Acta Universitatis Danubius
ŒCONOMICA

The Tripartite Effects of Blue, Digital, and Climate Economies on Economic Development in Nigeria

Anthony Oyamendan[1], Asaolu Adepoju[2], Adebolanle Debo-Ajagunna[3], Adekunle Bamidele[4], Adebayo Alabi[5], Daniel Apalowowa[6], Busayo Oladapo[7]

Abstract: This study investigated the tripartite effects of the blue, digital, and climate economies on Nigeria's economic development, focusing on their long-run and short-run dynamics. While previous studies have examined these economies individually. To address this gap, the study employed an ex post facto research design and analyzed time series data spanning 2000–2022, sourced from the World Bank Indicators and Statista. Using the Autoregressive Distributed Lag (ARDL) model, GDP per capita was adopted as a proxy for economic development, fisheries production for the blue economy, internet penetration for the digital economy, and carbon emissions for the climate economy. The results revealed that the blue economy exerts a strong and positive long-run effect on economic development in Nigeria (coefficient = 0.515, $p < 0.01$). Conversely, the digital economy (–0.0047, $p < 0.05$) and climate

[1] PhD Student; Department of Finance, Afe Babalola University, Ado-Ekiti, Ekiti State, Nigeria, Corresponding author: oyamengana@pg.abuad.edu.ng.
[2] Department of Finance, Federal University, Oye-Ekiti, Ekiti State, Nigeria, E-mail: adepoju.asaolu@fuoye.edu.ng.
[3] Department of Finance, Afe Babalola University, Ado-Ekiti, Ekiti State, Nigeria, E-mail: adeboajagunna@pg.abuad.edu.ng.
[4] Department of Public Administration, National Open University of Nigeria, Jabi, Abuja, Nigeria, E-mail: jbamidele@noun.edu.ng.
[5] Department of Accounting, Federal University, Oye-Ekiti, Ekiti State, Nigeria, E-mail: ennybay70@gmail.com.
[6] Department of Accounting, Federal University, Oye-Ekiti, Ekiti State, Nigeria, E-mail: apalowowadaniel@gmail.com.
[7] Department of Accounting, Federal University, Oye-Ekiti, Ekiti State, Nigeria, E-mail: oladapomoses82@gmail.com.

economy (–0.305, $p = 0.07$) negatively affect development in the long run. Short-run dynamics, however, indicate that digital economy contributes positively (0.00155, $p < 0.05$), while lagged climate variables show significant positive influence (0.159, $p < 0.01$). The model demonstrates robustness with an R^2 of 0.895, confirming its explanatory power. The paper contributes unique empirical evidence by quantifying the integrated impacts of these three economies.

Keywords: Blue Economy; Digital Economy; Climate Economy; Economic Growth; Nigeria

1. Introduction

The Nigerian economy is at a strategic juncture in its journey toward economic transformation, having emerged as the most populous economy in Africa (ThankGod, 2024), amidst the growth and sometimes complex confluence of the blue economy, the digital economy, and the climate economy. Each of these separately holds massive transformative potential, but the depth of their interlinkage has been relatively little explored, not least in the context of Nigeria. The blue economy insists on meaningful exploitation of the ocean resources for livelihood improvement, food security, and environmental sustainability in a sustainable way (Abdul-Wakeel, 2023). The digital economy uses technology for solution findings, efficiency, and ease in the delivery of services and the accessing of global markets (Oloyede et al., 2023). Climate economy is committed to reducing the impacts of climate change and undertaking sustainable practices for resilience in people and ecosystems (Allam et al., 2020).

Though the prospects for these interlinked economies are tremendous, a host of challenges burdens Nigeria's pursuit of sustainable development-poverty and unemployment, coupled with considerable environmental degradation due to the inadequacy of infrastructure and complete lack of comprehensive policies integrating the three sectors (Iroanya, 2024; Lincoln & Diamond, 2023; Agu, 2022; Adewuyi et al., 2020). Whereas the body of discourse is growing on each of these economies (Oberoi & Banerjee, 2024; Ikubor et al., 2024; Amuka & Ezinna, 2021), there is some literature gap regarding how complementarities exist among them and how collective strategies may be adopted in furthering integrated economic development in Nigeria. The lack of empirical research along this line presents a serious problem for policymakers and other stakeholders desirous of using these sectors to beneficial effect. In the absence of explicit understanding in the ways that the tripod of such economies can work for Nigeria, the country may forfeit a critical window of opportunity to achieve sustainable growth that would generate jobs, improve livelihoods, and achieve improved environmental stewardship. This study, therefore, tries to throw light on the tripartite effects of the blue, digital, and climate economies on the development of Nigeria by looking at challenges and opportunities emanating from their integration.

The blue economy encompasses diverse activities related to the sustainable exploitation of marine and coastal resources (Martínez-Vázquez et al., 2021). Nigeria, which borders on large stretches of the Atlantic Ocean, possesses an immense potential for economic diversification and general employment opportunities through the blue economy (Popoola & Olajuyigbe, 2023; Njue, 2020). Fisheries and aquaculture, along with maritime transportation and tourism, are expected to be a major source of income generation and enhancement of food security for the coastal communities in the area (March & Failler, 2022). Overfishing, pollution, and a general lack of infrastructure across the coasts threaten the sustainability of Nigeria's marine resources (Iyiola et al., 2022). In this light, integrated intervention with digital technologies can proffer new approaches in the monitoring and management of these resources toward sustainable utilization.

The digital economy is one of the very few important areas through which the economy of Nigeria can be further developed, especially considering its youthful population and increased internet penetration. In fact, digitization can enable entrepreneurship, improvement in service delivery, and development of new jobs in many sectors (Chen et al., 2021). On the other hand, it is digital infrastructure challenges, digital literacy, and access to finance that are some of the issues that keep such potential from fully being realized (Ogunode et al., 2023). Besides, there is a lack of effective collaboration between the technology sectors with others, reducing their effectiveness. This could, in turn, strengthen the impact of the digital economy through innovative development and synergies within many sectors.

The whole world is grappling with the reality of a changing climate; hence, the climate economy resonates more with key messages. For example, Nigeria is highly prone to extreme events such as rising sea levels and other environmental risks that threaten food security and livelihoods (Week & Wizor, 2020). Besides enabling policy frameworks, transitioning to a climate-resilient economy will involve the integration of blue and digital initiatives. For example, sustainable fisheries and agricultural methods will reduce impacts associated with climate, and digital tools offer enhanced data collection and analysis for better climate adaptation strategies. However, there is still quite considerable research that has paid little attention to how these different sectors can collaboratively answer climate challenges alongside economic growth. Despite these promising prospects of the interrelated economies, the literature addressing their combined effects on the economic development of Nigeria is scanty. Basically, the existent studies have isolated one sector from another and failed to realize synergy that could be derived from their integration (Oberoi & Banerjee, 2024; Ikubor et al., 2024; Amuka & Ezinna, 2021). The lack of a holistic analysis presents a challenge for policymakers who seek evidence-based insights with which to formulate strategies that take advantage of these economies as wholes.

2. Literature Review

The Blue Economy addresses the long-term utilization of marine and ocean resources through sustainable use, attaining economic growth coupled with maintained ecosystem health (Bax et al., 2021). This includes measures and activities against overexploitation, perceived value of ecosystem services, and inclusive local community involvement in decision-making. The balance between economic development and environmental stewardship through the concept of a blue economy nurtures livelihoods with a focus on the resilience of coastal ecosystems (Okafor-Yarwood et al., 2020). The digital economy involves those economic activities that are induced, driven, or significantly affected by digital technologies such as the internet and data analytics (Imamov & Semenikhina, 2021). It has a catalytic role in innovative products, services, and business models since their use enhances efficiency and interconnectivity (Aksoy, 2023). "Inclusion" essentially means making sure there is equal access to all-the people of the country-regardless of geographical area, social class, etc., in moving on to the mainstream digital economic way of life. E-commerce platforms will also help in facilitating trade to have access to more extensive global markets.

The climate economy would entail the response of economic activities to climate change impacts and involve such practices that considerably account for sustainable development in light of this reality (Ucal & Xydis, 2020). This involves resilience building in communities and economies, besides low-carbon development through promotion of investments in renewable energy (Tian et al., 2022). Therefore, the related concept of circular economy advances resource efficiency, along with waste reduction and environmental protection, causing minimal adverse impacts on economic growth. Development is a process through which improvement has to be achieved in the economic, political, and social wellbeing of the citizens (Luna-Nemecio et al., 2020). It can include diversification of economies, infrastructure development, and investment in human capital that may help in achieving higher productivity. Apart from that, it also reflects sustainability and social inclusion, since growth, in reality, needs to reach from top to grassroots levels (Marini Govigli et al., 2022). Similarly, good governance and institutions help create an enabling environment for development.

The Sustainable Livelihoods Framework (SLF) is a holistic approach to analyzing how various capital-natural, human, social, physical, and financial-make contributions differently to people's livelihoods. It focuses on questions of sustainability and resilience in the face of environmental and economic shocks and stressors (Scoones, 1998). Besides all that, the SLF takes into consideration the influence of external factors such as policies, institutions, and trends on livelihood strategies. In the context of Nigeria's tripartite economies-blue, digital, and climate-the SLF gives a useful lens to see how the three together can contribute to

improvements in livelihoods and sustainability. For example, the blue economy can build better natural capital through sustainable fishing, and the digital economy contributes to human capital through better education and entrepreneurial opportunities. Adding in the element of climate further makes those livelihoods resilient to changes in the environment. Through the SLF, this research tries to find that synergy and develop methods on how holistic development in the economy can be realized (DFID, 1999).

Ikubor et al. (2024) examined the long-term effects of financial development and ICT synergy on Nigeria's economic growth. The research used a divided method using the Autoregressive Distributed Lag (ARDL) model to analyse time series data from 1990 to 2021. The main conclusions showed that whereas financial development had a considerable influence on economic growth, ICT synergy had little effect on growth in Nigeria throughout the study period. Oberoi and Banerjee (2024) looked at the connections between Nigeria's economic expansion, environmental harm, human development, and climate change. The investigation demonstrated how several restrictions brought about by climate change have hampered human progress and, as a result, negatively affected Nigeria's environment and economic growth.

Chukwu et al. (2023) use secondary data from the World Bank and regression analysis to investigate the impact of ICT on economic growth in Nigeria. The research found that as population grows and ICT infrastructure costs decline, so does the number of internet users. This suggests that in the next years, ICT will provide enough employment and services to propel the Nigerian economy. Abdul-Wakeel (2023) investigated the Sustainable Development Goals, Social Resilience, and Blue Economy in Ghana. It was discovered that the majority of Ghanaian maritime villages had some degree of subpar facilities, which might pose a danger to the blue economy. Furthermore, since livelihood diversification may lessen the strain on fishing, coastal families benefit greatly from high welfare living standards, which is a solid foundation for the blue economy principles. However, the socioeconomic features of rural coastal settlements are horrifying. The effects of many elements that endanger Nigeria's food security condition are examined by Kralovec (2020). Reports and interviews with Nigerian NGOs are examples of qualitative data. Careful research reveals that all three of these variables may cause food insecurity, which helps to explain why there is food insecurity in Nigeria.

3. Methodology

The study utilized time series data extracted from the World Bank Data Indicators of 2022 and Statista. The study focused on 2000 to 2022. *Ex post facto* research design was employed for the study. Total fishery production, internet penetration,

carbon emission, and GDP per capita were used as measures for blue economy, digital economy, climate economy, and economic development respectively. The model for the study is presented equation 1.

$$\Delta \ln EcoDev_t = \alpha_0 + \sum_{i=1}^{m} \alpha_1 \Delta \ln BluEco_{t-1} + \sum_{i=0}^{n} \alpha_2 \Delta \ln DigEco_{t-1} + \sum_{i=0}^{p} \alpha_3 \Delta \ln CliEco_{t-1} + \theta ECM_{t-1} + \varepsilon_t \quad \text{..... (1)}$$

Where:

α_0 = constant; EcoDev = Economic Development; BluEco= Blue Economy; DigEco= digital economy; CliEco = Climate Economy; $\alpha_1 - \alpha_3$ = regression coefficients; ε_t = stochastic error term.

The summary statistics table was utilised to describe the data; the autocorrelation, heteroscedasticity, normality, and stability tests (using the Ramsey RESET) were used as diagnostics to ascertain the model's fitness; the Autoregressive distributed lag was utilised to ascertain the relationship in the model; and the Augmented Dickey-Fuller unit root test was used to determine the stationary level of the variables.

4. Result

Table 1. Summary Statistics

	ECODEV	BLUECO	DIGECO	CLIECO
Mean	316929.5	834860.4	19.43739	101959.0
Std. Dev.	52544.11	252532.7	18.03149	12825.25
Skewness	-0.770448	-0.158484	0.599002	-0.081229
Kurtosis	2.355543	1.525476	1.979761	2.190029
Jarque-Bera	2.673450	2.179912	2.372932	0.654010
Probability	0.262705	0.336231	0.305298	0.721080
Observations	23	23	23	23

Source: Authors' Computation, 2024

Following is the table of statistical summary for four economic indicators, namely Economic Development-ECODEV, Blue Economy-BLUECO, Digital Economy-DIGECO, and Climate Economy-CLIECO-all based on 23 observations. ECODEV had a mean value of 316,929.5 and a fairly stable value with a moderate standard deviation. In contrast, the BLUECO series had the highest mean, 834,860.4, but with a larger standard deviation, reflecting more variability in the measure. The mean for DIGECO is far lower at 19.44, and the distribution is positively skewed, showing that the tail is on the right side. CLIECO reveals the lowest of means at 101,959.0 and low skewness, reflecting that the distribution may be closer to symmetric. The

Jarque-Bera tests reflect that none of these distributions are differently distributed from normality.

Table 2. Augmented Dickey-Fuller Unit Root Test

	LECODEV	LBLUECO	LDIGECO	LCLIECO
t-Statistic	-4.0516	-1.5807	1.2915	-1.0231
Prob.	***0.0056***	***0.4752***	***0.9976***	***0.7262***
	***	n0	n0	n0
		At First Difference		
	d(LECODEV)	d(LBLUECO)	d(LDIGECO)	d(LCLIECO)
t-Statistic	NA	-4.7937	-9.1666	-6.0779
Prob.	NA	***0.0011***	***0.0000***	***0.0001***
	NA	***	***	***

Source: Authors' Computation, 2024

The unit root test indicates that all the variables are stationary albeit at mixed integration order. ECODEV is stationary at 1% significance level and at level (I(0)); while BLUECO, DIGECO, AND CLIECO are all stationary at 1% significance level and at first difference (I(1)). Based on the mixed integration order, the Autoregressive distributed lag (ARDL) is appropriate for the study.

Table 3. ARDL Bound Test for Cointegration

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	14.42957	Asymptotic: n=1000		
		10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Source: Authors' Computation, 2024

The result of the bound test indicates that F-statistics coefficient is 14.42957, when compared to the lower and upper bound coefficient of the 5% significant level of 3.15 and 4.08 respectively, the F-statistics is greater; thus, this confirms the existence of cointegration and a long run relationship in the model.

Table 4. ARDL Long Run Effects

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LBLUECO	0.515079	0.109231	4.715481	0.0008
LDIGECO	-0.004730	0.001977	-2.393121	0.0378
LCLIECO	-0.305459	0.153488	-1.990112	0.0746
C	9.297658	2.691251	3.454772	0.0062

Source: Authors' Computation, 2024

Table 4: Long-run effects using an ARDL model of different economic variables on Economic Development (ECODEV) The coefficient of the Blue Economy,

BLUECO, is 0.515 and positive, hence indicating its strong and statistically significant relation with ECODEV, as verified by a probability value of 0.0008. This means that any increase in the Blue Economy would result in positive effects on economic development. Also, DIGECO shows a coefficient of -0.0047 with the probability of 0.0378, hence considered significant and adverse to ECODEV. On the other hand, CLIECO is negatively associated with a coefficient of -0.305 with a p-value of 0.0746, indicating insignificant negative impact. Generally, the Blue Economy is very remarkable and considered the most influential variable on Economic Development in this analysis.

Table 5. ARDL Short Run Effects

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LDIGECO)	0.001549	0.000575	2.696166	0.0225
D(LDIGECO(-1))	0.002642	0.000655	4.035846	0.0024
D(LCLIECO)	0.019674	0.044826	0.438899	0.6701
D(LCLIECO(-1))	0.159301	0.043776	3.638986	0.0045
CointEq(-1)*	-0.430157	0.042801	-10.05022	0.0000
R-squared	0.895311	Durbin-Watson stat		1.753595
Adjusted R-squared	0.850444			

Source: Authors' Computation, 2024

Table 5 presents the short-run effects of the various economic variables on ECODEV, using an ARDL model. The estimated coefficient for the D(LDIGECO) is positive, 0.00155, and significant at a probability value of 0.0225, hence a positive statistically significant impact on ECODEV. Its coefficients for the lagged variable become stronger in magnitude (0.00264) with an increased significant probability value of 0.0024. Then again, its coefficient in CLIECO is extremely minute, 0.01967, insignificant in the short run, having a high probability value of 0.6701. Its first-order lag, CLIECO, however, is highly significantly positive with a coefficient estimate of 0.1593 and a probability of 0.0045. The CointEq(-1) coefficient is vastly significant, with a value of -0.4302, pointing to the equilibrium adjustment mechanism as very strong. In this model, the R-square is 0.895 and the adjusted R-square is 0.850, indicating a good fit of the model.

Table 6. Diagnostic Tests

Test	Output
Autocorrelation	0.4372
Heteroskedasticity	0.1172
Normality	0.679769
Ramsey RESET	0.3125

Source: Authors' Computation, 2024

Table 6 shows the result of diagnostic tests for the validity of the model. The autocorrelation value of 0.4372 shows that residuals are not significantly autocorrelated. The heteroskedasticity value of 0.1172 shows homoscedasticity. The normality test result, 0.6798, shows that residuals are normally distributed. Finally, the Ramsey RESET test value of 0.3125 shows that the model is correctly specified.

5. Discussion

The findings shows that Economic Development is positively influenced by Blue Economy, this means that for Economic Development to increase efficiently in Nigeria Blue Economy must also experience increase. Conversely, the result discovered that increase digital economy and Climate Economy leads to a reduction in Economic Development in Nigeria. The findings suggest that for a better Economic Development in Nigeria, a positive Blue Economy plays a major role. The studies of Oberoi & Banerjee (2024) and Abdul-Wakeel (2023) discovered similar supportive findings while Ikubor et al. (2024) had a contradicting finding.

6. Conclusion

The study explored the tripartite effects of blue, digital, and climate economies on economic development in Nigeria. The study found that Blue Economy plays a crucial role in promoting Economic Development in Nigeria. Also, the study discovered that digital economy and Climate Economy leads to a reduction in Economic Development in Nigeria. Thus, the study concluded that Economic Development in Nigeria is dependent on a performing blue economy.

7. Recommendations

Emphasize strategic investments in the blue economy. Given that the Blue Economy (BE) favorably impacts Nigeria's economic development, policymakers ought to prioritize the enhancement of sustainable maritime and aquatic resource exploitation. This encompasses the advancement of fisheries and aquaculture along her extensive coastline and underutilized inland water bodies, the enhancement of port infrastructure and shipping to improve trade efficiency and attract foreign investment, and the exploitation of tidal, wave, and offshore wind energy to diversify Nigeria's energy portfolio.

Additionally, it necessitates a reassessment of digital economy policies to ensure alignment with development objectives. This can be accomplished by bridging the digital divide, which entails expanding broadband connectivity to rural areas to enable inclusive growth. The fortification of fintech legislation is essential. A

significant number of digital transactions are informal; formalizing them can augment tax revenues and bolster financial stability.

Revise climate policies to mitigate economic trade-offs. The study's findings suggest that climate-focused initiatives impede economic development, potentially due to abrupt energy transitions or inadequate implementation. Policymakers should transition factories to renewable energy sources (solar, hydro) without disrupting production, promote drought-resistant crops and irrigation to ensure food security amidst climate policies, and incentivize businesses that adopt environmentally sustainable practices without compromising productivity.

The establishment of a framework known as Beyond-GDP Metrics to conduct a thorough evaluation of development is worth a trial. Conventional GDP growth indicators may fail to reflect the genuine influence of blue, digital, and climate economies. Consequently, it is essential to assess the multiplier effects of the blue economy through job creation, ecological health, and the welfare of coastal communities. The evaluation of climate resilience is essential for economic stability in the face of climate shocks, such as flood-resistant infrastructure.

References

Abdul-Wakeel, K. A. (2023). *Blue Economy, Social Resilience, and Sustainable Development Goals in Ghana*. Doctoral dissertation, University of Cape Coast.

Adewuyi, O. B., Kiptoo, M. K., Afolayan, A. F., Amara, T., Alawode, O. I., & Senjyu, T. (2020). Challenges and prospects of Nigeria's sustainable energy transition with lessons from other countries' experiences. *Energy Reports*, *6*, 993-1009.

Agu, C. R. (2022). Foreign Investment in Nigeria: Surmounting the Challenges of Domestic Environment through Review of Laws/Policies. *Lapai International Journal of Management and Social Sciences*, *14*(1), 39-50.

Aksoy, C. (2023). Digital Business Ecosystems: An Environment Of Collaboration, Innovation, And Value Creation In The Digital Age. *Journal of Business and Trade*, *4*(2), 156-180.

Allam, Z., Jones, D., & Thondoo, M. (2020). *Cities and climate change: Climate policy, economic resilience and urban sustainability*. Springer Nature.

Amuka, I., & Ezinna, P. C. (2021). Maritime sector: Key driver of economic growth and sustainable development in Nigeria. *European Journal of Human Resource Management Studies*, *5*(2).

Bax, N., Novaglio, C., Maxwell, K. H., Meyers, K., McCann, J., Jennings, S., ... & Carter, C. G. (2021). Ocean resource use: building the coastal blue economy. *Reviews in fish biology and fisheries*, 1-19.

Chen, C. L., Lin, Y. C., Chen, W. H., Chao, C. F., & Pandia, H. (2021). Role of government to enhance digital transformation in small service business. *Sustainability*, *13*(3).

Chukwu, A. O., Chukwu, W., Osuji, C., & Ongele, L. I. (2023). Effect of information and communication technology (ICT) on economic growth in Nigeria. *Nnadiebube Journal of Languages and Literatures*, *1*(1), 134-243.

Department for International Development (DFID). (1999). *Sustainable livelihoods guidance sheets*.

Ikubor, J. O., Yusuf, A. M., Gajere, J. M., Ojih, A. U., Mikairu, I., & Ali, K. (2024). Impact of ICT Synergy and Financial Development on Economic Growth in Nigeria. *Tanzanian Journal of Multidisciplinary Studies*, *1*(2), 1-16.

Imamov, M., & Semenikhina, N. (2021). The impact of the digital revolution on the global economy. *Linguistics and Culture Review*, 968-987.

Iroanya, A. C. (2024). Poverty Reduction in Nigeria: A Religious Imperative. *African Journal of Politics and Administrative Studies (AJPAS)*, *17*(1), 857-881.

Iyiola, A. O., Akinrinade, A. J., & Ajayi, F. O. (2022). Effects of Water pollution on biodiversity along the coastal regions. In *Biodiversity in Africa: Potentials, Threats and Conservation* (pp. 345-367). Singapore: Springer Nature Singapore.

Kralovec, S. (2020). *Food insecurity in Nigeria: An analysis of the impact of climate change, economic development, and conflict on food security*. Independent thesis, Malmö University, Faculty of Culture and Society.

Lincoln, A. A., & Diamond, B. (2023). Contribution of sustainable development goals and corporate social responsibility initiatives of multinational enterprises (MNEs) to social development in Nigeria: a critical assessment of the different parties and the dynamic involved in mandating CSR to identify best practices for developing nations. In *The Elgar Companion to Corporate Social Responsibility and the Sustainable Development Goals* (pp. 190-220). Edward Elgar Publishing.

Luna-Nemecio, J., Tobón, S., & Juárez-Hernández, L. G. (2020). Sustainability-based on socioformation and complex thought or sustainable social development. *Resources, Environment and Sustainability*, *2*.

March, A., & Failler, P. (2022). Small-scale fisheries development in Africa: Lessons learned and best practices for enhancing food security and livelihoods. *Marine Policy*, *136*.

Marini Govigli, V., Rois-Díaz, M., den Herder, M., Bryce, R., Tuomasjukka, D., & Górriz-Mifsud, E. (2022). The green side of social innovation: Using sustainable development goals to classify environmental impacts of rural grassroots initiatives. *Environmental Policy and Governance*, *32*(6), 459-477.

Martínez-Vázquez, R. M., Milán-García, J., & de Pablo Valenciano, J. (2021). Challenges of the Blue Economy: evidence and research trends. *Environmental Sciences Europe*, *33*(1), 61.

Njue, N. S. (2020). *Influence of maritime security on exploitation of blue economy resources along Kenya's coastal region*. Doctoral dissertation, Africa Nazarene University.

Oberoi, S. S., & Banerjee, S. (2024). Effect of Climate Change, Damage to Environment and Human Development Index on Economic Growth in Nigeria. *African Journal of Business & Economic Research*, *19*(2).

Ogunode, N. J., Abdulrazak, A., & Abubakar, J. A. (2023). Digitalization of Educational Institutions in Nigeria: Benefits, Problems and Solutions. *World of Semantics: Journal of Philosophy and Linguistics*, *1*(1), 12-24.

Okafor-Yarwood, I., Kadagi, N. I., Miranda, N. A., Uku, J., Elegbede, I. O., & Adewumi, I. J. (2020). The blue economy–cultural livelihood–ecosystem conservation triangle: The African experience. *Frontiers in Marine Science*, *7*.

Oloyede, A. A., Faruk, N., Noma, N., Tebepah, E., & Nwaulune, A. K. (2023). Measuring the impact of the digital economy in developing countries: A systematic review and meta-analysis. *Heliyon*, *9*(7).

Popoola, O. O., & Olajuyigbe, A. E. (2023). Operationalizing the blue economy in the Gulf of Guinea, Africa. *Frontiers in Political Science*, *5*.

Scoones, I. (1998). *Sustainable rural livelihoods: A framework for analysis*. Institute of Development Studies.

ThankGod, J. (2024). *Unlocking Nigeria's Potential: Strategies for Emerging as a Global Economic Powerhouse by 2050*. SSRN.

Tian, J., Yu, L., Xue, R., Zhuang, S., & Shan, Y. (2022). Global low-carbon energy transition in the post-COVID-19 era. *Applied energy*, *307*.

Ucal, M., & Xydis, G. (2020). Multidirectional relationship between energy resources, climate changes and sustainable development: Technoeconomic analysis. *Sustainable Cities and Society*, *60*.

Week, D. A., & Wizor, C. H. (2020). Effects of flood on food security, livelihood and socio-economic characteristics in the flood-prone areas of the core Niger Delta, Nigeria. *Asian Journal of Geographical Research*, *3*(1), 1-17.