Linking green human resource practices and environmental economics performance: the role of green economic organizational culture and green psychological climate. *International Journal of Environmental Research and Public Health*, *18*(20), 10953. https://doi.org/10.3390/ijerph182010953

Svaleryd, H., & Vlachos, J. (2002). Markets for risk and openness to trade: how are they related? *Journal of International Economics*, *57*(2), 369–395. https://doi.org/10.1016/s0022-1996(01)00153-2

Tao, H., Tao, M., & Wang, R. (2022). Do education human capital and environmental regulation drive the growth efficiency of the green economy in China? *Sustainability*, *14*(24), 16524. https://doi.org/10.3390/su142416524

Thomas, D. S. G., & Twyman, C. (2005). Equity and justice in climate change adaptation amongst natural-resource-dependent societies. *Global Environmental Change*, *15*(2), 115–124. https://doi.org/10.1016/j.gloenvcha.2004.10.001

Ullah, H., Wang, Z., Mohsin, M., Jiang, W., & Abbas, H. (2022). Multidimensional perspective of green financial innovation between green intellectual capital on sustainable business: the case of Pakistan. *Environmental Science and Pollution Research*, *29*(4), 5552–5568. https://doi.org/10.1007/s11356-021-15919-7

Wackernagel, M., Lin, D., Evans, M., Hanscom, L., & Raven, P. (2019). Defying the footprint oracle: implications of country resource trends. *Sustainability*, *11*(7), 2164. https://doi.org/10.3390/su11072164

Zeng, Y., Wang, F., & Wu, J. (2022). The impact of green finance on urban haze pollution in China: a technological innovation perspective. *Energies*, *15*(3), 801. https://doi.org/10.3390/en15030801

Zhai, X., & An, Y. (2020). Analyzing influencing factors of green transformation in China's manufacturing industry under environmental regulation: A structural equation model. *Journal of Cleaner Production*, *251*, 119760. https://doi.org/10.1016/j.jclepro.2019.119760