INFLUENCE OF GREEN FINANCE ON ENVIRONMENTAL SUSTAINABILITY: LESSONS FROM DEVELOPED TO DEVELOPING COUNTRIES

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Abstract

During the era of globalization when human activities put excessive stress on the environment, an instrument like green finance is much required as it ensures flow of capital towards different sustainable development priorities. This study aims to examine the influence of green finance on environmental sustainability in both developed and developing countries by employing panel ARDL estimation techniques. Panel dataset of developed and developing countries from 1995 to 2021 are considered in this study. Further, this paper portrays a comparable picture of influence of green finance on environmental sustainability between developed and developing countries. The outcomes of panel ARDL estimation technique confirms a significant positive long-run influence of green finance on environmental sustainability in both developed and developing countries. But this this study observes a smaller but favorable influential effect of green finance on environmental sustainability in developing countries. Results of this study recommends policy makers of developing countries to put more focus on green finance at the timing of framing different policies so that we can minimize the pressure on mother nature arise due to economic activities and we can move faster towards the goal of sustainable development.

Keywords: Green Finance; Environmental Sustainability; Panel ARDL. Developed Countries, Developing Countries.

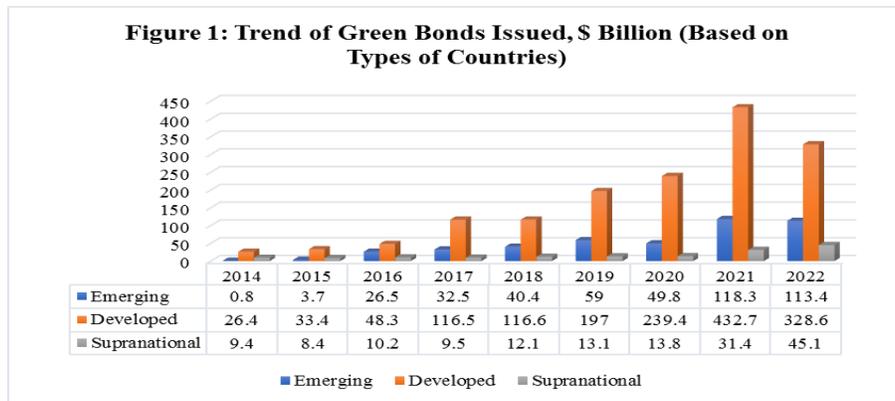*JEL Classification: C33, O52, Q53, Q56*

INTRODUCTION

Over the past 100 years, the pattern of world economy has changed drastically. Countries started shifting their focus from agriculture-based activities to industry-based activities. As a result, the world witnessed a rapid industrial growth in the last century. Along with the expansions of industries, financial sector also emerged as a
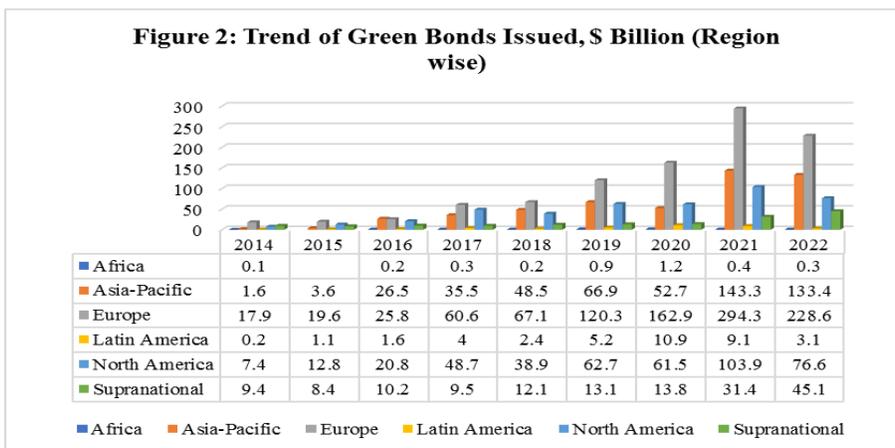
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strong pillar for industrial development. Here, financial sector played a pivotal role in channelizing funds from surplus sector to deficit sector which further accelerate the industrial development. Following the rapid industrial development, dependance on traditional energy sources, excessive utilization on natural resources and other environmentally harmful activities have increased drastically which further present different climate related issues during the last few decades. In order to mitigate the risk of various climate related issues, institutions started transforming their ways of operation and ways of financing. This ultimately leads to introduction of the concept of green finance or climate finance. Green finance or climate finance refers to a new type of financing approach where funds channelizing into various projects that encourage the development of a more sustainable economy. This green financing approach provides economic benefits as well as addresses various climate related issues simultaneously *(Soundarrajan and Vivek, 2016)*. It fosters diffident environment friendly activities which help world to shift to a sustainable society.

Figure 1: Trend of Green Bonds Issued, $ Billion (Based on Types of Countries)

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Emerging	0.8	3.7	26.5	32.5	40.4	59	49.8	118.3	113.4
Developed	26.4	33.4	48.3	116.5	116.6	197	239.4	432.7	328.6
Supranational	9.4	8.4	10.2	9.5	12.1	13.1	13.8	31.4	45.1

Source: Climate Bonds Initiative

Figure 2: Trend of Green Bonds Issued, $ Billion (Region wise)

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Africa	0.1		0.2	0.3	0.2	0.9	1.2	0.4	0.3
Asia-Pacific	1.6	3.6	26.5	35.5	48.5	66.9	52.7	143.3	133.4
Europe	17.9	19.6	25.8	60.6	67.1	120.3	162.9	294.3	228.6
Latin America	0.2	1.1	1.6	4	2.4	5.2	10.9	9.1	3.1
North America	7.4	12.8	20.8	48.7	38.9	62.7	61.5	103.9	76.6
Supranational	9.4	8.4	10.2	9.5	12.1	13.1	13.8	31.4	45.1

Source: Climate Bonds Initiative

Over a past few years the volume of green finance improved remarkably. According to the report published by Climate Policy Initiative the flow of climate finance doubled in just 10 years. From $364 bn in 2010 to $850 bn in 2021. Further this report highlighted the surge in this flow of climate finance happens mainly due to advancement in the renewable energy and transport industries. But it is observed that the developed countries performed better than emerging countries in terms of green finance. In the year 2022, $328.60 bn green finance has mobilized to developed countries whereas only $113.40 bn has mobilized to emerging countries. This shows the strong commitment of developed countries to mobilize funds in different climate protected projects. Similar to this, a region wise disparity in terms of green finance is observed over last nine years. European region significantly outpaces other regions in promoting green finance, which are pertinent to achieving environmental sustainability.

Despite of taking different sustainable initiatives such as green finance, renewable energy production, technological advancement etc., the world has been experiencing several climates related issues. Recently, the ***Emissions Gap Report (2023)*** published by United Nations highlighted an alarming statistic for the global community. According to this report, Global GHG emissions continues to increased and set a new mark of 57.4 GtCO2e in the year 2022. It is notable that the world has already exhausted eight years out of its targeted fifteen years to achieve SDGs. At this vital time, it is pertinent to examine whether or not green finance contributes to bringing environmental sustainability. Therefore, this paper seeks to investigate influence of green finance on environmental sustainability in both developed and developing countries. Further, this paper intends to portray a comparable picture of influence of green finance on environmental sustainability between developed and developing countries.

REVIEW OF LITERATURE

The economic activity and resource exploitation during the last few decades resulted in several kinds of climate-related issues. In this sense, green finance emerged as an innovative type of financing that encourages economic growth without endangering the environment. This innovative way of financing has drawn the interest of global community. Several researchers have conducted their research on green finance and investigated its relationship with several economic and environmental factors such as economic growth, renewable energy consumption, GHG emissions, innovation etc.

Zhou et al. (2020) considered province level panel data of China during 2010 to

2017 to analyze the effect of green finance on economic growth as well as on quality of environment. Results of this study revealed a favorable impact of green finance on economic growth as well as on environment. This implies promotion of green finance presents a win-win situation both for environment and economy.

Wang and Wang (2021) studied how the influence of green finance varies across the structure of industries by employing system GMM approach. Results indicated that green finance has a highest influence on upgrading industrial structure for service industries than primary and secondary industries. Further this study argued for green technological innovation and green infrastructure to get fruitful outcome of green finance.

The study of *Zhao et al. (2022)* used Tobit regression model to examine the relationship between green finance and environmental regulations and green innovation efficiency. In this study researchers are relied on province level data of China during the period from 2011 to 2020. Results indicate that environmental regulations have a favorable impact on green innovation efficiency in all types of regions of China. However, green finance only enhances the efficiency of green innovation in the eastern part of China.

Meo and Abd Karim (2022) studied impact of green finance on carbon dioxide (CO_2) in top ten developed countries using quantile on quantile regression approach. Overall results of his study confirm the favorable influence of green finance on carbon dioxide (CO_2).

The study of *Rasoulinezhad and Taghizadeh-Hesary (2022)* examined the relationship between green finance, carbon emissions and green energy index (GEI) in top ten countries in terms of green finance. Results of this study also showed the importance of green finance to reduce the level of carbon emissions. But in contrast, this study didn't find any causal relationship between green finance and carbon emissions in short run.

Whereas, the study of *Tran (2022)* also found one-way causal relationship between green finance and carbon emissions in Vietnam. This study used VAR model to analyze the influence of green finance on carbon emissions in Vietnam during 1986 to 2019.

The study of *Xiong et al. (2023)* showed that the advancement of green financing is essential to China's attempts to upgrade its industrial structure. This study further documented that this promotional effect is much strong in case of communication

and other electronic equipment manufacturing industry.

After consulting several earlier studies, researchers found that there is no such comprehensive study that employs Panel ARDL method to examine the influence of green finance on environmental sustainability in developed and developing countries. Moreover, no such earlier studies portrayed a comparable picture of influence of green finance on environmental sustainability between developed and developing countries. Therefore, this intends to fill that gap by examining the influence of green finance on environmental sustainability in developed and developing countries by using Panel ARDL estimation technique during 1995 to 2021.

RESEARCH METHODOLOGY

In order to observe the influence green finance on environmental sustainability, the study uses yearly data of top five select European countries based on GDP at market price namely Germany, United Kingdom, France, Italy and Spain. Further, in order to capture the comparable picture of developing countries with respect to influence green finance on environmental sustainability, this study considers three developing countries[1] from European region i.e., Hungary, Poland and Romania. Data for this study is obtained from two widely accepted data base i.e., OECD and World Bank (World Development Indicators, i.e., WDI) database. The select variables and their respective sources are presented in the table 1.

Table 1: Summary of Selected Variables

Variable's Considered	Variable Code	Description of Variable	Source
Carbon Dioxide Emissions (Khan et al., 2022; Tariq & Hassan, 2023)	CO2	CO2 emissions (metric tons per capita) as proxy of environmental sustainability	WDI
Green Finance (Bai et al., 2022; Li et al.,2023)	GF	Expenditure on environment protection (EPEA as % of GDP) as proxy of green finance. The amount of resources invested in projects that reduce, mitigate, or completely eradicate pollution	OECD

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[1] https://www.dfat.gov.au/sites/default/files/list-developing-countries.pdf

		and environmental damage is demonstrated by this EPEA[2].	
Renewable Energy Production (Ohler & Fetters, 2014; Hou et al., 2023)	RENP	Electricity production from renewable sources, excluding hydroelectric (% of total)	WDI
Gross Domestic Product (Asafu-Adjaye et al., 2016; Mngumi et al., 2022; Wu & Song, 2023)	L_GDP	Log of GDP per capita (constant 2015 US$) as proxy of economic growth	WDI

Source: Researchers' own presentation

Model Specification

The functional model can be written as follows:

Carbon Emissions = f (Green Finance, Renewable Energy, Economic Growth)

The below stated econometric model is used in this study:

$CO2_{it} = \beta_0 + \beta_1 GF_{it} + \beta_2 RENP_{it} + \beta_3 L\_GDP_{it} + \varepsilon_{it}$

Where,

$\beta_0, \beta_1, \beta_2, \beta_3 .... \beta_n$ = the model parameters

CO2 = carbon emissions of ith country in t^{th} year (dependent variable).

GF_{it} = Volume of Green finance of ith country in t^{th} year (prime explanatory variable)

RENP = Level of renewable energy production of ith country in t^{th} year (control variable)

L_GDP = Level of economic growth of ith country in t^{th} year (control variable)

ε_{it} = Disturbance term present in the model.

Econometric Tools Used

To satisfy the objectives of this study, following research methodology is used.

At first stage this study checks the presence of unit root in select series by performing Levin–Lin–Chu unit root tests. Then, both long run and short run

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[2] https://stats.oecd.org/OECDStat_Metadata/ShowMetadata.ashx?DataSet=EPEA

relationship between the select variables is estimated by using Panel ARDL model or Pooled Mean Group (PMG) estimation technique.

The long-run relationship model using the PMG estimators is as follows:

$$CO2_{it} = \alpha_i + \sum_{j=1}^{p} \lambda_{ij} \, CO2_{i,\,t-j} + \sum_{j=0}^{q} \delta_{1ij} \, GF_{i,\,t-j} + \sum_{j=0}^{r} \delta_{2ij} \, RENP_{i,\,t-j} + \sum_{j=0}^{s} \delta_{3ij} \, L\_GDP_{i,\,t-j} + \varepsilon_{it}$$

Where, i represents the number of countries (1, 2, ….), t is the number of years (1995-2021), (p,q,r,s) is the optimum time lag, α_i is the countries specific effect, and ε_{it} refer to the remainder error terms.

The short-run relationship with an error correction model is as follows:

$$\Delta CO2_{it} = \alpha_i + \phi_i \, (CO2_{i,\,t-1} - \lambda_1 \, GF_{i,\,t-1} - \lambda_2 \, RENP_{i,\,t-1} - \lambda_3 \, L\_GDP_{i,\,t-1}) + \sum_{j=1}^{p} \lambda_{ij} \, \Delta CO2_{i,\,t-j} + \sum_{j=1}^{q} \delta_{1ij} \, GF_{i,\,t-j} + \sum_{j=0}^{r} \delta_{2ij} \, RENP_{i,\,t-j} + \sum_{j=0}^{s} \delta_{3ij} \, L\_GDP_{i,\,t-j} + \varepsilon_{it}$$

Where λ_i are long-run parameters, and ϕ_i is the parameter for the error-correction term that measures the speed of adjustment to the long-term equilibrium of CO2 due to changes in GF, RENP and L_GDP. ϕ_i indicates the existence of a long-run relationship. Thus, a negative and significant value of ϕ_i shows the existence of a co-integrating relationship among CO2, GF, RENP and L_GDP. All ECM dynamics and terms can freely change. After performing Pooled Mean Group (PMG) estimation technique, stability of the model and the effectiveness of select independent variables is checked through Wald test.

RESULTS AND DISCUSSION

Table 2: Summary of Descriptive Statistics of Selected Variables

Variables	CO2	GF	RENP	L_GDP
Mean	7.1000	0.7805	5.5121	10.4235
Median	7.0564	0.7817	2.2950	10.4384
Maximum	11.0399	1.3765	26.48	10.7683
Minimum	3.8475	0.4363	0.0028	9.9036
Std. Dev.	1.8026	0.1620	7.0608	0.1939
Skewness	0.2419	0.1140	1.6033	-0.4419
Kurtosis	1.9946	3.0474	4.4050	2.6698
Observations	135	135	135	135

Source: Researchers' own estimation

Table 2 presents descriptive statistics of select variables in this study. It demonstrates

that every variable has a positive mean value. Mean and median values of model variables show how close the variables of a normal distribution are. In the case of normal distributions, the differences between the average and the median should not be greater than 10% *(Yitzhaki, 2003; Busu, 2020)*. In the table below, we can see that these values are close, meaning that the variables in the econometric model are following the normal distribution. L_GDP variable has negative value of skewness, indicating that the distribution is left-skewed, with remaining observations i.e., CO_2, GF and RENP on the right tail.

Table 3: Results of Levin, Lin and Chu Test (Panel Unit Root Test)

Variable	Stat.	Probability Value	Order of Integration
CO2	-2.34965	0.0000	At first difference
GF	-2.23735	0.0126	At level
RENP	-2.33067	0.0000	At first difference
L_GDP	-3.60466	0.0002	At level

Source: Researchers' own calculation

Results of LLC unit root test are showed in table 3. As per table out of four selected variables probability value of two variables i.e., GF and L - GDP are significant at level. This indicates GF and L - GDP are stationary at level. Whereas, remaining to two variables are significant at first difference. Now, researchers can perform Panel ARDL technique as variables are all the variables are eighter stationary at level or at first difference.

Table 4: Long-run Estimation Results - Influence of Green Finance on Environmental Sustainability (indicated by CO2) in Developed Countries

Variable	Coefficient	Probability Value
GF	-8.05144	0.0000
RENP	-0.15488	0.0000
L_GDP	6.97632	0.0000

Source: Researchers' own calculation.

Results of long run estimations are showed in table 4 using PMG estimation technique. Here, optimal PMG estimation technique model is selected based on Akaike Information Criterion (AIC). Results demonstrate a long run influence of green finance on carbon emissions in developed countries. As the sing of coefficient value is negative, it denotes favorable influence of green finance on environmental sustainability in developed countries in long run. Similar to this, renewable energy production also shows a favorable impact on environmental sustainability. But in

contrast to this economic growth exhibits a negative effect on environment by enhancing carbon emissions.

Table 5: Short-run Estimation Results - Influence of Green Finance on Environmental Sustainability (indicated by CO2) in Developed Countries

Variable	Coefficient	Probability Value
ECT	-0.54599	0.0496
GF	3.16023	0.0004
RENP	0.12177	0.1969
L_GDP	1.01769	0.7625

Source: Researchers' own calculation.

Results of short run estimations are showed in table 5 using PMG estimation technique. Results demonstrate error correct term (ECT) has a negative sign and its portability value is less than 0.05. Thus, it confirms in long run variables will reach to the equilibrium. But in contrast to results of long run estimation, positive sing of coefficient value denotes positive influence of green finance on carbon emissions in short run.

Table 6: Results of the Wald Test

Test Stat.	Value	Probability Value
F-stat.	77.50391	0.0000
Chi-square	155.0078	0.0000

Source: Researchers' own calculation

Table 7: Results of Jarque Bera Normality Test

Jarque Bera	5.45298
Probability Value	0.06545
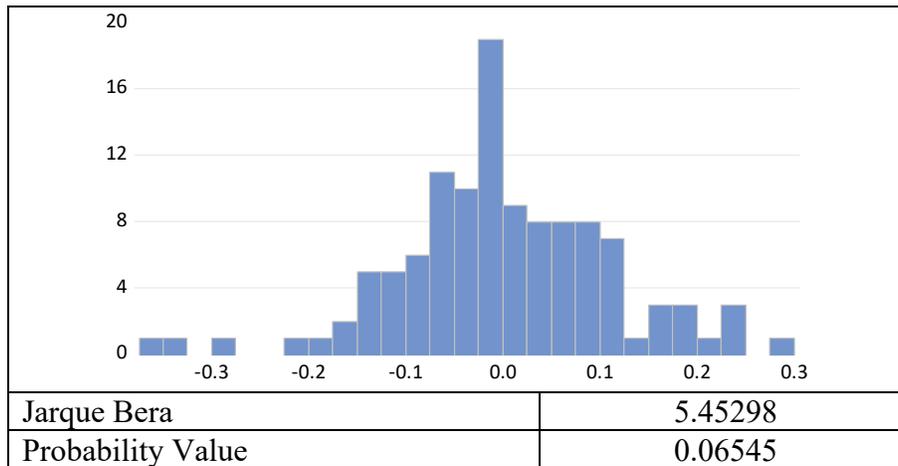
Source: Researchers' own calculation

At last stability of the model and the effectiveness of select independent variables is checked through Wald test. Results of Wald test is demonstrated in table 6. As the portability value of F stat is less than 0.01, it denotes model is stable and independent variables are significant for the model. Further, result of Jarque Bera test confirms model is normal as probability value is more than 0.05 (table 7).

Table 8: Results of Panel ARDL Estimation: Influence of Green Finance on Environmental Sustainability (indicated by CO2) in Developing Countries

Variable	Coefficient	Probability Value
Long-run Estimation Results		
GF	-0.03997	0.0039
RENP	-0.04312	0.0000
L_GDP	0.37011	0.0000
Short-run Estimation Results		
ECT	-0.79377	0.0265
GF	-0.02089	0.0007
RENP	0.04861	0.0027
L_GDP	0.39512	0.0030

Source: Researchers' own calculation

Results of this study already exhibited the favorable influential effect of green finance on environmental sustainability in long run in developed countries. Now, by using the same model, this study estimates the impact of green finance on environmental sustainability in select developing countries. Results of both long run and short run estimations demonstrated the favorable impact of green finance on environmental sustainability in select developing countries (table 8). However, it is important to note that the coefficient of green finance in developing countries is much lower than that of developed countries. In developed countries one-unit increase in green finance leads to 8.05144 unit decrease in carbon emissions (table 4). Whereas, in developing countries one-unit increase in green finance leads to 0.03997 unit decrease in carbon emissions (table 8). It indicates that all countries can benefit from green finance, but the larger investments in green finance will result in more beneficial outcomes for countries regarding environmental sustainability.

CONCLUSION

The concept of green finance prospered significantly during the last few years specifically after introduction of UN SDGs. This green finance emerged as a solution

to mitigate negative externality caused by human activities. It ensures proper flow of finance that address various environmental issues without compromising economic growth. But recent environmental related startling statistics highlighted how the quality of environment is worsening day by day. In this regards, present study intends to investigate the influence of green finance on environmental sustainability in developed countries. Results of Panel ARDL long run estimation revealed a positive influence of green finance on environment in both developed and developing countries. This indicates promotion of green finance improves quality of environment by reducing carbon emissions in long run. This result corroborates with the studies of *Meo and Abd Karim (2022), Rasoulinezhad and Taghizadeh-Hesary (2022), Wu and Song (2023)*. Present study also found a positive impact of renewable energy generation on environment in long run. In contrast to this, the smaller but favorable influential impact of green finance on environmental sustainability is observed in developing countries. This outcome could be the consequence of a number of factors, including population expansion, a reliance on non-renewable energy sources, faster economic growth etc., that increase carbon emissions and offset the positive effects of environmental protection initiatives in developing countries *(Shekhawat et al. 2022; Wang et al. 2024).* This study put forwards different policy recommendations. Policy makers specially policy makers of developing countries should recognize the importance of green finance in securing environmental sustainability and give utmost priority to promote green finance at national as well as at global level. Financial institutions should acknowledge their critical role to develop different green finance instruments and ensure financial assistance for environment positive companies. Government should encourage businesses to adopt various climate protected activities and provide tax benefits for engaging itself in those activities. As several studies found that the benefits of green finance such as renewable energy development, green innovation etc. can't be enjoyed if that particular country doesn't have strong but flexible environment regulations *Huang et al. (2022), Hou et al. (2023)*. This study also urges government to take necessary actions to formulate and implement strong but flexible environmental regulation. Otherwise, fruitful outcomes of green finance and the goal of sustainable development cannot be achieved.

LIMITATIONS OF THIS STUDY

This study has certain drawbacks even though it offers novel insights regarding the influential effect of green finance on environmental sustainability in both developed and developing countries. The yearly data used in this study spans only from 1995 to

2021. Further, this study only covers five developed countries and three developing countries. Present study could demonstrate more accurate image regarding the influential effect of green finance on environmental sustainability if it covered more time periods.

References:

- Asafu-Adjaye, J., Byrne, D., & Alvarez, M. (2016). Economic growth, fossil fuel and non-fossil consumption: A Pooled Mean Group analysis using proxies for capital. *Energy economics, 60,* 345-356.

- Bai, J., Chen, Z., Yan, X., & Zhang, Y. (2022). Research on the impact of green finance on carbon emissions: Evidence from China. *Economic research-Ekonomska istraživanja, 35*(1), 6965-6984.

- Busu, M. (2020). Analyzing the impact of the renewable energy sources on economic growth at the EU level using an ARDL model. *Mathematics, 8*(8), 1367.

- Hou, H., Wang, Y., & Zhang, M. (2023). Green finance drives renewable energy development: empirical evidence from 53 countries worldwide. *Environmental Science and Pollution Research,* 1-18.

- Hou, H., Wang, Y., & Zhang, M. (2023). Green finance drives renewable energy development: empirical evidence from 53 countries worldwide. *Environmental Science and Pollution Research,* 1-18.

- Huang, Y., Chen, C., Lei, L., & Zhang, Y. (2022). Impacts of green finance on green innovation: A spatial and nonlinear perspective. *Journal of Cleaner Production, 365,* 132548.

- Khan, S., Akbar, A., Nasim, I., Hedvičáková, M., & Bashir, F. (2022). Green finance development and environmental sustainability: A panel data analysis. *Frontiers in Environmental Science, 10,* 2134.

- Li, G., Jia, X., Khan, A. A., Khan, S. U., Ali, M. A. S., & Luo, J. (2023). Does green finance promote agricultural green total factor productivity? Considering green credit, green investment, green securities, and carbon finance in China. *Environmental Science and Pollution Research, 30*(13), 36663-36679.

- Meo, M. S., & Abd Karim, M. Z. (2022). The role of green finance in reducing CO2 emissions: An empirical analysis. *Borsa Istanbul Review, 22*(1), 169-178.

- Mngumi, F., Shaorong, S., Shair, F., & Waqas, M. (2022). Does green finance

mitigate the effects of climate variability: role of renewable energy investment and infrastructure. *Environmental Science and Pollution Research, 29*(39), 59287-59299.

- Ohler, A., & Fetters, I. (2014). The causal relationship between renewable electricity generation and GDP growth: A study of energy sources. *Energy economics, 43,* 125-139.

- Rasoulinezhad, E., & Taghizadeh-Hesary, F. (2022). Role of green finance in improving energy efficiency and renewable energy development. *Energy Efficiency, 15*(2), 14.

- Shekhawat, K. K., Yadav, A. K., Sanu, M. S., & Kumar, P. (2022). Key drivers of consumption-based carbon emissions: empirical evidence from SAARC countries. *Environmental Science and Pollution Research, 29*(16), 23206-23224.

- Soundarrajan, P., & Vivek, N. (2016). Green finance for sustainable green economic growth in India. *Agricultural Economics, 62*(1), 35-44.

- Tariq, A., & Hassan, A. (2023). Role of green finance, environmental regulations, and economic development in the transition towards a sustainable environment. *Journal of Cleaner Production, 413,* 137425.

- Tran, Q. H. (2022). The impact of green finance, economic growth and energy usage on CO2 emission in Vietnam–a multivariate time series analysis. *China Finance Review International, 12*(2), 280-296.

- Wang, J., Shan, Y., Cui, C., Zhao, C., Meng, J., & Wang, S. (2024). Investigating the fast energy-related carbon emissions growth in African countries and its drivers. *Applied Energy, 357,* 122494.

- Wang, X., & Wang, Q. (2021). Research on the impact of green finance on the upgrading of China's regional industrial structure from the perspective of sustainable development. *Resources Policy, 74,* 102436.

- Wu, D., & Song, W. (2023). Understanding the role of green finance and innovation in achieving the sustainability paradigm: application of system GMM approach. *Environmental Science and Pollution Research, 30*(14), 41806-41819.

- Xiong, X., Wang, Y., Liu, B., He, W., & Yu, X. (2023). The impact of green finance on the optimization of industrial structure: Evidence from China. *PloS One, 18*(8), e0289844.

- Yitzhaki, S. (2003). Gini's mean difference: A superior measure of variability for non-normal distributions. *Metron, 61*(2), 285-316.

- Zhao, T., Zhou, H., Jiang, J., & Yan, W. (2022). Impact of green finance and

environmental regulations on the green innovation efficiency in China. *Sustainability, 14*(6), 3206.

- Zhou, X., Tang, X., & Zhang, R. (2020). Impact of green finance on economic development and environmental quality: a study based on provincial panel data from China. *Environmental Science and Pollution Research, 27,* 19915-19932.

Website Consulted

- https://edgar.jrc.ec.europa.eu/report_2023

- https://www.unep.org/interactives/emissions-gap-report/2023/

- https://www.climatebonds.net/market/data#:~:text=The%20USA%20was%20the%20largest,France%20owned%20social%20bonds%20(USD54.

- https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-a-decade-of-data/

- https://www.unep.org/interactives/emissions-gap-report/2023/#:~:text=Global%20GHG%20emissions%20increased%20by,and%20now%20exceed%202019%20levels.

- https://databank.worldbank.org/source/world-development-indicators

- https://data.oecd.org/