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Is Globalization Driving the Use of Renewable Energy? A Global Macro Perspective

Czy globalizacja sprzyja rozwojowi energii odnawialnej? Globalna makro-perspektywa

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Abstract

The contemporary world has become increasingly interdependent in terms of economic, social and political development. These various forms of interdependence, usually termed globalization, help disseminate ideas, information, products, and services around the world. Increase in globalization has also increased path-dependence, affecting economic, social, and institutional development and completing some industries, products and technologies to grow in line with the global demand and changing standards. While the role of globalization in economic growth, technology transfer and institutional development is established in literature, the role of globalization in reversing environmental deterioration is not explored yet. The current study looks at how globalization has affected renewable energy use in high, upper middle and lower middle income countries. The empirical results based on a fixed effects model show that countries differ in terms of taking advantage of different types of globalization, i.e., economic, social and political, while transitioning towards renewable energy (RE) projects. Economic globalization has a positive influence on RE usage in the case of high and lower middle income countries, Social globalization in case of high and upper middle income countries. Contrary to the positive impacts of economic and social globalization, political globalization has a negative impact on RE usage in the case of high income countries. In addition to globalization, the effect of government effectiveness, GDP per capita and CO_2 vary across the groups of countries.

Key words: globalization, renewable energy, government effectiveness, GDP per capita, CO_2

Słowa kluczowe: globalizacja, energia odnawialna, skuteczność rządu, PKB per capita, CO_2

Introduction

Globalization is a worldwide phenomenon that impacts many facets of human existence, including social, political, and economic issues (Muhammad & Khan 2021). Industrialization, technology transfer, international trade, and investment are all aided by globalization (Etokakpan et al. 2020; Ibrahiem & Hanafy 2020). For a variety of reasons, rising levels of globalization have the potential not only to boost economic activity but also accelerate the transition to Renewable Energy (RE) technologies, which is in compliance with sustainable development programme and especially fulfil UN Sustainable Development Goal no 7: Affordable and clean energy. The economic, political and social interdependence of countries help to approach the issues of RE technology adoption from multi-pronged strategies. The issue and RE technology adoption entails corporate pressures, financial feasibility issues, public acceptance, political pressure and old-infrastructure that hamper its progress. This multifaceted issue is being resolved through global cooperation and cross-cutting approaches. Some countries, mainly developed and

industrialized, have greater levels of engagement and cooperation in addressing the issues related to RE energy projects in addition to their own capacity to invest and innovate.

Industrialized countries are in a better position to rapidly adopt RE because it necessitates technological advancements allowing for increased output and/or lower unit costs of production from solar and wind sources (Cheon & Urpelainen 2012; Bayer et al., 2013). Given the high degree of innovation required in the generation of renewable energy, highly industrialized countries have historically been the primary source of technological advancements in the field. As the use of fossil-based energy is increasingly becoming costly in addition to negative externalities, the primary focus has been on reducing per unit cost and making the RE projects financially feasible. In this regard, a lot of incentives have been provided by industrialized countries, mainly because these policy incentives are relatively easier to finance and administer in industrialized countries (Awerbuch and Sauter 2006; Lee et al., (2009).

Economic globalization alone supports growth in the renewable energy sector through facilitating investment in infrastructure, international trade, and improvement in technology transfer regulations. Foreign direct investment in renewable energy reached record-high levels –with over USD 23 billion of cross-border investments during the first quarter of 2020 (FDI Markets, 2020). Despite uncertainty during the COVID-19 period, these considerably higher cross-border investments relative to investments in fossil fuels indicate growing investor confidence and the resilience of the renewable energy sector. This also indicates that financing RE projects is becoming less challenging as new financing instruments, international trade and foreign direct investment have turned the renewable energy sector into a driver of economic growth, especially in emerging and developed countries. In this regard, technology transfer regulations are improving to introduce some form of unity, especially through various legislations, such as a global regulatory framework (Koskina et al., 2020; Bin, & Ji 2021).

RE sector was expected to attract lesser investments due to economic turndown during COVID-19 period as significantly low prices of fossil fuel products, the competition is not in favor of RE that generally require more investment in R&D and infrastructure. However, some recent literature that has found positive impact of pandemic on investment in RE sector have highlighted that the decline in prices, employment and supply destruction combined has compelled governments to consider RE projects that are stable, localized and more reliable compared to fossil fuels (Shekhar et. al., 2021; Amir & Khan, 2021; Nawaz & Riaz, 2020). Particularly, the energy importing countries have increased investments in RE sectors during pandemic despite decrease in demand for energy – indicating that in the long-term the governments intend to change their energy mix more towards renewable energy.

Information sharing and cultural closeness are part of social globalization. Information flowing across borders have the ability to enlighten and promote a home country's desire to adopt global best practices in various sectors, including the energy industry. Access to information regarding the implementation of renewable energy projects and their success in replacing non-renewable energy resources not only increases their acceptability in the home country, but it also makes them easier to replicate and build on already developed RE technology. This might lead to significant changes in the home country's energy policy, with a focus on expanding the use of renewable energy and to minimize CO_2 emissions.

Finally, political globalization refers to a country's participation in international treaties as well as the existence of embassies. Given the rising concern about the effects of climate change and its inclusion in agendas of many intergovernmental panels and agreements, it is projected that a more politically globalized country will join global climate change accords and groupings. According to Shahbaz et al., (2018), given recent concerns about environmental sustainability, the flow of information, regulatory frameworks, sanctions, and confidence built through membership in international organizations, countries that join these organizations are more likely to sign treaties addressing mutual interests such as climate change and CO_2 emissions. Furthermore, because RE innovation is vulnerable to environmental externalities, environmental agreements will help to increase RE innovation investments by safeguarding property rights in a way that a single country would not.

Effective environmental governance is also considered an important determinant of Renewable energy consumption (lyulyov et al., 2021; Nchofoung et al., 2021). Generally, a pro-environment government may be more interested and inclined toward policies that boost renewable energy consumption, whereas the liberal capitalist government may not be eco-friendly but rather priorities wealth generation (Murshed et al., 2021). Policies regarding energy consumption from non-renewable resources have dire consequences on the environment and lead to higher levels of pollution. Government initiatives to improve the environment through various policies such as environmental tax that can control the behavior of both consumers and producers, can play an important role in discouraging ecologically harmful activities (Baloch et al., 2021; Nawaz et al., 2021). Moreover, increase in the quality of governance leads to inflow of green investment in the economy and building of renewable energy plants (Adedoyin & Soykan, 2020) On the contrary, some of the studies suggest that strict government regulations in the energy sector led to an outflow of green investments, which limit the extension of renewable energy (Boute, 2020). Overall government effectiveness is important to not only formulate different policies but also effectively implement rules and regulation to encourage RE consumption.

GDP per capita and renewable energy consumption is evident to have a bidirectional relationship (Matei, 2017) as higher GDP per capita tends to increase energy demand it also tends to increase reliance on RE energy sources on other hand the infrastructure investment for renewable energy projects also drive overall economic growth (Awodumi & Adewuyi, 2020; Abbasi et al., 2020A, 2020B). According to the hypothesis of the Environmental Kuznets Curve (EKC), the increase in GDP per capita tends to increase the environmental degradation but in the long run environmental deterioration decreases as the economy grows further indicating that a higher real GDP per capita moves the economy towards more sustainable options and thus more renewable energy consumption (Shahbaz et al., 2018). This argument is supplemented by the fact that renewable energy consumption offers efficient solutions to the problem of climate change and energy security. Moreover, the emerging economies seem to increase the consumption of renewable energy in the wake of issues of energy security (Peng, 2021).
In this study we explore the impact of globalization on renewable energy consumption whereby different aspects of globalization, i.e., economic, social and political globalization is considered separately. This helps us understand the extent to which each type of globalization is important for enhancing RE energy consumption in high, upper middle and lower middle income countries. Moreover, other factors such as GDP per capita, government effectiveness and levels of CO_2 emissions are also used as control factors as these factors also determine the extent to which a county can progress in increasing RE energy consumption. Next section provides details on research methods followed by results and discussions, and conclusion.

1. Research Method

The present study used the panel fixed effects technique to analyze the impact of globalization on renewable energy consumption. The fixed effects model is well behaved in a way that it captures the cross-country differences. For this purpose, this study used the dummy variable for each country because each country has a different level of energy consumption. Thus, we can write equations for the Fixed Effects model as

$$lnRE_{it} = \beta_i + \beta_1 lnEG_{it} + \beta_2 lnSG_{it} + \beta_3 lnPG_{it} + \beta_4 GE_{it} + \gamma_j lnGPC_{it} + \gamma_j lnCO2_{it} + \mu_{it}$$

Where RE is renewable energy consumption, EG is economic globalization, SG is social globalization, PG is political globalization, GE is government effectiveness. GPC is GDP per capita and CO_2 is GDP per capital are control variables used in the model. β_i serve the purpose of capturing the cross-country differences for all countries included in the sample, *ln* represents the variables are in log form.
However, it may always be true that the cross-country differences are captured through separate intercepts. For this case, we need to include an error term along with a common intercept. This approach is suggested by the proponents of the random effects model or the error correction model. It has the feature of identifying intercept separately for each country, that is intercept is of random nature with fixed mean and a random component having mean zero and variance σ^2.

2. Data and Variable Description

The present study uses the time series data from 1996 to 2018 to check the impact of globalization on renewable energy in lower middle, upper middle, and high income countries (a list of countries is provided in the appendix A). The KOF globalization index, developed by Dreher, Axel (2006), is utilized. Economic globalization is measured by the trade flows with other countries, FDI, and portfolio investment, and restrictions on these inflows and outflows. The Social Globalization index is measured by personal contact, information flows, and cultural nearness. Political globalization is measured by the number of embassies in other countries, international organisations membership, UN Security Council missions' meeting membership, and the number of treaties signed with other countries.
There is no evident association between RE use and economic globalization, according to the scatter plot (see figure 1-3). The link is influenced by confounding variables such as the size of the economy, population size, and the consequent overall energy consumption. As a result, economic globalization has a clear positive relationship with the fraction of renewable energy consumption in total energy consumption and RE consumption per capita. Economic globalization levels range significantly between high-income, upper-middle-income, and lower-middle-income countries. Even within these groupings, there is a favourable relationship between economic globalization and renewable energy usage per capita, for example in lower middle-income countries.
In terms of political globalization, there isn't much of a distinction between lower middle and upper middle income countries (figure 4-6).
The scatter plots of RE use, per capita consumption, and share of energy consumption in overall energy consumption demonstrate a clear positive relationship with political globalization. Despite minimal political globalization, Latavia and Iceland have significantly greater RE consumption, per-capita RE consumption, and RE consumption shares in total energy use among developed countries. These countries have low political globalization when compared to the number of lower-middle-income and upper-middle-income countries; this could be because other causes such as economic or social globalization are the main drivers of growing RE consumption.

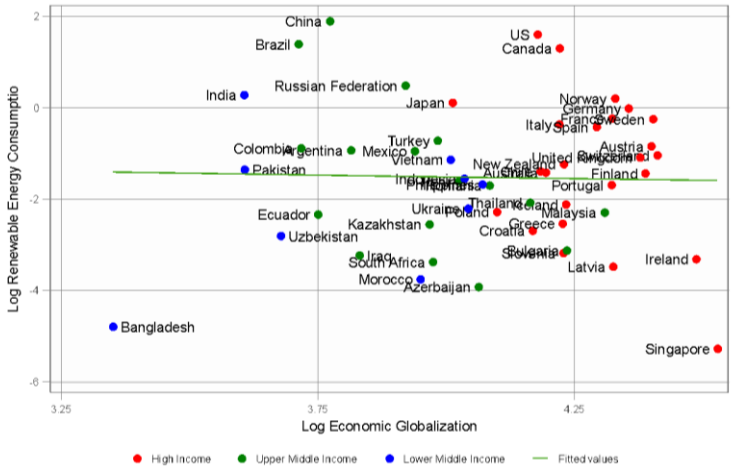

Figure 1. RE consumption and economic globalization

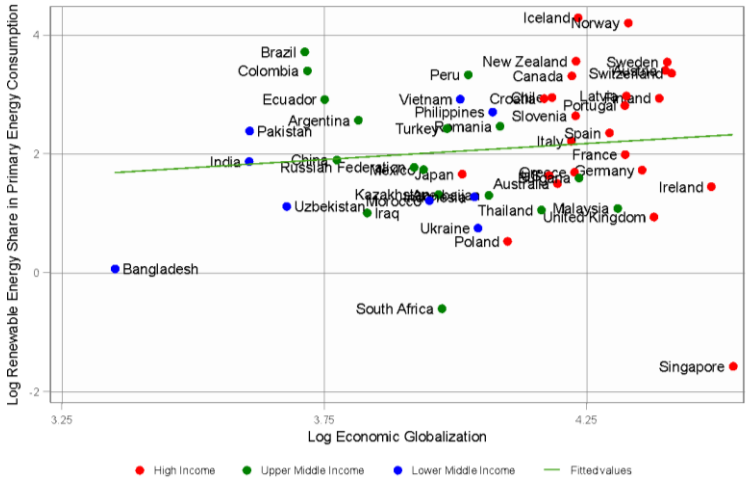

Figure 2. RE share and economic globalization

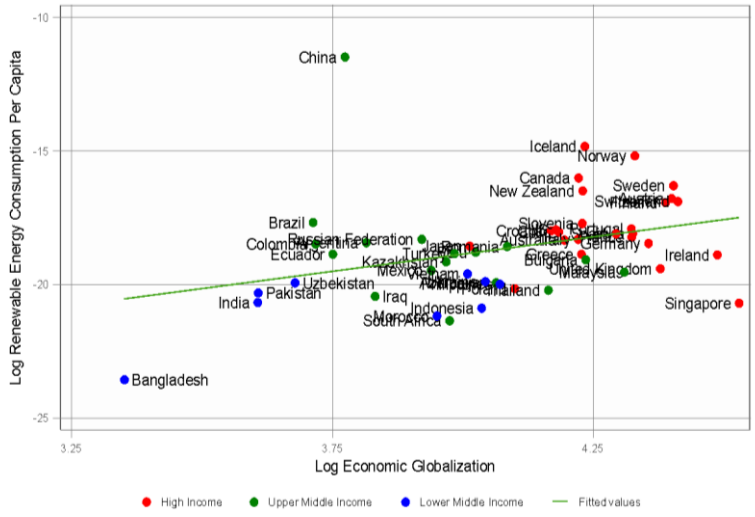

Figure 3. RE consumption per capita and economic globalization

Similarly, social globalization also has positive association with RE consumption (see figure 7-9). Again, lower middle-income countries have lower social globalization compared to middle income countries and high-income countries. Singapore is an outlier in this case, with very low RE energy usage despite having a higher level of social globalization.

This study also takes into account the government role in increasing the renewable energy consumption and for that purpose the government effectiveness is taken as a proxy of government performance. The data of government effectiveness is taken from World governance indicators. GDP per capita, Emission (CO_2) and population are used

as a control variable and data of these variables are taken from the World Bank (2021). The data of Renewable Energy Consumption and Primary Energy (PE) Consumption in exajoules are taken from the International Energy Agency.

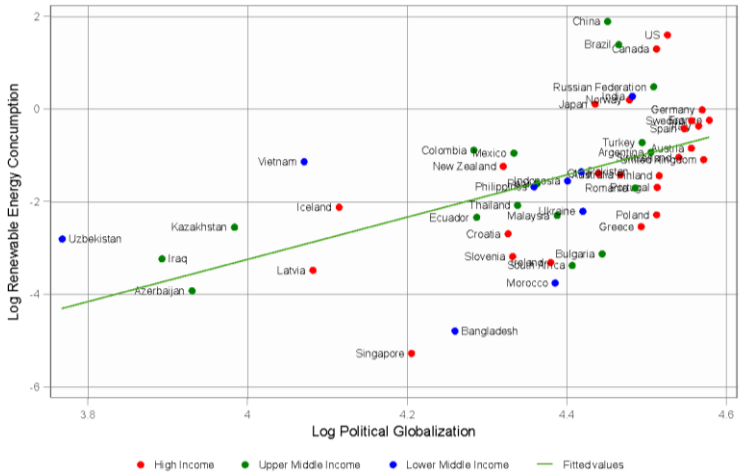

Figure 4. RE consumption and Political globalization

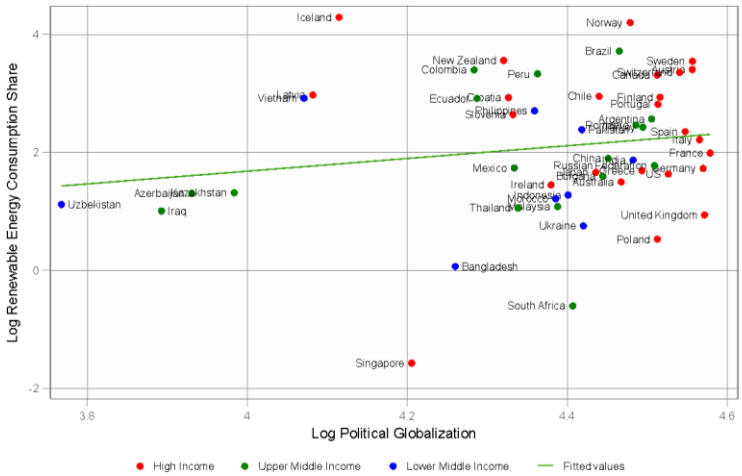

Figure 5. RE consumption share and Political globalization

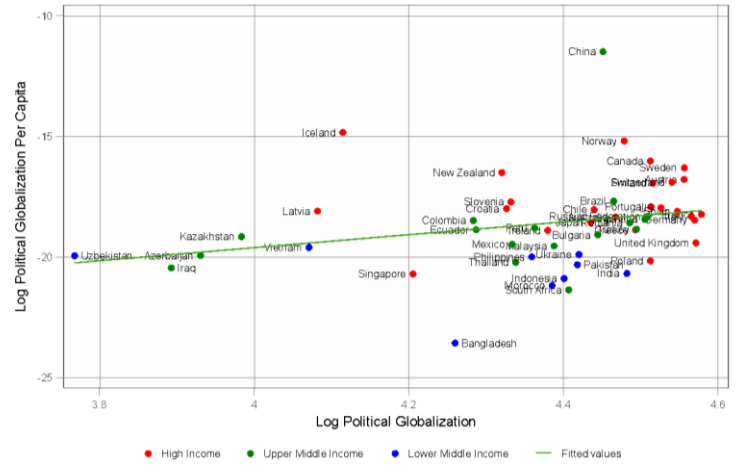

Figure 6. RE consumption per capita and Political globalization

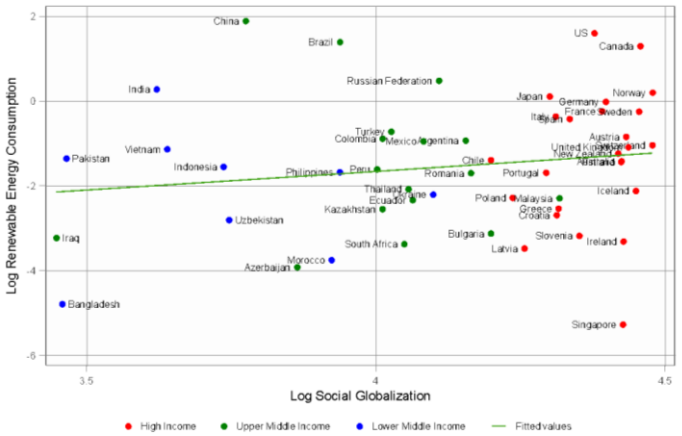

Figure 7. RE consumption and social globalization

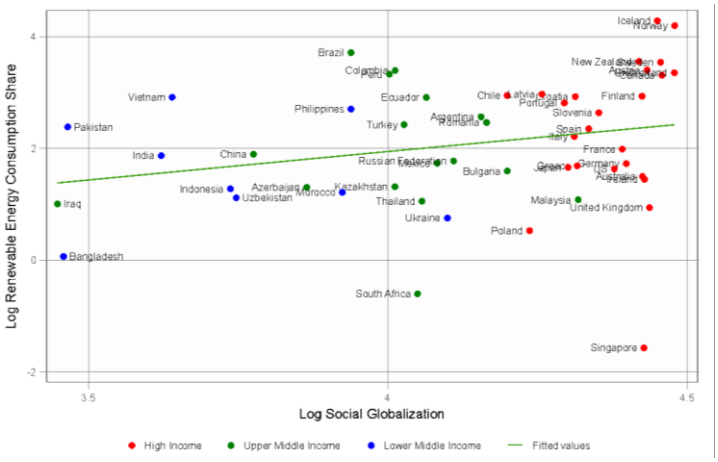

Figure 8. RE consumption share and social globalization

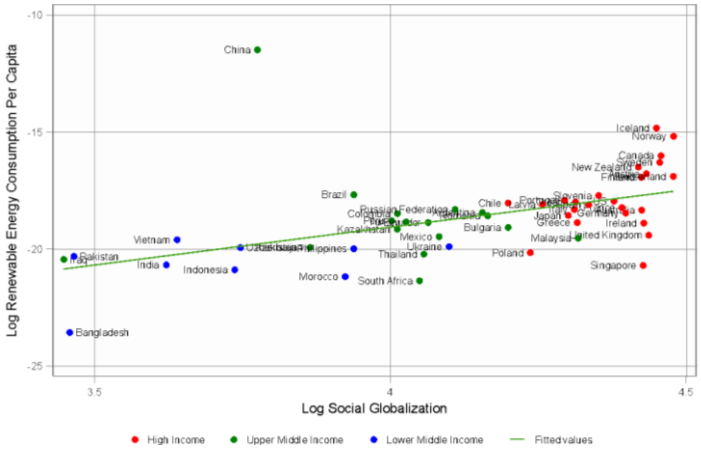

Figure 9. RE consumption per capita and social globalization

3. Results and Discussion

This study investigated the impact of three facets of globalization, i.e. economic, social, and political globalization on the renewable energy consumption relative to primary energy consumption in a panel data of 51 countries. The countries were grouped into high income, upper middle income and lower middle income countries based on world bank classifications and panel fixed effects were employed to achieve our objective. The list of countries is reported in Appendix A.

The descriptive statistics is portrayed in the appendix section. The table (Table 2A) describes the mean, standard deviation, minimum and maximum values of the proposed variables for High income, Middle income and lower middle-income countries. The average value of CO_2 emissions for High income, Middle income and lower middle-income countries are recorded as 0.44 Mtons, 0.632 Mtons, and 0.298 Mtons. The maximum value of CO_2 emission for High income, Middle income and lower middle-income countries are recorded as 5.892 Mtons, 9.653 Mtons and 2.449 Mtons respectively and this indicates a higher value for middle income countries. Economic, Social and Political Globalization for High income countries show an average value of 73.3, 79.9, 86.1, upper middle income countries show an average value of 53.4, 57.0, 77.2 and Lower middle-income countries show an average value of 47.1, 44.08, 74.35 respectively. Similarly, the average values of GDP per capita for High income, Middle income and lower middle-income countries show 33.815 thousand USD, 8.137 thousand USD, and 1.503 thousand USD respectively. The average values of government effectiveness for High income, Middle income and lower middle-income countries show 1.427, -0.074 and -0.406, respectively.

Table 1 presents the results for panel fixed effects. The findings for the combined panel are reported in model 1. Economic and social globalization promote the use of RE relative to PE, with a 1% increase in the economic and social globalization index increasing RE/PE consumption by 0.228% and 1.279%, respectively. On the other hand, political globalization and government effectiveness reduce the RE/PE ratio by 0.297% and 0.291%, respectively. The size of the economy (GDP) and CO_2 emissions have a significant negative relationship with RE/PE use of -1.424% and -1.101%, while their square terms have a significant positive effect of 0.0864% and 0.0257%, respectively. Model 2 reports the same trend for all coefficients except for CO_2 emissions, when only high-income countries are considered. An increase in carbon emissions increases consumption of RE relative to PE in high income countries, while the square term depicts a negative relationship by 0.163%. In model 3, the impact of globalization on RE use in upper middle-income countries is reported. Results reveal that economic and social globalization significantly increased RE/PE utilization by 0.470% and 0.572%, respectively. With increased government effectiveness, RE/PE usage is reduced by 0.326%. Moreover, GDP and CO_2 emissions have a significant negative relationship with RE/PE consumption by 1.619% and 0.707%, respectively; their respective square terms are positively associated by 0.976% and 0.0237%. In the case of low income countries, as reported in model 4, economic globalization and government effectiveness have a significant positive effect on RE/PE use by 0.312% and 0.316%, respectively. Increases in GDP and CO_2 emissions significantly reduce RE usage relative to PE by 2.541% and 0.760%, with their square terms depicting a significant positive association of 0.178% and 0.0646%, respectively.

According to the findings, economic globalization has a positive impact on increasing RE consumption relative to PE usage in all high, upper middle, and low-income countries. The inflow of FDI allows host countries to not only establish businesses and reap profits, but also to become acquainted with advanced energy-efficient production techniques. As a result, economic globalization in the form of FDI inflows, domestic investment, and technological spillovers caused by international trade can play a critical role in extending RE demand (Murshed et al., 2022; Gozgor et al., 2020; Shahbaz et al., 2018; Kutan et al., 2018). Social globalization has a positive and significant association with RE usage relative to PE usage in the overall sample as well as in high and upper middle income countries. This effect, however, is negative but insignificant in low-income countries. The results are similar to Padhan et al. (2020) who postulated that social norms of globalization promote use of RE in OECD countries. Surprisingly, political globalization reduces RE consumption relative to PE consumption in the total sample and high-income countries, though the relationship is insignificant in middle-income countries. Our findings suggest that economic and social globalization are among the main drivers of RE consumption. Moreover, soft power of nations in terms of personal contacts, information dissemination and cultural ties have far reaching repercussions in persuading countries to opt for cleaner and sustainable technologies rather than formal treaties and political connections.

As GDP rises in all groups of countries, consumption of RE relative to PE decreases at an increasing rate. As the economy grows, so does the demand for energy, and countries must rely on both renewable and non-renewable energy sources to meet this increased demand (Ergun et al., 2019; Paramati et al., 2016; Mehrara et al., 2015). Furthermore, in middle and high income countries, government effectiveness has a significant negative relationship with RE use, whereas in lower income countries, the effect is positive. A possible explanation could be that in the low- income countries, successful implementation of government regulations like tax credits on RE production, rebates on installations of RE structures, RE portfolio standards, and establishment of markets for RE certificates encourages the adoption of efficient RE systems (Bowden and Payne, 2010).

Carbon emissions produced by countries have a negative and significant relationship with the use of renewable energy relative to primary energy, and as CO_2 emissions increase, the use of renewable energy relative to primary energy decreases at an increasing rate for middle and low income countries. These countries clearly didn't show much apprehensions about usage of RE compared to PE and could not implement regulations to curb CO_2 emissions (Paramati et al., 2016; Mehrara et al., 2015). On the other hand, as carbon emissions rise, RE consumption relative to PE rises at a slower rate in high-income countries. Concerns about environmental protection grow as

CO_2 emissions rise, encouraging high-income countries to develop and use cleaner RE sources (Omri and Nguyen, 2014).

Table 1. Impact of globalization on Renewable Energy consumption

	(1)	(2)	(3)	(4)
Variables	Overall	High Income Countries	Upper Middle-Income Countries	Lower-Income Countries
lGe	0.228**	0.206	0.470***	0.312**
	(0.111)	(0.247)	(0.151)	(0.156)
lGs	1.279***	4.134***	0.572**	-0.0677
	(0.144)	(0.412)	(0.234)	(0.206)
lGp	-0.297**	-1.709***	-0.119	0.304
	(0.141)	(0.270)	(0.178)	(0.300)
lGdp	-1.424***	-0.720	-1.619***	-2.541***
	(0.159)	(0.504)	(0.418)	(0.595)
lGdp_sqr	0.0864***	0.0372	0.0976***	0.178***
	(0.00847)	(0.0244)	(0.0249)	(0.0405)
Gov_eff	-0.291***	-0.229***	-0.326***	0.316***
	(0.0518)	(0.0745)	(0.0736)	(0.116)
lCO_2	-1.101***	0.163	-0.707***	-0.760***
	(0.159)	(0.409)	(0.253)	(0.236)
lCO_2_sqr	0.0257*	-0.163***	0.0237	0.0646***
	(0.0151)	(0.0433)	(0.0265)	(0.0214)
Constant	3.067***	-6.521***	3.284**	5.969**
	(0.765)	(2.216)	(1.515)	(2.326)
Observations	1,173	575	391	207
R-squared	0.318	0.597	0.230	0.277
Number of countries	51	25	17	9

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Conclusion

An investigation of the impacts of globalization on the usage of renewable energy sources in high, upper-middle, and lower-middle-income countries is presented in this research. Economic, social, and political dimensions of globalization are all considered independently. The fixed effects model results suggest that economic gobalization has positive impact on renewable energy utilisation in upper and lower middle countries. However, it is inconsequential in the case of high income countries. The social globalization has major advantageous effect on renewable energy utilisation in high and upper middle income countries. Nonetheless, the political globalization has adverse impact in high income countries and proven negligible in the upper medium and lower middle income countries. These results show that economic and social globalization is among the key drivers of RE use. Moreover, soft power of nations in terms of human relationships, information distribution and cultural linkages have long-reaching effects in influencing countries to choose cleaner and sustainable technology rather than formal treaties and political connections.

The adverse impact of political globalization in case of high-income countries reflect the current world political system where formulation and execution of rules regarding environmental problems are mainly driven by high-income countries. High income countries that are generally politically strong put relatively more pressure on low-income countries to undertake more responsibilities or at least equal to high income countries in environment protection. Although high income countries are the mainly responsible for current global environmental issues, through the political influence they protect their economic interest, continue low-cost albeit harmful production methods. Correspondingly, in high and upper middle-income countries, government effectiveness negatively affects renewable energy consumption, whereas in lower middle-income countries, it has a positive link.

The relationship between growing income and emissions levels is examined across three groups of countries, and it shows that the effect varies. In low-income countries, the successful implementation of government regulations like tax credits for renewable energy production, rebates for the installation of renewable energy structures, standards for renewable energy portfolios, and the establishment of markets for renewable energy certificates may encourage the adoption of efficient renewable energy systems. As nations' carbon emissions rise, so does their usage of renewable energy relative to primary energy, and in countries with medium and low incomes, this trend is accelerating. These countries showed less concern about the use of RE in comparison to PE and were unable to put rules in place to reduce CO_2 emissions. On the other hand, when carbon emissions grow, RE consumption

relative to PE climbs at a slower pace in high-income countries. Concerns about environmental protection increase as CO_2 emissions rise, driving high-income countries to develop and employ cleaner RE sources.
It is more vital than ever to achieve economic success, and globalization is playing a significant part in economic growth. Our findings suggest that nations should place a priority on renewable energy sources in addition to reaping the advantages of globalization for economic growth. Furthermore, this study recommends that the government should not only focus on increasing renewable energy generation but also motivate consumers to decrease the use of non-renewable energy through various incentives that encourage switching to renewable energy (e.g. Hybrid Car, roof top solar panels, etc.).
In the future research it could be very interesting to find out, what changes brought to the subject COVID-19 pandemic.

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Appendix

Table 1. List of High Income, Middle and Lower middle income countries

HIC	MIC	LMIC
Australia	Argentina	India
Austria	Azerbaijan	Indonesia
Canada	Brazil	Morocco
Chile	Bulgaria	Pakistan
Croatia	Colombia	Philippines
Finland	Ecuador	Ukraine
France	Iraq	Uzbekistan
Germany	Kazakhstan	Vietnam
Greece	Malaysia	Bangladesh
Iceland	Mexico	
Ireland	Peru	
Italy	Romania	
Japan	South Africa	
Latvia	Thailand	
New Zealand	Turkey	
Norway	Russian Federation	
Poland	China	
Portugal		
Singapore		
Slovenia		
Spain		
Sweden		
Switzerland		
United Kingdom		
USA		

Table 2. Descriptive Statistics

Countries	Carbon Dioxide Emissions (M.tons)				Globalization E			
	Mean	St.Dev	Min	Max	Mean	St.Dev	Min	Max
Australia	0.381	0.024	0.024	0.415	66.34	2.29	61.13	70.04
Austria	0.066	0.005	0.005	0.075	81.45	1.50	1.50	83.98
Canada	0.549	0.020	0.020	0.578	68.16	1.51	1.51	71.08
Chile	0.072	0.015	0.015	0.094	66.18	7.45	7.45	74.65
Croatia	0.018	0.002	0.002	0.022	65.13	6.70	6.70	74.84
Finland	0.058	0.008	0.008	0.075	80.52	2.02	2.02	83.22
France	0.357	0.030	0.030	0.390	75.47	1.85	1.85	79.21
Germany	0.816	0.048	0.048	0.872	77.96	2.30	2.30	81.02
Greece	0.094	0.014	0.014	0.113	68.64	3.45	3.45	73.83
Iceland	0.003	0.000	0.000	0.004	69.03	2.83	2.83	75.31
Ireland	0.042	0.004	0.004	0.048	88.88	1.06	1.06	91.07
Italy	0.403	0.050	0.050	0.470	68.09	2.06	2.06	72.79
Japan	1.230	0.047	0.047	1.297	55.70	6.59	6.59	67.72
Latvia	0.008	0.000	0.000	0.009	75.75	4.67	4.67	81.98
New Zealand	0.035	0.002	0.002	0.038	68.69	1.39	1.39	71.55
Norway	0.037	0.001	0.001	0.039	75.89	1.36	1.36	78.33
Poland	0.314	0.014	0.014	0.324	61.33	9.87	9.87	73.27
Portugal	0.056	0.005	0.005	0.065	75.42	2.47	2.47	80.38
Singapore	0.154	0.044	0.044	0.229	92.67	1.52	1.52	94.63
Slovenia	0.015	0.001	0.001	0.017	69.00	6.34	6.34	77.48
Spain	0.311	0.035	0.035	0.381	73.26	2.30	2.30	77.32
Sweden	0.056	0.007	0.007	0.065	81.75	2.01	2.01	84.35
Switzerland	0.042	0.002	0.002	0.046	82.46	2.43	2.43	86.94
United Kingdom	0.526	0.061	0.061	0.585	79.69	1.57	1.57	82.02
US	5.486	0.280	0.280	5.892	65.28	1.79	1.79	68.21
Argentina	0.158	0.026	0.118	0.193	45.73	5.75	35.85	53.60
Azerbaijan	0.036	0.005	0.027	0.043	58.89	9.01	39.43	72.04
Brazil	0.375	0.074	0.273	0.508	41.20	4.42	31.01	47.47
Bulgaria	0.047	0.004	0.041	0.057	69.38	6.71	58.18	78.06
Colombia	0.068	0.014	0.052	0.093	41.45	4.96	32.76	48.93
Ecuador	0.030	0.006	0.022	0.040	42.73	4.21	37.03	53.35
Iraq	0.112	0.032	0.064	0.171	46.36	4.76	40.20	53.56
Kazakhstan	0.173	0.045	0.104	0.255	53.15	5.62	40.14	60.99
Malaysia	0.188	0.052	0.101	0.258	74.37	1.69	70.42	77.03
Mexico	0.422	0.057	0.315	0.486	51.62	5.33	43.25	60.00
Peru	0.036	0.012	0.025	0.057	56.21	5.60	47.83	64.28
Romania	0.089	0.015	0.070	0.126	60.33	10.34	41.64	72.22
South Africa	0.428	0.045	0.357	0.476	53.61	6.17	35.20	58.69
Thailand	0.231	0.047	0.164	0.300	64.35	2.58	55.94	67.25
Turkey	0.264	0.070	0.175	0.397	53.75	2.41	50.04	58.00
Russian Federation	1.530	0.054	1.445	1.606	50.52	2.91	44.15	55.29
China	6.552	2.535	3.163	9.653	43.77	4.52	34.47	51.88
India	1.474	0.530	0.817	2.449	37.91	8.40	21.19	46.31
Indonesia	0.392	0.111	0.216	0.575	56.92	6.55	48.52	70.76
Morocco	0.044	0.011	0.028	0.062	52.19	5.26	44.04	60.44
Pakistan	0.131	0.033	0.085	0.198	36.98	2.89	33.61	43.89
Philippines	0.082	0.021	0.062	0.134	58.72	3.89	52.56	64.63
Ukraine	0.297	0.053	0.188	0.366	57.36	6.55	42.93	66.01
Uzbekistan	0.111	0.007	0.098	0.125	39.85	5.04	32.91	56.92
Vietnam	0.105	0.060	0.032	0.241	55.27	4.79	46.94	61.27
Bangladesh	0.046	0.022	0.018	0.089	28.87	4.39	20.98	34.94
Australia	83.58	4.10	75.43	88.22	87.13	1.74	83.12	89.17
Austria	84.22	3.24	3.24	88.15	95.20	0.62	0.62	96.04
Canada	86.32	3.20	3.20	90.21	91.13	0.75	0.75	92.42
Australia	83.58	4.10	75.43	88.22	87.13	1.74	83.12	89.17

Countries	Globalization S				Globalization P			
	Mean	St.Dev	Min	Max	Mean	St.Dev	Min	Max
Austria	84.22	3.24	3.24	88.15	95.20	0.62	0.62	96.04
Canada	86.32	3.20	3.20	90.21	91.13	0.75	0.75	92.42
Chile	66.99	6.57	6.57	75.06	84.80	2.68	2.68	87.89
Croatia	74.98	6.51	6.51	82.94	76.64	9.90	9.90	85.79
Finland	83.49	3.07	3.07	87.19	91.45	1.17	1.17	93.65
France	80.90	5.04	5.04	87.00	97.37	0.69	0.69	98.06
Germany	81.47	5.44	5.44	87.99	96.50	0.75	0.75	97.90
Greece	75.12	5.72	5.72	82.83	89.42	1.72	1.72	92.04
Iceland	85.61	1.91	1.91	89.76	61.43	4.54	4.54	69.73
Ireland	83.89	4.25	4.25	89.51	79.81	1.13	1.13	81.53
Italy	74.69	4.78	4.78	80.56	96.09	1.86	1.86	97.97
Japan	73.92	4.70	4.70	80.22	84.43	2.43	2.43	88.26
Latvia	71.09	7.82	7.82	80.50	60.04	9.06	9.06	77.27
New Zealand	83.09	3.43	3.43	86.70	75.24	1.89	1.89	77.57
Norway	88.15	2.66	2.66	91.19	88.11	1.27	1.27	89.91
Poland	69.53	6.73	6.73	78.31	91.15	1.07	1.07	93.59
Portugal	73.54	5.69	5.69	81.08	91.22	1.52	1.52	93.18
Singapore	83.79	3.75	3.75	88.70	67.19	4.18	4.18	72.86
Slovenia	77.76	4.51	4.51	83.40	76.61	6.27	6.27	83.71
Spain	76.54	5.32	5.32	82.92	94.39	1.99	1.99	96.96
Sweden	86.10	2.31	2.31	89.75	95.23	0.76	0.76	96.43
Switzerland	88.10	2.55	2.55	91.72	93.72	1.07	1.07	95.62
United Kingdom	84.62	4.52	4.52	89.51	96.68	0.40	0.40	97.64
US	79.84	5.05	5.05	86.56	92.39	0.30	0.30	92.89
Argentina	64.22	7.60	49.78	72.68	88.08	11.94	33.40	91.47
Azerbaijan	48.67	9.82	32.51	59.62	52.08	10.94	33.75	73.03
Brazil	52.07	8.90	36.61	63.09	86.95	2.64	83.49	90.54
Bulgaria	67.24	9.18	51.79	77.33	85.16	1.77	80.38	87.94
Colombia	55.61	6.46	46.55	62.89	72.77	6.42	61.58	79.78
Ecuador	58.69	7.67	44.38	67.11	73.03	6.35	60.81	78.00
Iraq	32.05	6.37	23.16	41.03	49.16	3.51	44.29	54.91
Kazakhstan	56.10	10.01	42.61	68.69	55.00	12.00	37.38	70.76
Malaysia	75.33	7.17	62.91	83.40	80.57	4.24	72.47	84.88
Mexico	59.75	7.40	44.50	67.22	76.43	5.84	68.48	87.76
Peru	55.24	7.57	39.87	62.82	78.74	6.45	65.12	84.32
Romania	65.21	10.52	46.85	76.32	88.75	2.11	85.25	91.07
South Africa	57.82	7.53	46.83	67.20	82.58	9.37	58.02	89.66
Thailand	58.37	8.50	44.73	69.63	76.71	4.71	65.94	81.29
Turkey	56.79	9.05	41.62	66.85	89.54	2.59	84.42	92.70
Russian Federation	61.54	8.84	47.23	72.14	90.83	1.62	87.91	92.69
China	45.10	10.99	22.55	57.82	85.81	4.13	77.47	90.28
India	39.03	11.13	21.61	51.89	88.49	3.49	81.36	92.24
Indonesia	42.80	8.51	28.66	53.02	81.62	4.27	75.20	87.60
Morocco	51.35	8.97	36.55	65.10	80.71	8.31	63.61	87.11
Pakistan	33.20	8.74	17.33	42.61	82.96	2.43	78.05	85.32
Philippines	51.63	5.77	39.18	61.45	78.46	6.53	62.46	83.35
Ukraine	61.04	9.69	45.77	72.77	83.25	5.06	71.56	88.56
Uzbekistan	42.63	4.73	30.97	51.13	43.65	5.67	32.85	50.19
Vietnam	41.09	15.31	18.60	61.55	59.16	8.54	49.43	73.76
Bangladesh	33.98	12.05	16.63	48.12	70.84	2.69	65.82	74.11
Australia	40.74	17.32	19.49	68.15	1.71	0.11	1.54	2.01
Austria	39.94	10.03	10.03	51.72	1.76	0.19	0.19	2.04
Canada	37.48	11.08	11.08	52.67	1.85	0.10	0.10	2.03

Countries	GDP (000 USD)				Government Effectiveness			
	Mean	St.Dev	Min	Max	Mean	St.Dev	Min	Max
Chile	9.85	4.25	4.25	15.89	1.17	0.08	0.08	1.28
Croatia	10.62	3.77	3.77	16.30	0.46	0.16	0.07	0.71
Finland	39.44	10.05	10.05	53.55	2.10	0.11	0.11	2.26
France	34.67	7.72	7.72	45.33	1.55	0.16	0.16	1.84
Germany	36.93	8.42	8.42	47.96	1.61	0.12	0.12	1.89
Greece	20.11	5.75	5.75	32.00	0.54	0.20	0.16	0.82
Iceland	47.13	13.81	13.81	74.47	1.81	0.30	0.30	2.34
Ireland	46.94	15.34	15.34	79.07	1.55	0.14	0.14	1.74
Italy	30.47	6.40	6.40	40.78	0.58	0.19	0.19	0.80
Japan	38.69	4.33	4.33	49.15	1.40	0.24	0.24	1.82
Latvia	9.80	5.19	2.97	17.85	0.67	0.23	0.23	1.09
New Zealand	29.09	10.66	10.66	44.57	1.78	0.09	0.09	1.96
Norway	68.17	23.45	23.45	102.9	1.91	0.07	0.07	2.08
Poland	9.57	3.98	3.98	15.47	0.56	0.11	0.11	0.75
Portugal	18.34	4.48	4.48	24.85	1.10	0.11	0.11	1.33
Singapore	39.52	15.21	15.21	66.68	2.12	0.16	0.16	2.44
Slovenia	18.84	5.80	5.80	27.48	0.99	0.12	0.12	1.19
Spain	24.77	6.57	6.57	35.37	1.33	0.39	0.39	1.92
Sweden	45.36	11.44	11.44	61.13	1.92	0.14	0.14	2.12
Switzerland	65.13	18.98	18.98	91.25	1.98	0.09	0.09	2.18
United Kingdom	38.07	7.16	7.16	50.44	1.72	0.17	0.17	1.95
US	45.72	8.95	8.95	63.06	1.51	0.22	0.22	2.00
Argentina	9.01	3.50	2.59	14.61	-0.02	0.21	-0.32	0.48
Azerbaijan	3.44	2.72	0.41	7.89	-0.67	0.27	-1.01	-0.16
Brazil	7.34	3.45	2.83	13.25	-0.09	0.15	-0.45	0.20
Bulgaria	5.06	2.78	1.36	9.43	0.08	0.11	-0.20	0.25
Colombia	4.71	2.15	2.21	8.22	-0.16	0.15	-0.46	0.07
Ecuador	3.91	1.76	1.45	6.38	-0.71	0.25	-1.10	-0.26
Iraq	3.40	2.17	0.50	7.08	-1.55	0.38	-2.26	-1.10
Kazakhstan	6.23	4.40	1.13	13.89	-0.50	0.30	-0.96	0.02
Malaysia	7.24	2.93	3.26	11.38	1.03	0.17	0.54	1.27
Mexico	8.34	1.82	4.41	10.93	0.17	0.12	-0.16	0.36
Peru	4.09	1.98	1.92	6.96	-0.32	0.24	-0.73	0.17
Romania	6.23	3.76	1.58	12.40	-0.21	0.17	-0.57	0.16
South Africa	5.15	1.67	2.50	8.01	0.54	0.20	0.29	1.02
Thailand	4.07	1.79	1.85	7.30	0.31	0.10	0.09	0.46
Turkey	7.95	3.42	3.05	12.61	0.12	0.19	-0.26	0.41
Russian Federation	7.56	4.89	1.33	15.97	-0.39	0.18	-0.73	0.00
China	44.61	28.76	15.65	93.02	1.09	0.33	0.39	1.47
India	1.02	0.55	0.40	2.00	-0.05	0.12	-0.21	0.28
Indonesia	2.14	1.26	0.46	3.89	-0.31	0.22	-0.71	0.18
Morocco	2.32	0.72	1.33	3.23	-0.13	0.07	-0.28	0.00
Pakistan	0.90	0.35	0.45	1.48	-0.56	0.20	-0.82	-0.17
Philippines	1.90	0.85	0.97	3.25	-0.05	0.14	-0.31	0.19
Ukraine	2.14	1.17	0.64	4.03	-0.62	0.13	-0.88	-0.41
Uzbekistan	1.22	0.79	0.38	2.62	-0.96	0.28	-1.40	-0.55
Vietnam	1.13	0.76	0.32	2.57	-0.28	0.19	-0.58	0.07
Bangladesh	0.75	0.41	0.39	1.70	-0.70	0.13	-0.91	-0.32