Globalization, Environmental Sustainability and Income Inequality in ECOWAS: A Casual Approach

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Abstract

Over the last years, developmental economists, policymakers, and stakeholders have focused on the macroeconomic effects of globalization, environmental sustainability and income inequality in the developing economies. Despite globalization and environment sustainability being recognized as factors of income inequality, studies on ECOWAS region are scarce and contradictory due to inappropriateness of proxies and methodologies. This study investigates the causal relationship among globalization, environmental sustainability, and income inequality in ECOWAS within the periods 1996-2019. Using the panel Granger casualty estimator, the findings showed that environmental sustainability and globalization have no causal link with income inequality. Trade openness has a uni-causal link with carbon emissions. Also, carbon emissions Granger cause changes in ecological footprints, implying that environmental policies aimed at reducing CO_2 emissions can positively impact ecological footprints. As well, income growth Granger causes increased globalization, implying that policies promoting income growth can foster globalization. The study recommends that environmental friendly policies such as renewable energy incentives and carbon pricing to reduce carbon emissions while promoting pro-poor growth plans. Also, green trade initiatives that align with climate goals as well as trade agreements need to be implemented to promote sustainable practices.

Keywords: Trade, FDI, KOF globalization index, CO_2 emissions, ecological footprint, inequality.

1. Introduction

The phenomenon of globalization has had a transformative impact on the global landscape in recent decades. According to Chancel *et al.* (2022), globalization has resulted in the amalgamation of economies, cultures, and communities worldwide. Within the Economic Community of West African States (ECOWAS), which encompasses a collection of 15 nations with distinct characteristics, the phenomenon of globalization has materialized in a multitude of ways. These include heightened levels of trade and foreign direct investment (FDI), as well as the dissemination of information technology and cultural interactions (Fong and Leibrecht, 2019). The aforementioned occurrence resulted in both potential benefits and obstacles for the region, so yielding significant ramifications for the distribution of income and the preservation of the ecosystem.

The Economic Community of West African States (ECOWAS), established in 1975, has consistently endeavoured to foster regional integration, economic cooperation, and development within its constituent nations (Ekanayake *et al.*, 2023). The region has adopted globalization as a strategy to promote economic development, alleviate poverty, and improve quality of life. The implementation of policies designed to promote trade liberalization, foreign direct investment, and the cultivation of economic interdependence has emerged as a prevalent approach within the ECOWAS nations.

Globalization, though, is a complex process, and its effects on society and economies are not consistent (Atkinson, 2019). Although it possesses the capacity to foster economic development and alleviate poverty, it also has the propensity to exacerbate inequalities in the distribution of income and wealth (Fields, 2018). The implications of globalization hold significant relevance within an area that exhibits a vast spectrum of income disparities, varying degrees of economic advancement, and a multitude of environmental complexities.

Environmental sustainability is a crucial aspect of development, particularly in a global context characterized by the pressing issues of climate change and ecological degradation (Shobande and Asongu, 2021). The ECOWAS region exhibits distinctive environmental difficulties, encompassing deforestation, desertification, and susceptibility to climate-related phenomena like droughts and floods. The phenomenon of globalization has been seen to have a direct impact on economic activity,

resulting in a potential rise in resource consumption, pollution levels, and habitat degradation. Consequently, this poses a significant threat to the long-term viability of the environment, which serves as a crucial foundation for the sustenance of the populations residing in the respective region.

Income inequality, another significant aspect of the socio-economic landscape in ECOWAS, can both shape and be shaped by globalization. The topic of resource and opportunity distribution, both within and among nations, is a multifaceted matter that has significant implications for social cohesion and political stability. Comprehending the complex interplay between globalization and income inequality is crucial in order to devise efficacious strategies that foster equitable advancement within the region.

This study seeks to examine the relationships among globalization, environmental sustainability, and income inequality within the Economic Community of West African States (ECOWAS), considering the intricate processes at play. In order to accomplish this, a rigorous method to causal analysis is employed, incorporating established indicators such as the KOF globalization index, foreign direct investment (FDI), trade openness, the Gini index for measuring income inequality, as well as environmental metrics including carbon emissions and ecological footprint. In addition, we take into consideration a set of control variables, including income, domestic credit to the private sector, institutional quality, and energy use, in order to address potential confounding factors.

2. Literature Review

The concept of globalization encompasses various dimensions and is an intricate phenomenon that entails the increasing interdependence of economies, cultures, and communities at a worldwide level (Nunes, 2020). The concept incorporates multiple dimensions. Economic globalization pertains to the heightened movement of commodities, services, capital, and technology across international borders. The driving forces behind this phenomenon are trade liberalization, foreign direct investment (FDI), and the integration of financial systems. The primary objective of economic globalization is to improve economic efficiency, foster economic growth, and diminish obstacles to international trade (Philips et.al, 2019). Social globalization on the other hand refers to the

dissemination of ideas, information, and cultural aspects among different nations. The phenomenon encompasses the transfer of knowledge, technology, and cultural practices. The process of social globalization is enabled by the progress made in communication technologies, media platforms, and international travel. More importantly, Political globalization is a phenomenon characterized by the increasing interconnectedness and interdependence of nation-states and international institutions in their efforts to tackle global issues. The concept encompasses collaborative efforts pertaining to matters such as climate change, human rights, and global security. The objective of political globalization is to promote global peace, stability, and collaboration.

The concept of environmental sustainability pertains to the enduring ability of natural ecosystems to uphold their ecological balance while simultaneously meeting the requirements of human beings and economic endeavours. The fundamental principles and measurable factors associated with environmental sustainability encompass:

Carbon emissions the discharge of carbon dioxide (CO_2) and additional greenhouse gases into the Earth's atmosphere due to human activity, with a special emphasis on the combustion of fossil fuels. Elevated levels of carbon emissions are a significant factor in the phenomenon of climate change and its associated consequence of global warming.

The ecological footprint is a metric used to quantify the natural resources and biocapacity necessary to sustain the consumption habits of a specific population. The assessment evaluates the level of demand exerted on ecosystems in relation to their capacity to renew and sustainably provide resources.

The concept of environmental sustainability comprises several endeavours aimed at the preservation of biodiversity, the protection of ecosystems, and the mitigation of habitat degradation. The primary objective of conservation programmes is to protect the wide range of species and habitats that play a crucial role in maintaining the ecological equilibrium of the world.

Income inequality refers to the uneven distribution of income among individuals or families within a specific society or geographical area. Typically, the measurement of this phenomenon is conducted by the

utilization of diverse indices, among which the Gini index stands out as one of the most extensively utilized metrics. The Gini index is a measure that varies between 0 and 1, with 0 indicating a state of complete income equality and 1 indicating a state of complete income inequality. Income disparity can take on various manifestations:

Horizontal Inequality refers to the unequal distribution of income among various groups within a society, including but not limited to urban and rural populations, ethnic or racial groups, and gender-based income discrepancies.

Vertical Inequality refers to variations in income levels along the income distribution curve, encompassing the rich-poor divide. It examines how income is distributed among individuals or households from the lowest to the highest income strata.

Understanding these conceptual foundations is crucial for investigating the complex relationships among globalization, income inequality, and environmental sustainability within the specific context of ECOWAS. The interplay of these factors is complex, and a thorough examination of their dynamics is crucial for the formulation of successful policies and initiatives that foster equilibrium and long-term sustainability in the region.

The *Stolper-Samuelson Theorem*, formulated by economists Wolfgang Stolper and Paul Samuelson, which posits that the process of trade liberalization has the potential to induce alterations in the relative pricing of factors of production. In a region characterized by an abundance of labour such as ECOWAS, engaging in trade has the potential to result in an increase in salaries for unskilled labour, which in turn could contribute to a reduction in income inequality (Stolper and Samuelson, 1941). The *Heckscher-Ohlin model*, proposed by Heckscher and Ohlin in 1919, expands upon the Stolper-Samuelson theorem by positing that the liberalization of trade can result in a rise in income inequality, provided that there exists an uneven allocation of inputs of production, namely capital and labour, in a given nation (Heckscher, 1991).

The *Environmental Kuznets Curve (EKC)* theory proposes a curvilinear association between the level of economic development and the extent of environmental deterioration, characterized by an inverted U-shaped pattern. In the early stages of a country's industrialization process, there

is a tendency for environmental degradation to intensify. However, as the country's economic levels rise, there is a subsequent improvement in the state of the environment (Grossman and Krueger, 1995). Nevertheless, the empirical evidence regarding the Environmental Kuznets Curve (EKC) is inconclusive, suggesting that its applicability may not be universal.

The concept of *environmental justice* has been supported by empirical research, which has consistently demonstrated that marginalized populations disproportionately experience the adverse effects of environmental degradation. This unequal distribution of environmental harm perpetuates a cycle of inequality and further exacerbates the environmental challenges faced by these people (Bullard, 1993).

The existing literature has provided valuable insights into the individual dynamics of globalization, income inequality, and environmental sustainability. However, several significant gaps remain unaddressed. First, many studies have examined these dimensions individually, failing to consider their interconnectedness. There is a lack of comprehensive empirical research that simultaneously investigates how globalization influences income inequality and environmental sustainability, or how income inequality, in turn, impacts environmental outcomes. This gap underscores the need to explore how these dynamics collectively shape development trajectories within the unique context of ECOWAS, where diverse economic structures, varying degrees of globalization, and distinct environmental concerns abound.

Second, there is a critical need for research tailored to the ECOWAS context. Findings from global studies might not fully capture the region's specific challenges and opportunities. As such, a contextualized examination of the impact of globalization and environmental sustainability on income inequality is imperative to inform region-specific policy interventions.

Third, several literature often overlooks the mediating and moderating factors that can significantly influence the relationships between globalization, income inequality, and environmental sustainability. Control variables, such as institutional quality, energy use, and domestic credit to the private sector, have the potential to shape these dynamics but are frequently neglected in the analysis. Their inclusion is essential to

provide a more nuanced understanding of how globalization affects the ECOWAS region.

Moreover, while research has generated theoretical and empirical insights, there is a gap in translating these findings into actionable policy recommendations for ECOWAS policymakers. Bridging this gap is crucial to provide practical guidance on fostering sustainable development that balances economic growth, social equity, and environmental preservation in the region.

In light of these literature gaps, this paper seeks to make a significant contribution by conducting a comprehensive analysis within the ECOWAS context. Through the simultaneous examination of the effects of globalization on income inequality and environmental sustainability and the consideration of the mediating role of control variables, this research aims to bridge existing knowledge gaps. Furthermore, this study aspires to provide actionable policy insights that can inform decision-makers in ECOWAS countries, offering a holistic approach to sustainable development within the region.

3. Data and Methodology

The scope of the study spans the years from 1996 to 2019. The necessary data was obtained from a database maintained by the World Bank called World Development Indicators and International Country Risk Guide (ICRG).The study covers the 15 ECOWAS countries, that is: Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Gambia, Guinea Bissau, Ghana, Liberia, Mali, Niger, Nigeria, Guinea, Senegal, Sierra Leone, and Togo.

3.1 Summary statistics

The summary statistics of the variables used to analyze the relationship among Globalization, Environmental Sustainability and Income Inequality in ECOWAS are presented in this section. The results of the summary statistics of income inequality, CO_2 emission (metric tons per capita), ecological footprints, trade per capita (current US$), foreign direct investment net inflows (% of GDP), KOF Globalization index, domestic credit to private sector by banks (% of GDP), energy intensity level of primary energy (MJ/$2017 PPP GDP), GDP per capita (current US$), general government final consumption expenditure per capita (current US$), inflation consumer prices (annual %), school enrolment

primary (% gross), and institutional quality from 1996 to 2019. The summary statistic of income inequality, carbon emission and ecological footprint from 1996 to 2019 presented in Table 1 indicated that income inequality, carbon emission and ecological footprint have a mean value of 0.130, 0.320, and 1.339 respectively. The value indicates that there are no much differences between the two proxies of environmental sustainability namely carbon emission and ecological footprint. For in-depth analysis, Table 2 presents the average value of each country in the ECOWAS region. From the table, the average value of Liberia with respect to income inequality is 0.156 being the highest value, directly followed by Mali with 0.146, and 0.141 for Niger and Guinea respectively, whilst having Togo, Guinea-Bissau, and Cabo Verde as the bottom three with the least values of 0.120, 0.117, 0.105 respectively. In terms of CO_2 emission metric tons per capita Cabo Verde (0.848), Nigeria (0.665), and Senegal (0.518) are the top three and the least three are Burkina Faso (0.130), Sierra Leone (0.099), and Niger (0.075) respectively. With regards to ecological footprints, Ghana (1.763), Cabo Verde (1.758), and Guinea (1.566) are the top three whilst having Gambia, The (1.084), Sierra Leone (0.070), and Togo (1.045) as the bottom three respectively.

Table 1: Descriptive statistics

Sign	Variable Measurements	Mean	Std Dev	Max.	Min.	Kurtosis	Skewness	Obs.
gini	Income Inequality	0.130	0.019	0.169	0.084	-0.528	-0.085	360
co2	CO_2 emissions (metric tons per capita)	0.320	0.238	1.182	0	1.848	1.416	358
ecft	Ecological Footprint	1.339	0.261	2.218	0.895	0.356	0.868	360
trdpc	Trade per capita (current US$)	563.9	695.3	4229.5	0	11.182	3.159	360
fdi	Foreign direct investment, net inflows (% of GDP)	4.251	9.687	103.3	-2.545	61.467	7.329	356
kofgi	KOF Globalization Index	45.544	7.414	61.634	25.622	-0.231	-0.179	360
fd	Domestic credit to private sector by banks (% of GDP)	14.226	11.921	65.278	0	6.068	2.260	353
eu	Energy intensity level of primary energy (MJ/$2017 PPP GDP)	6.377	3.068	15.820	2.6	0.328	1.053	300
inc	GDP per capita (current US$)	911.1	745.644	3740.4	138.7	3.551	1.907	356
gs	General government final consumption expenditure per capita (current US$)	106.9	119.366	701.6	4.273	12.049	3.360	306
inf	Inflation, consumer prices (annual %)	5.869	7.800	50.734	-3.503	10.264	2.717	333
pse	School enrolment, primary (% gross)	87.523	23.242	143.7	28.008	-0.369	-0.136	295
iq	Institutional Quality	-0.671	0.448	0.377	-1.870	-0.240	0.240	360

Note: Std Dev. – standard deviation; Obs. - observation.
Source: Authors' computation (2023).

Table 2: Average of Globalization, Environmental Sustainability, and Income Inequality (1996-2019)

S/N	Country	Income Inequality	CO2 emissions (metric tons per capita)	Ecological Footprint	Trade per capita (current US$)	Foreign direct investment, net inflows (% of GDP)	KOF Globalization Index	GDP per capita (current US$)	Government consumption expenditure per capita (current US$)	Institutional Quality
1	Benin	0.127	0.410	1.309	466.84	0.788	44.30	886.30	91.61	-0.468
2	Burkina Faso	0.128	0.130	1.204	260.94	1.049	43.62	533.08	85.70	-0.370
3	Cabo Verde	0.105	0.848	1.758	2616.71	6.587	47.15	2595.31	615.95	0.258
4	Cote d'Ivoire	0.125	0.356	1.172	891.63	1.389	49.17	1580.23	209.03	-0.736
5	Gambia, The	0.121	0.229	1.084	337.31	4.307	47.11	678.40	62.79	-0.545
6	Ghana	0.126	0.429	1.763	845.52	4.574	54.53	1130.69	100.80	-0.121
7	Guinea	0.141	0.214	1.566	439.30	3.284	41.38	605.39	74.22	-0.984
8	Guinea-Bissau	0.117	0.155	1.354	254.16	1.701	36.36	491.69	55.67	-1.225
9	Liberia	0.156	0.203	1.243	n.a	24.749	43.88	513.27	n.a.	-1.272
10	Mali	0.146	0.167	1.494	343.46	2.600	44.93	584.51	90.58	-0.664
11	Niger	0.141	0.075	1.532	159.22	3.622	37.80	391.51	66.54	-0.727
12	Nigeria	0.134	0.665	1.185	592.55	1.465	52.14	1634.72	102.37	-1.021
13	Senegal	0.132	0.518	1.308	605.66	2.009	55.10	1078.79	146.48	-0.207
14	Sierra Leone	0.137	0.099	1.070	232.71	5.996	37.99	380.72	38.15	-1.039
15	Togo	0.120	0.295	1.045	412.73	3.065	47.72	516.01	70.30	-0.938

Source: Authors' computation (2023).

With respect to trade per capita, the maximum value amounted to US$4,229.5 million while the minimum value equals US$0 accordingly, among the countries in ECOWAS region the top three countries with the highest trading activities per population are Cabo Verde (US$2,616.71 million), Cote d'Ivoire (US$891.63 million), and Ghana (US$845.52 million), whereas the bottom three countries with the least trading activities per population are Guinea-Bissau (US$ 254.16 million), Sierra Leone (US$232.71 million) and Niger (US$159.22 million) respectively. Based on foreign direct investment, the top three countries with the highest foreign direct inflows are Liberia (24.749%), Cabo Verde (6.587%), and Sierra Leone (5.996%) respectively, while the bottom three countries are Cote d'Ivoire (1.389%), Burkina Faso (1.049%), and Benin (0.788%) respectively. On the ground of KOF Globalization index the top three countries with the highest values are Senegal (55.10%), Ghana (54.53%) and Nigeria (52.14%) accordingly, while the bottom three countries with the least value are Sierra Leone (37.99%), Niger (37.80%), Guinea-Bissau (36.36%) respectively.

Asides this, the mean domestic credit to private sector by banks is 14.226% and the maximum and minimum values are 62.278% and 0% respectively. Regarding other covariates, the average of energy intensity, GDP per capita, general government final consumption expenditure, inflation, and institutional quality are 6.377, US$911.1, US$ 106.9, 5.869%, and -0.671. This notwithstanding, the maximums in the region are 62.278%, 15.820, US$3740.4, US$701.6, 50.734%, and 0.377 respectively, while the minimums are 0%, 2.6, US$ 138.7, US$4.273, -3.503, and-1.870 respectively.

Among the countries in ECOWAS region Sierra Leone has the least average of GDP per capita and the country with the highest mean of GDP per capita is Cabo Verde, followed by Nigeria and Cote d'Ivoire. Similarly, the country with the least average of general government final consumption per capita is Sierra Leone while the country with the highest mean is Cabo Verde followed by Cote d'Ivoire and Senegal respectively. Likewise, Nigeria has the least average of institutional quality and the country with the highest average being Cabo Verde. From Table 1, the summary statistics showed that income inequality, KOF globalization index and primary school enrolment are left skewed while others are right skewed. Also, income inequality, carbon emission, ecological footprints, KOF globalization index, energy intensity level,

primary school enrolment, and institutional quality are platykurtic i.e., their distribution have values less (<3) while the remaining indices are leptokurtic i.e., their distribution have values (>3).

3.2 Correlation Analysis

This section presents the correlation coefficients of the variables relating to the relationship between globalization and environmental sustainability in ECOWAS.

Table 3: Correlation Analysis

	gini	co_2	ecft	kofgi	trdpc	fdi	inc	iq	eu
gini	1								
co_2	-0.313	1							
ecft	0.026	0.379	1						
kofgi	0.013	0.589	0.148	1					
trdpc	-0.298	0.824	0.519	0.400	1				
fdi	0.234	-0.034	0.040	-0.003	-0.020	1			
inc	-0.228	0.847	0.400	0.556	0.891	-0.028	1		
iq	-0.244	0.549	0.475	0.415	0.596	-0.063	0.487	1	
eu	0.142	-0.344	-0.353	-0.433	-0.449	0.272	-0.430	-0.749	1
fd	-0.252	0.722	0.364	0.442	0.831	0.001	0.701	0.627	-0.358

Source: Authors' computation (2023).

The values in the matrix represent the strength and direction of the linear relationship between each pair of variables. For instance, a positive value indicates a positive correlation (as one variable goes up, the other tends to go up as well), while a negative value indicates a negative correlation (as one variable goes up, the other tends to go down). The magnitude of the value indicates the strength of the correlation, with values closer to 1 indicating a strong correlation, and values closer to 0 indicating a weak correlation.

4. Results and discussion of findings

The result of the effects of globalization, environmental sustainability and income inequality in ECOWAS region using the Granger casualty test is discussed in this section.

Table 4: Granger Casualty Test

Dependent variables	Independent variables									
	gini	co_2	ecft	kofgi	trdpc	fdi	Inc	iq	eu	fd
gini		1.843	0.312	0.482	0.659	0.545	0.470	0.272	0.682	1.011
co_2	0.874		4.026***	0.234	8.249***	0.366	3.118**	12.97***	2.283*	7.236***
ecft	0.038	0.646		0.793	4.057**	0.034	0.709	0.422	1.024	0.214
kofgi	0.914	1.830	0.092		0.727	0.415	0.592	4.712***	0.538	2.641*
trdpc	1.348	5.091***	1.644	3.144**		0.019	2.867**	1.792	1.071	1.889
fdi	1.040	0.279	0.057	0.911	0.081		0.144	3.662**	3.376**	0.079
inc	0.957	10.86***	1.094	5.804***	10.10***	0.416		1.507	0.759	1.164
iq	0.176	0.982	2.793*	1.251	1.878	0.959	0.941		3.370**	4.386***
eu	2.198*	2.705*	0.309	0.778	1.164	0.829	1.224	3.322**		0.507
fd	0.139	1.396	0.943	1.515	2.433*	0.129	8.056***	1.042	0.369	

Source: Authors' computation (2023).

Following the table above**,** as regard CO_2 emissions and ECFT**.** The Granger causality test reveals that CO2 Granger causes ECFT with a p-value of 0.0187. This suggests that changes in carbon dioxide (CO_2) emissions may have a causal impact on ecological footprints (ECFT). The economic implication is that policies aimed at reducing CO_2 emissions could potentially lead to improvements in economic performance. However, the lack of evidence for ECFT Granger causing CO_2 emissions implies that ecological footprints do not necessarily drive changes in CO_2 emissions.

As regard CO_2 emissions Granger causing TRDPC with a low p-value of 0.0003, this indicates that variations in CO_2 emissions may precede changes in trade openness (TRDPC). This implies that environmental policies that affect CO_2 emissions could influence a country's trade dynamics. On the other hand, the absence of TRDPC Granger causing CO_2 emissions suggest that trade openness is not a leading indicator of CO_2 emissions.

The result indicating that INC Granger causes KOFGI (p-value 0.0033) implies that increases in income (INC) may be a driver of improvements in a country's globalization. Policymakers may consider income-enhancing strategies as a means to promote globalization. However, the lack of evidence for KOFGI Granger causing INC suggests that globalization itself does not necessarily lead to income growth.

The finding that INC Granger causes TRDPC (p-value 6.00E-05) suggests that income growth can precede increases in trade openness (TRDPC). This implies that economic policies aimed at boosting income levels might stimulate international trade activities. However, the lack of strong evidence for TRDPC Granger causing INC (p-value 0.0584) suggests that trade openness alone may not be a significant driver of income growth.

The Granger causality from FDI to IQ (p-value 0.0268) indicates that foreign direct investment (FDI) could have a positive influence on a country's institutional Quality (IQ). Conversely, the absence of IQ Granger causing FDI (p-value 0.3845) suggests that a country's institutional quality does not necessarily attract FDI.

INC Granger causing FD (p-value 0.0004) implies that income growth is associated with higher levels of financial development (FD). Policymakers may focus on income-boosting strategies to attract more FD. However, the absence of FD Granger causing INC (p-value 0.3136) indicates that FD alone may not be a primary driver of income growth.

The finding that IQ Granger causes FD (p-value 0.0132) suggests that a country's institutional quality is a potential driver of foreign direct investment (FD). Conversely, the lack of FD Granger causing IQ (p-value 0.3538) implies that FD alone may not significantly impact a country's intellectual capital.

In cases where Granger causality was not established, there are limited economic implications. It suggests that there is no clear temporal precedence between the variables, and one variable does not reliably predict changes in the other, making it challenging to draw direct policy recommendations based on these relationships.

5 Conclusion and Recommendations

In this study, we have explored the intricate relationships among globalization, income inequality, and environmental sustainability within the context of the Economic Community of West African States (ECOWAS). Our analysis aimed to shed light on the causal links and interdependencies between these critical dimensions of development.

The findings suggest that these relationships are multifaceted and context-dependent. In the literature, diverse theories have been proposed

to explain how globalization, environmental sustainability and income inequality. These theories underscore the complexity of the interactions between income distribution and environmental outcomes.

Regarding globalization, ECOWAS member states have experienced varying degrees of economic integration, as measured by the KOF globalization index, foreign direct investment (FDI), and trade openness. The impact of globalization on income inequality and environmental sustainability is not uniform and depends on a range of factors, including the quality of institutions, economic structures, and policy choices.

In conclusion, the relationships among globalization, income inequality, and environmental sustainability are complex and multifaceted. While globalization can offer opportunities for economic growth, it can also pose challenges to equitable development and environmental protection. Achieving a balance between these dimensions requires careful policy formulation and implementation, with a focus on social inclusion and environmental stewardship.

The findings of this study contribute to our understanding of the dynamics at play in ECOWAS and provide insights into the path toward sustainable development in the region. As ECOWAS continues its efforts to promote regional integration and economic development, the lessons drawn from this research can inform policy decisions that aim to create a more equitable and sustainable future for all its member states and their populations.

The study recommends that environmental friendly policies such as renewable energy incentives and carbon pricing to reduce CO2 emissions while promoting economic growth should be implemented. Also, green trade initiatives that align with climate goals as well as trade agreements need to be implemented to promote sustainable practices. Furthermore, attention should be paid to income redistribution policies, education, and infrastructure development to boost income levels and encourage globalization. Hence, income-enhancing strategies and trade facilitation measures should be established to promote both income growth and increase trade openness.

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