

**Review Article**

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*Chrysanthus Chukwuma Sr**The Chrysanthus Centre for Future-oriented Studies, Abakaliki, Ebonyi State, Nigeria*

Geopolitics of the nature and crises of the environment, economics and health in a sustainable society for human progress and survival

*Chrysanthus Chukwuma Sr***Abstract**

Environmental geopolitics is an aspect of political geography that probes how environmental features are applied to undergird geopolitical polemics and physical presentations of power play, spatiotemporal variations and realities. Geopolitics analyzes and studies the interrelatedness between places, national and regional strategies which focus on geographic situations. In essence, geopolitical environment pertains to the fusion of the natural and social ambient. The geopolitical environment is an expansive and intricately complex system that comprises the physical elements, such as topography, geomorphology, meteorological characteristics of hydrologic and terrestrial resources, as well as social and economic variables, viz: society, ethics, culture and politics. Thus, the factors which influence geopolitics inculcate applied science, spatiotemporal investigation and experimentation, climate, topography, demography, natural resources. Geopolitics centres on political power in relation to geographic transect, with reference to territorial hydrologic and terrestrial space as influenced by diplomacy. Geopolitics affects the economy when a rise in geopolitical risk is influenced by increased market volatility and diminished equity returns. However, the volatility tends towards a short-run trajectory that poses a higher geopolitical threat than a realistic conflict. With the occurrence and realisation of the event, there is an accompanied resolution of uncertainty, and with volatility precipitating to pre-threat phases. Environmental or ecological crises result from transformations in the niche of a species or population which perturb sustainability and survival. Certain dimensions of the crucial etiological factors or agents comprise disruption of the abiotic ecological factor, such as elevated temperature and disrupted precipitations. The world is experiencing grave and rapidly transforming geopolitical threats. The geopolitical risks in view encompass tensions between local, national, regional and global strategic competitions which impact on vulnerable populations regarding anti-/deglobalization, climate change and risk, energy security and the emergence and reemergence of infectious diseases and their variants.

Keywords: Geopolitics, Environmental geopolitics, Geopolitical economics, Health and geopolitics.

INTRODUCTION

Environmental and land degradation^[1,2] as well as natural resource insecurity denigrate the essence of managing global issues for sustainable society^[3]. Studies concerned with simulation of the geopolitical environment system relate to scientific undergirding mechanisms to understand international geostrategic dynamics for the implementation of spatiotemporal strategies in a sustainable society^[3]. The rationale and expanse associated with research of the geopolitical environment [Quansheng et al], economic and health system have undergone remarkable transformation as a result of international geo-strategic shift, the global economy and technical advancement^[4]. This article aptly provides a geopolitical corridor that attempts to explicate global environmental, economic and health politics. A sound and efficient strategy and policy for environmental protection and natural resource restoration must comprise essential components which reflect harmonization of national, regional and global approaches pertinent for a sustainable society. The increasing interests of governments and international organizations have resulted in varied pursuits focused in systematic confrontation of the extant problems envisaged to configure a global policy for environmental management and health for sustainable development. This inculcates environmental modifications, patterns and trajectories in economic development and sociocultural variables. The sustainable society is pivotal for fundamental necessities with the extant expansive issues, challenges and opportunities to promote and aspire satisfactorily to better quality of life, as it were for the future. For economic sustainability to succeed, developmental action must be supported with extant resources.

Correspondence:*Dr Chrysanthus Chukwuma Sr**The Chrysanthus Centre for Future-oriented Studies, Abakaliki, Ebonyi State, Nigeria*

Email: chukwumasr@gmail.com

What is the meaning of geopolitical problems? The struggle over the control of geographical entities with an international and global dimension, and the use of such geographical entities for political advantage^[5]. The stresses and constraints within vulnerable and poverty-encumbered populations must be taken into cognizance. The resource base in a sustainable society^[3] requires to be strengthened via effective, efficient and equitable utilisation of available resources and economic growth devoid of massive input of inimical contaminants and pollutants^[1,2]. In contradistinction to geopolitical conflict, cooperative governance is in the position to converge, ameliorate, and manage intricately complex global crises with pertinent coordination^[6] within the comity of nations for a sustainable society^[3] to ensure human progress and survival.

Environmental Geopolitics

Environmental issues are varied and emanate from disparate factors and conditions. These necessitate multidimensional strategies to confront environmental disruptive mechanisms of the extant noxious ingredients, such as toxic chemical components and wastes from various natural and anthropogenic activities. The sustained successful implementation of certain environmental programmes in the developed countries and refinement of our environmental paradigms in a contextually patterned sustainable development, in combination with pertinent information and knowledge in environmental planning and management have culminated in the decision for a global concerted effort for the maintenance and sustenance of our environment for health and safety of current and future generations. These objectives and interests are not fully supported in developing countries, and are ostensibly devoid of support and interest by chemical industries and other implicated interests due to impaired will and dedication to action and realisation that economics, environmental management, health and safety are inextricably linked.

Research has considered general and perturbative traits of commonplace, but broadly misconstrued presentations per human-environment relationships [Shannon Lear]. Mainstream themes concerning human-environment associations encompass characterisations regarding associative presumptions between trends of human population and scarcity of nonrenewable resources; as well as the linkage of crisis, conflict and violence to resource utilisation or environmental degradation^[2]; climate security; and science application in the resolution of environmental issues^[7]. It is amply argued that the functionality or interpretation of the environment is seldom elucidated, and any anthropogenic role within the circumstances may be partially considered, and ostensibly devoid of spatial dimensions or variations of Man and environment. Presentations concerning the environment frequently confound or mask value judgments with constraints on vividly dynamic strategic Man-environment associations. Environmental geopolitics presupposes the unravelling of justifiable, veritable and newfangled modalities to the inextricable linkage with the environment^[8].

Geopolitical risks and environmental policy are gaining interests globally with commitment in dealing with environmental problems and protection of the environment. However, geopolitical risks may jeopardise the objectives of the environmental policy. Results portray that geopolitical risks either critically govern environmental policy, or that environmental policy induces geopolitical risks, or there is no defined association^[9]. Thus, policymakers must not relent but address geopolitical risks, foster renewable energy, undergird environmental regulations, and tackle social and economic issues to diminish environmental policy susceptibility to geopolitical risks^[9].

International environmental politics, IEP showcased a pragmatic global phase of environmental issues, rather than merely local, national or regional^[10]. The philosophy, however, takes into cognizance transboundary and varied international problems as crucial, but that the global scale of IEP focus in the aftermath of World War II, depicted pertinence to economic, military, political and social issues. Ostensibly, both the global characterisation of American politics as well as the resource and naturalist colonialisation and colonial empires were responsible for the global IEP stance. Globalization of environmental problems persisted from early 1960s to mid-1970s, increasing

spatiotemporally with intricate complexity based on the assertion of the Global South, and more contested in the following decades. In the 1990s, IEP globalization and study expanded and became ingrained by both (supra) the domineering concepts superimposed and contested the contemporary IEP study. Consequentially, the dissemination of IEP study has prevailed and accelerated. Scholars and institutions in Europe have gained prominence, Anglophone countries have basically correlated to the conventional IEP; as is also the trend of IEP scholarship in other climes, especially the South^[10]. A plethora of crises, such as climate change, ecosystem degradation as well as economic, political and social perturbations, adversely impact human well-being, welfare and sustainable development. Ecosystem services or the effect of nature during crisis necessitate to be addressed. A vast majority of research are based on the material recovery which ecosystems present in crisis, with frugal attention on sustainability. However, these ecosystem materials are pertinent for human resilience, well-being and welfare during necessities and crises^[11].

Geopolitical economics

Geopolitics and economics are inextricably-linked. Consequently, economic growth overrides power balances across superior powers, thus setting the stage for power dominance. With the contestation of the rise or decline of the global powers, there is a tendency in the extant to determine geopolitical ingredients which influence sustainable economic development. In the West, political fragmentation or interstate rivalry may provide a comparatively conducive environment to establish constrained government and private property rights, economic liberty or capitalism than imperial conformation. This may grant the world the latitude to conduct its civilizations as it deems fit to become a prosperous and sustainable societal environment. Despite European integration, Brexit notwithstanding, the belligerence, risk and conduct of war has not been averted. The amelioration of European interstate rivalry provides the comfort of making self-defeating economic policies ostensibly viable for sustainability. In the face of Brexit, the Russian-Ukraine hostilities, the separatist movement in Catalonia, the Israeli-Hamas/Gaza imbroglio amongst others have not permitted the European Union to metamorphose into a harbinger or promoter of economic justice, liberty and prosperity but an ostensible threat to prosperity and the viability and entrenchment of European capitalism. Furthermore, diminished fertility phases and massive transborder migrations persistently excoriate the institutional framework of a sustainable society or prosperous entity including a long-term political stability. With the perspicuous decline of Europe and Japan, and the consequential accelerated economic posturing of China ahead of India, future hegemony contestations will pitch China against the United States. The pivotal challenge, issue and opportunity of the envisaged hegemonic rivalry relates to the accessibility of Russian resources to Europe, the West or China^[12].

The feasible transition to renewables is focal to climate action. An empirical investigation was conducted to determine if renewables can contribute to the promotion of international peace, as hypothetically presented in the literature of International Political Economy, IPE of renewables^[13]. It developed and tested hypotheses towards the ameliorating impacts of renewables in order to establish the fundamentals in the analysis of detailed aetiologic mechanisms. The mechanisms are dependent on the 'energy democracy' polemics, with the premise that a low carbon global environment experiences minimal interstate stress as increasing number of states become democratically inclined. The theorem of the 'capitalist peace', postulating that renewables deployment creates economic development, abates conflict; while the human security literature posits that renewables decrease local level vulnerabilities, thereby promoting social stability, and suppressing violence. It is suggested by longitudinal dataset on global renewable energy investment and econometric tests that deployment of renewable energy systems ostensibly fail to enhance democratic rule, or critically influence sustainable human development. In contradistinction to the energy democracy narrative, a higher renewable investment concentration may augment stability/absence of violence and human development rather than decentralized investment trajectories. The 'peace through prosperity' rhetoric and assumption of renewables creating a peaceful

environment with resultant abatement of conflict remain unsubstantiated [13].

Geopolitics affects the economy when a rise in geopolitical risk is influenced by increased market volatility and diminished equity returns. However, the volatility tends towards a short-run trajectory that poses a higher geopolitical threat than a realistic conflict. With the occurrence and realisation of the event, there is an accompanied resolution of uncertainty, and with volatility precipitating to pre-threat phases^[14]. Geopolitical crises, and especially economic sanctions, have contributed significant derailments in natural resource markets may disrupt targeted states from established low-carbon trajectories. The augmentation of capital costs and constraints in technology access propel sanctioned states to steer from capital- and technology-intensive greener alternatives and generate more carbon-intensive primary energy supply, predominantly of the coal variety. The recovery strategy from sanctions augments coal consumption in targeted states. Econometric findings from global cross-sectional time-series dataset depict in-depth exposition of the challenges, issues and opportunities to achieve sustainable recovery following geopolitical crises. These provide assessment of carbon-footprint and defined foreign policy prior to implementation^[14].

The untoward outcomes and economics risks In geopolitics commodities prices are susceptible to volatility and disruptions to supply of important resources with a critical influence on global economy. The global economy is expressively interrelated, and circumstances in a region can have a ripple effect in other regions of the world. Thus, economic risks constitute integral aspect of geopolitics. Trade is a vital dimension to consider as protectionist measures of a specific country may result in retaliatory measures from others, with culmination in the disruption of global trade flows^[15]. Multiple instances abound of geopolitical risks, as of 2022 between the United States, Taiwan, and China, wherein the protracted and complex condition of the US and Taiwan has extensive trade agreements which have delved into risk due to the conflict between China and Taiwan. The parties involved have reasonably effected to reconcile trade agreements within considerable magnitude. Following decades of enhanced cooperatively integrated global economic stance, there is a perspicuiud risk of policy-driven geoeconomic fragmentation, GEF that explores the ramifications, with identification of numerous conduits of globalization benefits.were transmitted previously, and conversely, wherein the GEF costs indubitably fall. These comprise trade, immigration, capital flows and flight, diffusion of technology and availability of global public goods. The GEF repercussions for the international monetary system and the global financial safety net need to be elucidated. A pragmatic trajectory forward for the sustainability of global integration benefits and multilateralism are pertinent to be explored^[15].

The economic derangement attributed to natural disasters varies. Capital assets and infrastructure, for instance, habitat, hospitality, educational establishment, industry, equipment, thoroughfare, dam and bridge dissipate. There is paucity of human capital arising from the dissipation of life, skilled workers and diminished educational infrastructure disrupting school attendance and functionality. Globally, geopolitical threats have remarkably accelerated with aggravated adverse impact on the environment. Conversely, there is a widening lacuna between the consumption of non-renewable energy, trade liberalization, and environmental sustainability and development in society. The extant work simulates the interdependence between geopolitical risks or threats, non-renewable energy utilisation, trade liberalization and environmental sustainability applying a vector error correction model, VECM and Granger causality test^[16]. The analysis comprise encompassing the period of 1980 to 2021. The findings revealed that geopolitical risks, non-renewable energy use, natural resource and industrialization, respectively present negative and statistically significant correlation on environmental sustainability, with natural resource also depicting negative but insignificant influence on environmental sustainability. Concomitantly, trade liberalization and urbanization featured positive and statistically significant effect, respectively on environmental sustainability. Government must be proactive for natural environmental disasters by harnessing early warning and emergency response and disaster relief capabilities to ameliorate the effect of geopolitical risks which culminate

in natural disasters. It is pertinent to prioritize investment of huge resources diplomatically for regional dynamic relationship with neighboring and transborder countries; with sustainable development of modalities centred on restricting non-renewable energy consumption to retard the negative impact. Provision of pecuniary incentives, implementation of efficient and effective feed-in tariff schedules, and development of a sustainable approach to engender the propensity for sources of renewable energy^[16].

An intervention that specifies current disruptiveness and alterations during the (post)pandemic global economy will invariably perturb economic geographers^[17]. It tends to promote constructive dialogues and transcend discussions in the broadening discipline of economic geography of existence and relevance in pivotal human geography is paradoxically threatened. It is contended that the characterisation of economic geography in the early 2020s is depicted by a global modification and a transforming generation of increasingly varied researchers with newfangled predispositions to tackle the extant perturbing themes for future studies. Research pathways which combine nascent geopolitical themes and risks in renodelling the global economy with previous issues of work and environment which undoubtedly merit renewed interest and enhanced analytical interest in the discipline is pertinent^[17]. Overall, the current economic geography research of the 2020s and the future ought to be entrenched upon to foster intellectual and public relevance of the discipline.

Health and geopolitics

There is an extant intersection geopolitically between pandemics and climate change. They both exhibit complexities, stresses and tensions which necessitate joint efforts considering the global and trans-boundary ramifications. It is pertinent to inter alia examine the urgencies and contraindications in global diplomacy, governance and cooperation which become exhumed via the SARS-CoV-2 pandemic. Polemically, the pandemic grants an early warning of the inherent issues in a waned or debilitated international cooperation, and driving accountability for social impact^[18,19]. Nations flaunting disparate territories, are taking distinct rather than collective actions to the SARS-CoV-2 pandemic^[18,20]. Several countries have inculcated stringent modalities which have obliterated rather than granted access, international collaboration and cooperation. The control or closure of borders^[20], restricted social mixing, domestic acquisition of public health provisions as well as subsidies for domestic industries and commerce activities tend to proffer antidotes at the national level but lack the global prowess to tackle strategic confrontations^[18]. In the least developing countries and vulnerable populations, pandemics, other issues challenges comprise a litany of scourges exacerbated by pressures of scarce resources, population and climate change. On the disproportionate impact of SARS-CoV-2 on environmental stress, greater holistic strategies to the geopolitical intersection of public health and climate change must be considered.

With the accelerated emergence and reemergence of infectious diseases globally^[21] and disseminating across international boundaries; showcasing accelerated climate, demographic and technologic spatiotemporal variations with unprecedented threats to hunger/food security, environment^[1], health and socioeconomic activities have been disrupted^[22]. These pose grave dilemma which necessitate nations with expansive resources and geopolitical impetus to harness and enhance global health and environmental security to curtail the increased risk in the emergence and reemergence of diseases^[23-25].

These threats of overwhelming epidemics and pandemics have culminated in widespread global concerns of aggravated impacts^[26] on geopolitical stability without a modicum of consideration for international boundaries or borders^[20].

Gain-of-function, GoF or gain-of-function research, GoFR in association with or absence of geopolitics or geopolitical activities has posted concerns in the emergence and reemergence of infectious diseases. The SARS-CoV-2 or COVID-19, Omicron (Nu or Xi) is a Variant of Concern. The designation as may be applicable to other novel microorganisms, such as subunit variant BA.2 of the Omicron COVID-19 species, genome

sequence sharing, notification to the WHO regarding initial cases and clusters, performing field and laboratory experimentations as well as assessment to explore factors which correlate with the overall impacts of indicted microorganisms, especially in vulnerable populations^[21]. The introduction of "travel apartheid" in a pandemic that is devoid of endemic essence, as in the ban on select countries for COVID-19 Omicron variant is an unconscionable conduct. In the mode to prevent COVID-19 scourge, governments must tread with caution on Emergency Use Authorization and booster doses of vaccines, particularly concerning the emergence of the subunit variant BA.2 Omicron COVID-19. Despite gain-of-function research being an enabling test for new scientific theories, the development of novel technologies, discoveries and targets for infectious disease treatment, it is a precinct to be handled with care^[21]. Global concerns persist in the dissemination and transmission dynamics of emerging and reemerging infectious diseases including the underlying characteristics of gain-of-function research and geopolitics. These concerns have become crucial in the management of local and global health as the disease is conspicuously a geopolitical issue ostensibly linked to gain-of-function research where health diplomacy is central to the emergence and re-emergence of infectious diseases, pandemics, and microbiome variants. The convening and convergence of countries for unprecedented epidemic or pandemic treaty settings or other formulations to confront emerging and reemerging infectious diseases will afford considerable opportunities, preparedness, and response for a sustainable society. Legal instruments, effective and efficient systems to mitigate future threats and outbreaks of infectious diseases are tenable under the circumstances^[27].

The convening and convergence of nation's for epidemic or pandemic treaty settings or other to stem or ameliorate emerging and reemerging infectious diseases will provide opportunities for challenges in action, preparedness and response towards a sustainable society. Provisions for sustainable legal instruments, effective and efficient systems to counter future threats and outbreaks of infectious diseases are critical to enhance global health security^[28].

Phases of critical risk factors and social decision-making incessantly undergo multiple transformations in diverse nations with their concomitant geopolitics, gain-of-function research in biosecurity, environment, and health requiring international cooperation for peaceful coexistence within and across borders for sustainable development. Elucidating and understanding the cumulative impact of these transformations in erstwhile, current and future trends is vital to control environmental disasters in vulnerable ecosystem cadastres^[1], emerging and reemerging communicable and noncommunicable disorders or perturbations^[19,29].

Geopolitical crises and impediments for a sustainable society

The global development project faces newly evident challenges in the combination of energy, climate and food crises. Their interrelationships create a powerful moment in world history in which analysts and practitioners grope for solutions, limited by the narrow market episteme^[30]. This contribution argues that official development, in advocating green market solutions, recycles the problem as solution—a problem rooted in the geopolitics of an unsustainable global 'metabolic rift' and a discourse of global ecology reinforcing international power relations through monetary valuation, and deepening the North's 'ecological debt'^[30].

Global challenges require interactive global solutions. The disparities of inter alia scarce resources, military efforts, trade and transboundary realizations of pollutants and irritants into the biosphere correlate to the multidimensional origin of health and environmental perturbations. Thus, taking into cognizance the inherent complexity of the world, it has become necessary to inculcate all pertinent concerns in decision making locally and globally. The levels of significant risk factors and social decision-making continue to undergo diverse alterations in several countries with their attendant geopolitics, gain-of-function research in biosecurity, environment and health which necessitate international cooperation for peaceful coexistence within and across borders^[31]. A proper understanding of the cumulative impact of these changes in

erstwhile, current and future trends is vital to harness and curb environmental health disasters in vulnerable ecosystem cadastres. Changes or trends in risk factor presentations or levels can be determined via disparate or collaborative spatiotemporal specific environmental cadastre and health surveys. International conflicts, hostilities, war, commodity crisis, inflation, trade imperfection, supply-chain disruption and labour shortages are being rebranded by multinationals and industrialized countries as health and environmentally virtuous policies^[31].

Conflict due to scarce resources, such as minerals, fish, water, and considerably territory, is a routine excuse for military belligerency. Overwhelming claims resulted to the effect of environmental degradation accelerating resource scarcity with concomitant armed hostilities. There are extant contradistinctions and controversies as well as minute veritable systematic investigation regarding the phenomenon^[32]. A vast majority of scholarship publications associating resources, environment and armed conflict are faulted due to certain aspects of these factors, such as (i) deficient clarification of 'environmental conflict'; (ii) researchers focus more on definitions and polemics rather than analytical reasonings; (iii) pertinent variables are relegated to the background, perspicuously for political and economic considerations having effect on conflict, and moderate the impact of resource and environmental variables; (iv) certain models become enlarged and complex resulting in their ostensible untestability; (v) case selection is skewed based on pertinence of the dependent variable; (vi) there is reversal in the causality of the association; (vii) envisaged events are cited as empirical evidence; (viii) investigations neglect to differentiate between extraneous and internal conflict; and (ix) resultant confounding ambient regarding the pertinent analytical level^[32].

DISCUSSION

Understanding geopolitical determinants and gain-of-function research will enhance evidence and imperatives to prevent and be proactive towards emerging and reemerging infectious diseases globally. Interests in international health, policy and security have enhanced perspectives and interventions in political stability and gain-of-function investigations to manage the disproportionate global disruptions and impact of the SARS-CoV-2 Omicron variant and other microbial variants on strategies in public and medical modalities in the pandemic without stigmatisation regarding the origin(s)/source(s) as realised in HIV/AIDS controversies^[33]. Prejudicial attributes and political nationalism immensely differ spatiotemporally globally. Speculations are time as to the predictors of these variations. It is, however, suggested that cultures engender more prejudiced attitudes as the cultural norms intertwine in response to disruptive ecological threats; thus engendering intercultural conflict and radicalization^[34]. Procrastination and impediment of investigations on the origin, dissemination and impacts of SARS-CoV-2 culminated in certain Western nations to link the virus with China, "Chinese virus". This narrative is that the international presentation assumed geopolitical and geoeconomic realisations with the emergence of "pandemopolitics". In its absence, this global public health dilemma, geopolitical and geoeconomic characterisations would be devoid of overwhelming impact on humanity, and exclusive pandemopolitics^[35].

Research tends to identify trajectories to shift demographic pressures and environmental issues could transform future geopolitical stability, and the manner the modifications emanating from climate change are liable to disrupt the global power balance. It is perspicuous that global warming may precipitate conflicts to access food^[36], clean water, energy and habitat among vulnerable populations^[37]. The extant international contest for the natural resources of Africa, South America, polar regions and the marine precincts, in the context of accelerated multiplier of natural megadisasters predicts future trends^[38], which must not negate sustainability^[39,40], and the eradication of poverty^[41] in our society^[3].

CONCLUSION

Geopolitics, environment, economics and health are pivotal to the geopolitical, socio-economic, and sustainable development of society. Global environmental politics pertains to international relations on issues

associated with interaction between Man and Nature, focusing on global natural resources, political economy and security. Environmental degradation and natural resource deprivation undermine the propensity to overcome certain global prevailing dilemma. Geopolitical determinants impact social aspects of health, poverty, unemployment, habitat, urbanization, industrialization, and deficiencies in sustainable development of society, with particular reference to vulnerable populations. However, natural resource insecurity, economic instability, and conflicts are intertwined; thus, resolutions are only worthwhile in a sustainable world. Geopolitical perspectives on health comprise the collation of veritable data and resources for the identification and determination of health outcomes pertinent to extant situations for sustainability. The emergence and reemergence of SARS-CoV-2 and other debilitating diseases, geopolitically instructs humans about global health and geopolitics. The pertinent variables of geopolitics encompass spatiotemporal variations of areas of interest, environment, economics, health, nature and crises to be remedied for a sustainable society. Geopolitics is characteristically affiliated with political power and diplomacy inextricably-linked to geographical latitude, especially aerial, marine and terrestrial precincts or territories. The natural world must rely on inter alia pertinent Treaties and Agreements: Multilateral environmental agreements, MEAs and conventions for pivotal functionality to tackle environmental issues via setting legally binding standards, obligations and ratifications with countries as signatories.

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