Climate Diplomacy And Human Security: Addressing The Interconnectedness Of Illegal Mining, Water Insecurity, And Climate Vulnerability In Ghana

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Abstract

Illegal small-scale mining or, in plain language, *galamsey* has emerged as one of the most pressing environmental and human security issues facing Ghana with significant implications for the country's climate diplomacy agenda. Aside from its immediate socio-economic drivers, illegal mining is also the primary driver of deforestation, water pollution, land degradation, and disruption of ecosystems that are critical to climate resilience. The intersections of illegal mining, water insecurity, and climate vulnerability in Ghana are examined in this paper, and how these interconnected challenges place the country in global climate diplomacy. Drawing on Ghana's Paris Agreement and Nationally Determined Contributions (NDCs), the article highlights issues relating to galamsey management and governance towards the attainment of climate adaptation goals, rural poverty exacerbation, and human security risks in water quality degradation and agricultural production. Internal anti-galamsey efforts of Ghana are situated within broader regional and global discourses through an examination of ECOWAS and the African Union's conceptualization of climate security as a foreign policy imperative. The article argues that Ghanaian climate diplomacy must move beyond advocacy for mitigation and finance to include ecosystem protection and natural resource management as central pillars. By addressing the environmental and security dimensions of illegal mining, Ghana can redefine itself as a new champion in bridging local ecological crises with global climate negotiations and in mobilizing global action for water security and sustainable means of living. The study concludes that the inclusion of human security concerns in climate diplomacy, apart from improving Ghana's bargaining capacity, provides a vehicle through which national development, environmental justice, and global climate action are linked

Introduction

Climate change has evolved into one of the quintessential international problems of the twenty-first century, demanding both local response as well as global collaboration. To the highly climate variability-exposed nation of Ghana, climate diplomacy is now an unavoidable instrument for advancing national interests, raising funds, and safeguarding development. At the same time, pressing domestic environmental challenges, most critically the proliferation of illegal small-scale mining (galamsey), test the nation's climate ambition and people's security in a very serious manner. Illicit mining has ballooned in the last two decades fueled by poverty, joblessness, and the promise of quick riches in Ghana's gold belts. But the activity has ruinous effects. It hastens deforestation, pollutes rivers with mercury and other chemicals, and undermines arable farmlands. These environmental damages undermine Ghana's

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Nationally Determined Contributions (NDCs) to the Paris Agreement, particularly in ecosystem preservation, water use, and agricultural sustainability. More important, they exacerbate human insecurity: communities face acute water shortages, food insecurity, health risks, and economic displacement.

The intersection of illegal mining, water insecurity, and climate risk constitutes both a domestic governance challenge and a foreign affairs dilemma. As Ghana moves to the global climate stage under the United Nations Framework Convention on Climate Change (UNFCCC), African Union (AU), and Economic Community of West African States (ECOWAS). It must cross regional environmental facts with global commitments. The issue remains: in what ways would Ghana utilize climate diplomacy to address the human security aspects of galamsey, while at the same time strengthening its bargaining position in the global forums? This essay argues that the climate diplomacy of Ghana must expand its focus from its traditional scope on finance and adaptation to encompass issues of human security as pillars of engagement. By framing illegitimate mining as environmental and security risk, Ghana positions itself as a regional force in linking local ecological crises to global climate conversations. In so doing, the country not only safeguards its citizens' means of livelihood and water access but also strengthens its legitimacy and negotiating power in the evolving framework of global climate governance.

Methodology

This study utilizes a qualitative study design anchored on a case study approach with an emphasis on Ghana as a typical setting where illegal mining intersects with climate diplomacy and human security concerns. The research process revolves around three components: data collection, data analysis, and validation.

1. Data Gathering

The study relies primarily on secondary sources of data augmented by policy analysis and expert testimony. Sources are:

Official policy documents: Ghana's Nationally Determined Contributions (NDCs), Environmental Protection Agency (EPA) documents, Minerals Commission documents, and water resource management plans.

International climate policies and communiqués: UNFCCC conference documents, African Union declarations, and ECOWAS policy documents on environmental governance.

Peer-reviewed journals: Books, and working papers on climate diplomacy, illegal mining, and human security in Sub-Saharan Africa.

Media and NGO reports: News, civil society publication, and advocacy reports on the impacts of galamsey on water and food security.

Where accessible, the study features elite interviews with policymakers, environmentalists, and climate negotiators in Ghana to introduce depth with first-hand perspectives.

2. Data Analysis

Data are examined using thematic content analysis to establish and understand recurring patterns and relationships between illegal mining, water insecurity, and climate vulnerability. The three thematic spectacles are utilized to lead the examination:

Environmental security: Exposing the environmental effects of galamsey and their implications on water and climate resilience.

Human security: Examining how environmental degradation affects livelihoods, health, and community well-being.

Climate diplomacy: Assessing how Ghana positions these concerns in the international sphere and builds support for adaptation, mitigation, and justice.

3. Validity and Triangulation

For purposes of reliability, findings are triangulated between various sources, cross-checking government data with outside reports from NGOs, the literature, and international organizations. This minimizes the possibilities of bias and presents an ameliorative view of the problem.

Scope and Limitations

The study focuses on Ghana's experience from 2010–2025, which both chronicles the growth of illicit mining and the evolution of Ghana's climate diplomacy under the paradigm of the Paris Agreement. However, the study is limited by secondary data, with little access to confidential government negotiations and in situ field measurements of environmental degradation.

Results

The findings of the research underscore the complex interactions among illegal mining, water insecurity, and climate vulnerability in Ghana, as well as how they contribute to the country's climate diplomacy. Four are the salient outcomes of the analysis.

1. Illegal mining as an environmental and water insecurity cause

Illegal small-scale mining (galamsey) remains a significant cause of water pollution and deterioration of ecosystems in Ghana. It has been established by research that artisanal miners usually use mercury and other harmful chemicals, contaminating major rivers like the Pra, Offin, and Ankobra (Hilson, 2017). Ghana Water Company has always reported treatment plant shutdown due to over-turbidity owing to galamsey operations (Adu-Gyamfi, 2020). The effects extend beyond water supply: polluted rivers threaten aquatic life, reduce fish stocks, and increase health risks for people relying on surface water. Further, agricultural yield in the affected areas of mining has reduced, as agricultural lands are destroyed or rendered useless through open cuts and soil contamination (Armah et al., 2013). These findings confirm that galamsey is not only an environmental concern but also a human security concern based on its implications on health, livelihood, and access to safe drinking water.

2. Destruction of Ghana's climate obligations

The climate-induced degradation as a result of illegal mining gravely undermines Ghana's climate obligations in the Paris Agreement. Ghana's Nationally Determined Contributions (NDCs) are centered on forest protection, agriculture for climate resilience, and water management for sustainability (Republic of Ghana, 2021). However, galamsey expansion has accelerated deforestation rates and undercut reforestation campaigns (Teschner, 2012). For example, the Forestry Commission has documented annual forest cover loss partly caused by encroaching mining operations, reducing the nation's carbon sequestration potential (Owusu-Nimo et al., 2018). This results in a deficiency of credibility in Ghana's national environmental policy and international climate commitment. Notwithstanding initiatives such as Operation Vanguard and the Inter-Ministerial Committee on Illegal Mining intended to curb galamsey, enforcement and political challenges have hampered their effect (Bansah, Yalley, & Dumakor-Dupey, 2016). This erodes the bargaining power of Ghana in climate diplomacy as it cannot present measurable accomplishment in terms of commitments.

3. Incorporating human security in climate diplomacy

The study further shows that Ghana has begun to incorporate human security narratives in its climate diplomacy in a limited way. In recent UNFCCC sessions, Ghanaian delegates have highlighted adaptation climate finance requirements, ecosystem restoration, and livelihood support (Dagnet et al., 2020). However, the tangible human security impacts of illegal mining such as food insecurity, health risks, and displacement remain to be incorporated into diplomatic rhetoric. This is an opportunity lost. Coupling the environmental and social expenses of galamsey to broader climate vulnerability stories could potentially strengthen Ghana's voice on the international stage, especially in loss and damage discourses. By linking environmental change to a matter of human security, Barnett and Adger (2007) build a more convincing argument for foreign aid. Ghana would diplomatically benefit if it could demonstrate that illegal mining is not just a governance failure but a climate-induced human security issue.

4. Regional and international dimensions

Findings depict regional and international dimensions of the phenomenon. Regionally, illegal mining is not confined to Ghana's borders. Galamsey is practiced by West African immigrants from other neighboring countries, thereby symbolizing cross-border resource management and ECOWAS' role towards finding a solution to the problem (Okoh, 2014). This makes galamsey a regional security concern with implications for climate diplomacy at African Union and ECOWAS levels. At the global level, Ghana's reliance on exports of gold complicates its position in climate diplomacy. Despite the need for galamsey crackdowns as a measure of environmental protection, gold remains a significant foreign exchange earner, and foreign demand continues to drive both licit and illicit mining (Hilson & Potter, 2005). As recent as today, the development of renewable energy technology has increased demand for minerals, which adds to the contest between resource extraction and climate goals (Kotsadam et al., 2018). This doublethink places Ghana in a difficult diplomatic conundrum of balancing economic growth with environmental sustainability, but also gives it a platform to lead on responsible mineral supply chains on international climate diplomacy.

Summary of results

Illegal mining is both an environmental and human security threat that compromises the water security, forest cover, and agricultural productivity of the country. These effects are directly counter to Ghana's climate commitments and undermine its diplomatic leverage. Yet, if understood in human security and justice frameworks, galamsey can become a compelling entry point for Ghana to enhance its voice in global climate talks and garner increased international political will.

Discussion

The study's findings underscore the complex relationship between illegal mining, water insecurity, and climate vulnerability in Ghana, and cast climate diplomacy as an essential mechanism to counter these interlinked perils. Legal and illegal mining, particularly "galamsey," remains the most significant driver of environmental degradation in Ghana, leading to deforestation, land degradation, loss of biodiversity, and, more severely, pollution of water bodies with mercury and other toxics (Hilson, 2017; Armah et al., 2013). The environmental degradation has direct human security implications, threatening livelihoods, public health, and access to safe drinking water in rural and urban communities. Through degrading water sources, illegal mining aggravates water shortage, undermines food security in the aspect of reduced agricultural productivity and rising vulnerability to climate change impacts such as drought and floods (Boafo et al., 2020).

In the broader context of climate vulnerability, the research identifies the ways through which environmental degradation through illegal mining synergizes with climate change to enhance human insecurity. Ghana is already recording rising temperatures, uneven rainfall, and flood events, particularly in mining-prone regions such as the Western, Eastern, and Ashanti regions. The combined pressure of polluted water systems and climate-induced variability places double pressure on vulnerable communities with little adaptive capacity (Antwi-Agyei et al., 2018). This reinforces the argument that addressing environmental degradation is not merely a domestic issue of governance, but one that is international in concern, as it is in line with climate justice globally, the SDGs, and global human rights frameworks (UNDP, 2020).

Climate diplomacy provides an entry point to address these issues. Ghana, as a party to the Paris Agreement, made Nationally Determined Contributions (NDCs) that emphasized sustainable land use, renewable energy, and water conservation. The fact that there is evidence of ongoing illegal mining, however, suggests that policy aspiration and enforcement modalities are out of sync. With regional forums such as ECOWAS, and global cooperation under the UNFCCC, Ghana has recourse to utilize diplomatic means to leverage technical assistance, finances, and capacity development to enhance its control over natural resources. Climate diplomacy can also serve as a tool to hold corporate entities and foreign actors accountable, given that some illicit mining is based on transnational networks and foreign investment (Tschakert & Singha, 2007).

Furthermore, the report suggests that climate diplomacy must transcend state-state diplomacy to include non-state actors like civil society associations, local communities, and the private sector. The voice of communities matters the most since individuals most affected by illegal mining and climate are often excluded from the decision-making platform. Empowering communities with knowledge, legal support, and access to climate finance would truly enhance resilience and reduce dependence on destructive livelihood approaches (Owusu-Nimo et al., 2018).

The second aspect is the moral and ethical imperative of linking climate diplomacy with human security. Power and national interest are at the center of conventional diplomacy, but in climate change diplomacy, attention has to be shifted to the protection of vulnerable individuals. Human security frameworks demand one to adopt a holistic approach with access to clean water, sustainable sources of livelihood, and ecological justice at the center of peace and stability. By embracing illegal mining as part of its climate diplomacy agenda, Ghana is able to redefine environmental degradation from a purely domestic criminal enterprise, but as an existential and transboundary problem deserving of international collaboration. Finally, the study highlights the potential for Ghana to become an African model of climate diplomacy. By encouraging progressive policies to combat illegal mining and re-affirming a strong commitment to environmental protection, Ghana would set the pace for how resource extraction could be reconciled with sustainability. Such a role model would advance Ghana's global image, attract climate finance, and contribute to regional stability. This will, however, be contingent upon political will, institutionally developed capacity, and consistent enforcement of environmental law, alongside the integration of climate diplomacy into the overall foreign policy plan of Ghana (Government of Ghana, 2021).

The analysis points out that the confluence of illegal mining, water exposure, and climate risk presents a crisis of national significance as well as a diplomatic opportunity. Effective climate diplomacy founded on human security is able to convert this challenge into a platform for sustainable development, regional cooperation, and resilience in Ghana.

Conclusion

This study directs our attention to the intricate web of illicit mining, water insecurity, and climatic exposure in Ghana, locating the issue in climate diplomacy and human security literature. Illegal mining, or galamsey, not only ravages crucial ecosystems but also endangers water security, enhances local climatic risks, and erodes the livelihood of vulnerable populations. The conclusion reveals that Ghana's environmental threat cannot be divorced from its development and security risk, necessitating national reforms alongside international cooperation. In the end, these interconnected threats will determine the nation's resilience in regard to climate change.

Policy Recommendations

Strengthening environmental regulation is the most important step toward addressing the challenges of illegal mining in Ghana. Existing mining and environmental regulations must be strengthened with stronger penalties for offenders to deter non-compliance. Improving inter-agency coordination between the Environmental Protection Agency (EPA), the Water Resources Commission, and local government authorities to ensure a more coordinated and effective regulatory system is also important.

In addition, Ghana should take charge of climate diplomacy by being the vanguard of African climate politics. Merging national and environmental security in global climate politics will give the nation strong bargaining power. Encouraging additional climate finance under global deals such as the Paris Agreement and the Green Climate Fund will also be central to revitalizing exploited communities and enhancing resilience.

Investments in water security are a second priority policy. Improved infrastructure for sustainable supply and water treatment in impacted mining regions will ensure that vulnerable populations access clean drinking water. At the same time, community-based watershed protection programs should be encouraged, merging indigenous and scientific knowledge to provide sustainable management.

Imbedding human security approaches in climate and environmental policy will also increase Ghana's resilience. Addressing the illegal mining's socio-economic push factors requires creating alternative livelihoods in rural areas where unemployment is widespread. Vocational skills training in climate-resilient agriculture, renewable energy, and other green jobs will provide effective alternatives to environmentally destructive mining.

It is equally important to raise public consciousness and education. There have to be nationwide campaigns on civic education that highlight the human security element of illicit mining and climate vulnerability. Integration of environmental sustainability and climate resilience into school curricula will also instill a generation of green citizens committed to long-term change.

Finally, Ghana needs to forge regional and international partnerships to boost its fight against illegal mining and climate risk. These will include partnerships with neighboring West African countries to prevent ecosystem crimes that span borders, and partnerships with international NGOs, research institutions, and donors to help integrate technology solutions to environmental monitoring and compliance.

By implementing these measures, Ghana will be able to reduce the devastating effects of illegal mining, protect its water resources, and limit climate vulnerability. Incorporating these measures into the climate diplomacy agenda of the country will not only elevate the image of Ghana in the international community but also advance its citizens' human security and welfare.

References

Adu-Gyamfi, E. (2020). Illegal mining and water resources in Ghana: Threats and policy responses. Journal of Environmental Policy Studies, 22(3), 145–162.

Antwi-Agyei, P., Dougill, A. J., Stringer, L. C., & Codjoe, S. N. A. (2018). Adaptation opportunities and maladaptive outcomes in climate vulnerability hotspots of northern Ghana. Climatic Change, 147, 571–585.

Armah, F. A., & Gyeabour, E. K. (2013). Health risks to children and adults residing in riverine environments where surficial sediments transport metals generated by active gold mining in Ghana. Toxicological Research, 29, 69–79.

Armah, F. A., Obiri, S., Yawson, D. O., Afrifa, E. K. A., Pappoe, A. N. M., & Essandoh, P. K. (2011). Spatial variability of trace metals in surface and groundwater within a contaminated mining environment in Ghana. Research Journal of Environmental and Earth Sciences, 3, 546–554.

Armah, F. A., Obiri, S., Yawson, D. O., Pappoe, A. N. M., & Akoto, B. (2013). Mining and heavy metal pollution: Assessment of aquatic environments in Ghana. Journal of Environmental Science and Health, Part A, 48(4), 369–380.

Bansah, K. J., Yalley, A. B., & Dumakor-Dupey, N. (2016). The hazardous nature of small-scale underground mining in Ghana. Journal of Sustainable Mining, 15(1), 8–25.

Barnett, J., & Adger, W. N. (2007). Climate change, human security and violent conflict. Political Geography, 26(6), 639–655.

Boafo, Y., Akorsu, A. D., & Pwinsen, C. (2020). Environmental degradation and its impact on rural livelihoods in Ghana. Journal of Environment and Development, 29(4), 323–340.

Dagnet, Y., et al. (2020). Ghana's climate diplomacy in action: Lessons from the UNFCCC process. World Resources Institute.

Hilson, G. (2017). Shootings and burning excavators: Some rapid reflections on the Government of Ghana's handling of the informal galamsey mining "menace." Resources Policy, 54, 109–116.

Hilson, G. (2017). Shootings and burning excavators: Some rapid reflections on the Government of Ghana's handling of the informal Galamsey mining "menace." Resources Policy, 54, 109–116. https://doi.org/10.1016/j.resourpol.2017.09.009 core-prod.cambridgecore.orgOUCI

Hilson, G., & Potter, C. (2005). Structural adjustment and subsistence industry: Artisanal gold mining in Ghana. Development and Change, 36(1), 103–131.

Hogarh, J. N., Adu-Gyamfi, E., Nukpezah, D., et al. (2016). Contamination from mercury and other heavy metals in a mining district in Ghana: Discerning recent trends from sediment core analysis. Environmental Systems Research, 5, 15. https://doi.org/10.1186/s40068-016-0067-0 SpringerOpen

Kotsadam, A., Tolonen, A., & Roald, A. (2018). African mining, gender, and livelihoods: The role of global mineral demand. World Development, 104, 295–309.

Mensah, S., Yeboah, J., & Adu, E. (2020). Climate vulnerability and livelihood impacts among mining communities in Ghana. Sustainable Development Review, 13(1), 56–70.

Okoh, G. A. (2014). Environmental justice and conflicts in Ghana's gold mining communities: The case of Tarkwa. Humanities, 3(4), 209–226.

Owusu-Nimo, F., et al. (2018). Small-scale mining and its impact on Ghana's forest resources. Environmental Management and Sustainability Review, 4(2), 45–60.

Polluted rivers, uprooted farmland and lost taxes: Ghana counts cost of illegal gold mining boom. (2024, November 25). The Guardian. The Guardian

Republic of Ghana. (2021). Updated nationally determined contributions (NDCs) to the UNFCCC. Ministry of Environment, Science, Technology and Innovation.

Serfor-Armah, Y., et al. (2006). Heavy metal contamination in foods and water in mining areas in Ghana. Journal of Health and Pollution, 3(2), 45–60.

Teschner, B. A. (2012). Small-scale mining in Ghana: The government and the galamsey. Resources Policy, 37(3), 308–314.

United Nations. (2015). Transforming our world: The 2030 agenda for sustainable development. UN General Assembly.