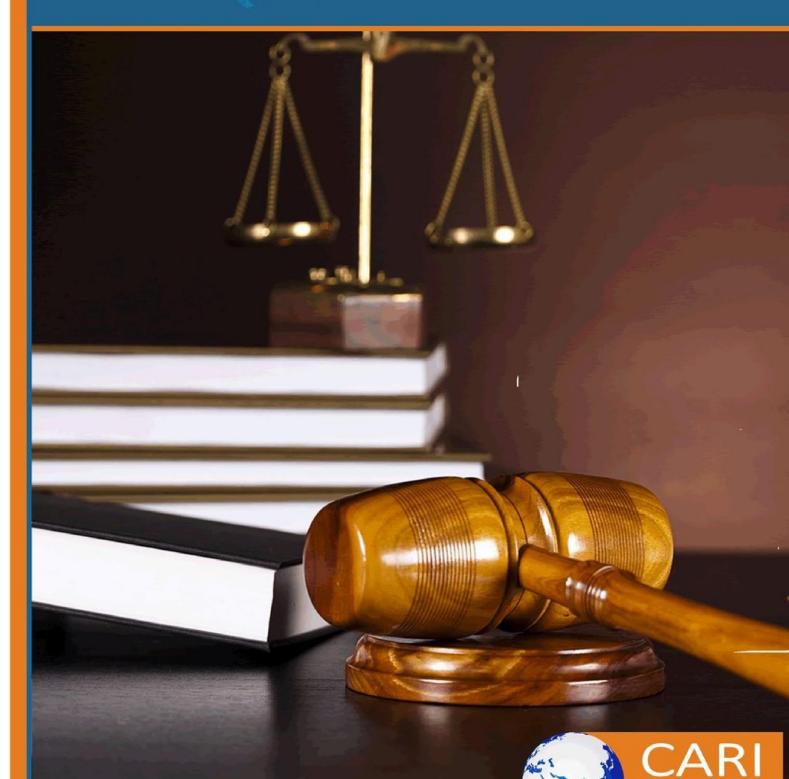
Journal of Modern Law and Policy (JMLP)

Illegal Small-Scale Mining (Galamsey) and its Impact on the Human Rights of Ghanaians



Vol.5, Issue No.1, pp 1 - 12, 2025



Illegal Small-Scale Mining (Galamsey) and its Impact on the Human Rights of Ghanaians



University Of Ghana

https://orcid.org/0009-0007-1302-2160

Accepted: 4th Dec, 2024, Received in Revised Form: 19th Dec, 2024, Published: 1st Jan, 2025

ABSTRACT

Purpose: Illegal small-scale mining, commonly referred to as "galamsey" in Ghana, has become a significant issue, not only for its environmental devastation but also for its profound impact on the human rights of affected communities. This paper seeks to explore the intersection between illegal mining activities and the human rights of Ghanaians, focusing on how these activities violate environmental rights, compromise public health, and disrupt social and economic structures.

Methodology: This study will be methodically carried out by briefing on the history of galamsey, the concept of galamsey. A review of the literature will be conducted in order to understand the concept. Through an in-depth analysis of existing literature, legal frameworks, and case studies, this research sheds light on the systemic challenges posed by galamsey and the inadequacies of current regulatory measures. Articles, books, conference documents were used in the article.

Findings: The findings reveal a web of consequences extending beyond environmental degradation to include the infringement of fundamental human rights, including the right to a healthy environment, health, and livelihood. The paper concludes by recommending stronger policy enforcement, community engagement, and international cooperation to address the multidimensional impacts of illegal small-scale mining in Ghana.

Unique Contribution to Theory, Practice and Policy: Illegal small-scale mining, commonly referred to as galamsey, is a pervasive issue in Ghana that has led to significant human rights violations. These violations span environmental, health, economic, and social dimensions, affecting various rights recognized under both national and international law. In this section, I will provide a more detailed account of the documented instances where galamsey activities have led to such violations, offering insights into the broader implications for the rights of affected communities

Keywords: Galamsey, Environmental Degradation, Human Rights Violations, The Constitution of Ghana





INTRODUCTION



Illegal small-scale mining, known locally as "galamsey," has emerged as one of Ghana's most pressing socio-environmental challenges. Over the past few decades, the increase in galamsey operations has resulted in widespread environmental destruction, particularly in rural communities heavily dependent on natural resources for their livelihoods. Rivers have been polluted with mercury and other toxic chemicals, forests have been decimated, and fertile lands have been rendered barren, threatening food security and sustainable development.

Despite efforts by the Ghanaian government to regulate and curb illegal mining activities, enforcement remains weak, and the incentives for illegal mining continue to outweigh the risks for many.

In this paper, I will seek to explore the relationship between illegal small-scale mining and human rights in Ghana. It will examine how galamsey activities violate basic human rights, the legal frameworks in place to protect these rights, and the challenges in enforcing these laws. The paper will also analyze the role of various stakeholders, including the government, local communities, and international bodies, in addressing the issue.

EVOLUTION OF SMALL SCALE MINING

Small-scale mining in Ghana has deep historical roots, dating back centuries before European colonization. "The Ghanaian small-scale mining industry is well over 2,000 years old. Vestiges of alluvial gold extraction and winning activities have been found that date as far back as the sixth century, and there is a wealth of evidence indicating and showing that precious metals recovered from regional artisan activities were attracting Arab traders to certain areas of the country as early as the 7th and 8th centuries AD. In fact, it was the rich gold deposits of the western Sahara that were largely responsible for the wealth and strength of large ancient Ghanaian empires and cultures"¹.

"Indigenous communities, particularly among the Akan people, engaged in artisanal gold mining using rudimentary tools and methods. Gold was not only a valuable commodity but also held significant social and political importance within these communities"²

"Following Ghana's independence in 1957, the new government sought to take control of the mining sector, which was seen as vital for economic development. The establishment of the State Gold Mining Corporation marked the beginning of state involvement in mining activities. However, the focus remained primarily on large-scale mining, while small-scale mining continued largely unregulated and informal"³.

¹ Botchway, Francis, Pre-Colonial Methods of Gold Mining and Environmental Protection in Ghana' (1995). Journal of Energy and Natural Resources Law 13(4): 299-311.

² Tschakert Petra, Recognizing and nurturing artisanal mining as a viable livelihood'(2009). Resources Policy, 34(1-2), 24-31.

Vol.5, Issue No.1, pp 1 - 12, 2025



The 1980s marked a turning point for small-scale mining in Ghana, driven by economic reforms and the liberalization of the mining sector. As part of structural adjustment programs recommended by international financial institutions, the Ghanaian government introduced the Minerals and Mining Law of 1986. This legislation officially recognized small-scale mining as a legitimate economic activity and provided a legal framework for its regulation and licensing.

Despite these efforts, galamsey remains a pervasive issue. The challenges of enforcing regulations, combined with socio-economic pressures, have made it difficult to eradicate illegal mining. "The government has also introduced Community Mining Schemes as a means to provide legal, regulated avenues for small-scale miners, hoping to balance economic needs with environmental sustainability"⁴.

LITERATURE REVIEW: HUMAN RIGHTS IN THE CONTEXT OF ENVIRONMENTAL AND SOCIAL IMPACTS

Introduction to Human Rights and the Environment

"Human rights are rights which are entitled to humans simply because we exist as human beings – they are not granted by any state. These universal rights are inherent to us all, regardless of nationality, sex, national or ethnic origin, color, religion, language, or any other status. They range from the most fundamental – the right to life – to those that make life worth living, such as the rights to food, education, work, health, and liberty"⁵.

The relationship between human rights and environmental protection has become an increasingly important area of study, particularly in the context of developing countries where rapid industrialization and exploitation of natural resources often lead to significant environmental degradation. This intersection is crucial because the degradation of the environment can directly and indirectly affect the enjoyment of various human rights, including the right to life, health, water, food, and an adequate standard of living.

One of the most significant human rights issues related to environmental protection is the right to a healthy environment. This right is recognized in various international instruments, including the Stockholm Declaration of 1972 and the Rio Declaration of 1992. It asserts that individuals are entitled to live in an environment that allows for their well-being and development.

In recent years, there has been growing recognition that environmental degradation can have severe human rights implications. For example, "the UN Special Rapporteur on Human Rights and the Environment has emphasized that environmental damage often undermines the rights of

³Yelpaala Kojo, Mining, sustainable development, and health in Ghana: The Akwatia Case-Study'(2004). Research Paper, Institute for Environmental and Development, London.

⁴ Armah, F. A., Obiri, S and Yawson, D. O. Human health risk assessment of artisanal miners in Ghana's gold mining region'(2014) Environmental Science and Pollution Research, 21(11), 6517-6527.

⁵ https://www.ohchr.org/en/what-are-human-rights



Vol.5, Issue No.1, pp 1 - 12, 2025

vulnerable and marginalized groups, exacerbating inequality and poverty"⁶. This is particularly relevant in contexts like illegal mining, where environmental harm is often concentrated in poor, rural communities that are least equipped to cope with its consequences.

Human Rights Impacts of Environmental Degradation

Environmental degradation can infringe upon several specific human rights. For instance, the right to health is jeopardized when pollution and environmental toxins, such as those used in illegal mining operations, contaminate water and food supplies. "The World Health Organization (WHO) has documented numerous cases where environmental contaminants have led to severe health issues, including respiratory problems, cancer, and developmental disorders"⁷

Furthermore, environmental degradation often leads to violations of the right to an adequate standard of living. "When land and water resources are destroyed, livelihoods that depend on agriculture and fishing are undermined. This can force communities into deeper poverty, making them more vulnerable to further human rights abuses and exploitation"⁸

Social Impacts and Human Rights

The social impacts of environmental degradation can also be seen, often leading to displacement, loss of livelihoods, and social unrest. These social consequences are inherently linked to human rights concerns. For example, forced displacement due to environmental degradation, such as the destruction of land by illegal mining, can lead to violations of the right to housing and the right to be free from forced evictions. In addition, the social fabric of communities is often disrupted by environmental degradation. The loss of traditional livelihoods, such as farming and fishing, can lead to the breakdown of social structures and community cohesion. This is particularly true in regions where illegal mining has become prevalent, leading to increased social tensions and conflicts over access to and control of resources.

Gender and Environmental Human Rights

The intersection of gender and environmental human rights is another critical area of focus. Women, particularly in rural areas, often bear the brunt of environmental degradation. They are typically responsible for collecting water, growing food, and caring for the sick, which means that

⁶ Knox, J. H. 'Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment' (2017) United Nations Human Rights Council.

⁷ WHO. 'Health in the Green Economy' (2011): Co-benefits to Health of Climate Change Mitigation. World Health Organization.

⁸ Agyeman Julian and Evans, B. 'Toward Just Sustainability in Urban Communities: Building Equity Rights with Sustainable Solutions' (2003). Annals of the American Academy of Political and Social Science, 590(1), 35-53.

Vol.5, Issue No.1, pp 1 - 12, 2025



when the environment is degraded, their daily lives and well-being are disproportionately affected. Also, women's voices are often marginalized in decision-making processes related to environmental management and resource allocation. This exclusion increases the vulnerability of women to environmental harm and undermines their ability to assert their rights.

The literature on human rights in the context of environmental and social impacts sheds light on the deep relationships between the protection of human rights and the environment. Environmental degradation, driven by activities such as illegal mining, can lead to significant human rights violations, particularly affecting vulnerable and marginalized communities.

NATIONAL LAWS AND POLICIES: AN OVERVIEW OF GHANA LAWS CONCERNING MINING AND HUMAN RIGHTS

Ghana's legal framework for mining is extensive, reflecting the importance of the mining sector to the country's economy. However, the relationship between mining and human rights in Ghana is in a way complicated and often contentious, particularly when it comes to illegal small-scale mining or "galamsey." Below I'll make an exploration of the national laws and policies in Ghana that regulate mining activities and their implications for human rights.

The Minerals and Mining Act, 2006 (Act 703)

Act 703 establishes the legal basis for mining activities, including provisions that aim to protect the environment and ensure the rights of local communities. For instance," the Act mandates that mining companies conduct Environmental Impact Assessments (EIAs) before beginning operations"⁹. These assessments are intended to identify potential environmental and social impacts and to develop strategies to mitigate them. However, in practice, these provisions are often inadequately enforced, particularly in the case of illegal mining activities. The failure to properly implement these environmental protections has direct human rights implications, particularly concerning the rights to a healthy environment, health, and access to clean water.

The Environmental Protection Agency Act, 1994 (Act 490)

The Environmental Protection Agency (EPA) Act of 1994 is another critical piece of legislation that impacts the mining sector in Ghana. This Act establishes the EPA, which is responsible for ensuring compliance with environmental laws and regulations, including those related to mining... "The Act establishes the Environmental Protection Agency (EPA) that it is responsible for advising the Minister on environmental policies, acting as the point of bringing understanding between the government and local or global organizations working in the environmental sector, prescribing pollution standards, coordinating successful waste management schemes and improving the quality of the environment through effective planning, research, and awareness-raising (section 2). Offices are located in all regional capitals and districts (section 11)"¹⁰

⁹ The Minerals and Mining Act, 2006 (Act 703).

¹⁰ <u>https://www.clientearth.org/latest/documents/environmental-protection-agency-epa-act-490-1994/</u>



Vol.5, Issue No.1, pp 1 - 12, 2025

The Constitution of Ghana, 1992

Ghana's 1992 Constitution is the supreme law of the land and provides the fundamental legal framework for the protection of human rights. Several provisions of the Constitution are relevant to mining activities and their impact on human rights. An example of such provisions is, Right to a Healthy environment, the constitution recognizes the right of individuals to live in a clean and healthy environment. This provision places an obligation on the state and individuals to protect and safeguard the environment for present and future generations. In the context of mining, this right is particularly relevant, as mining activities can have significant environmental impacts that affect the health and livelihoods of local communities. The Constitution also protects the right to property, which includes land and other natural resources. While the state has the authority to regulate the use of land and natural resources, this must be done in a manner that does not arbitrarily deprive individuals of their property.

The Human Rights Protections in Ghana's Mining Policies

Ghana has developed several mining policies that seek to balance the benefits of mining with the need to protect human rights and the environment. One of the key policies in this regard is the National Mining Policy of 2014, which outlines the government's approach to managing the mining sector.

National Mining Policy (2014):

The National Mining Policy aims to ensure that mining contributes to sustainable development and that the benefits of mining are shared equitably among all stakeholders, including local communities. The policy emphasizes the need to protect the environment, promote responsible mining practices, and ensure that the rights of local communities are respected. This includes provisions for community engagement, fair compensation for land acquisition, and the protection of cultural heritage sites.

Even though the National Mining Policy contains strong language on protecting human rights, in my view its implementation has been inconsistent. In many cases, local communities have not been adequately consulted or compensated, leading to conflicts and human rights abuses. Moreover, the policy's emphasis on sustainable development is often undermined by the prevalence of illegal mining, which operates outside the formal legal framework and is associated with severe environmental and social impacts.

INTERNATIONAL AGREEMENTS AND THEIR RELEVANCE TO ILLEGAL MINING IN GHANA

Vol.5, Issue No.1, pp 1 - 12, 2025



Ghana is a signatory to several international agreements and conventions that have significant implications for the country's approach to illegal mining, particularly in the context of environmental protection, human rights, and sustainable development.

The African Charter on Human and Peoples' Rights (ACHPR)

"The African Charter on Human and Peoples' Rights, also known as the Banjul Charter, is a regional human rights instrument that Ghana ratified in 1989. The Charter emphasizes the protection of civil and political rights, as well as economic, social, and cultural rights"¹¹.

Illegal mining activities in Ghana often result in violations of various human rights protected under the ACHPR, including the rights to health, a clean environment, and access to resources. The Charter obligates Ghana to ensure that its citizens enjoy these rights, which are frequently compromised by the environmental degradation and social disruption caused by illegal mining. Ghana's commitment to the ACHPR requires the government to take steps to mitigate these negative impacts and uphold the human rights of affected communities.

The United Nations Guiding Principles on Business and Human Rights

Ghana is also expected to align its national policies with the United Nations Guiding Principles on Business and Human Rights, although these principles are not a binding treaty, these principles provide a global standard for preventing and addressing the risk of adverse impacts on human rights linked to business activity. The Guiding Principles emphasize the state's duty to protect human rights, the corporate responsibility to respect human rights, and the need for effective remedies for victims of business-related abuses. Illegal mining in Ghana often involves private actors and has been linked to significant human rights abuses, including environmental harm, displacement, and violations of labor rights. By adhering to the Guiding Principles, Ghana is expected to regulate mining activities, prevent abuses, and provide redress for those affected by illegal mining operations.

CHALLENGES IN ADDRESSING ILLEGAL MINING AND PROTECTING HUMAN RIGHTS

Tackling illegal mining is a daunting task, especially when it comes to safeguarding the human rights of those affected. The issue is not just about stopping illegal activities; it's about addressing the deep-rooted economic, social, and political challenges that allow these activities to thrive. Here are some of the key challenges that make combating illegal mining and protecting human rights so difficult.

Economic Pressures

One of the biggest challenges is the economic reality faced by many people involved in illegal mining. In regions like Ghana, where poverty is widespread and job opportunities are limited,

¹¹ <u>https://achpr.au.int/</u>

Vol.5, Issue No.1, pp 1 - 12, 2025



illegal mining can be one of the few ways for people to earn a living. For many families, it's not just about survival but also about funding education, healthcare, and other basic needs. This economic pressure makes it incredibly difficult to convince people to abandon illegal mining, even when they know the risks and the harm it causes to the environment and their communities.

Corruption and Weak Governance

Corruption is a significant barrier to addressing illegal mining. When law enforcement officials, government representatives, or even community leaders are involved in or benefit from illegal mining activities, efforts to stop these activities are undermined from within. Weak governance structures also play a role, as poorly enforced laws and regulations allow illegal miners to operate with impunity. This corruption not only fuels the persistence of illegal mining but also erodes public trust in the authorities, making community cooperation in anti-mining initiatives harder to achieve.

Social and Cultural Factors

In many areas, illegal mining is deeply embedded in the social and cultural fabric. It has been practiced for generations, and in some cases, it is seen as a traditional right or a family inheritance. Disrupting such ingrained practices requires more than just enforcement; it requires changing mindsets, which is a slow and challenging process. Additionally, the social ties and networks that support illegal mining activities can be strong, making it difficult for individuals to break away from these practices without facing social ostracism or other consequences.

Environmental Degradation

The environmental impact of illegal mining poses a significant challenge to human rights protection. Illegal mining often leads to severe deforestation, water pollution, and soil erosion, which in turn threaten the health and livelihoods of local communities. Addressing the environmental damage caused by illegal mining requires substantial resources and long-term commitment, which can be challenging for governments with limited budgets and competing priorities. Moreover, the immediate financial benefits of illegal mining can often outweigh concerns about long-term environmental consequences, both for the miners and for local communities.

POLICY RECOMMENDATIONS: SOLUTIONS TO COMBAT ILLEGAL MINING AND PROTECT HUMAN RIGHTS

To effectively combat illegal mining and protect human rights, a multi-faceted approach is essential. This approach should encompass policy reforms, stronger enforcement mechanisms, and active community involvement. Below are some policy recommendations that can help address the challenges posed by illegal mining.

1.Policy Reforms

Strengthening Legal Frameworks:

Vol.5, Issue No.1, pp 1 - 12, 2025



One of the first steps in combating illegal mining from my perspective is to strengthen the existing legal frameworks. This could involve revising mining laws to close any loopholes that illegal miners exploit. Additionally, laws should be updated to impose stricter penalties for illegal mining activities, ensuring they serve as a real deterrent. The legal framework should also make provisions for the clear and efficient regulation of small-scale mining, providing a pathway for illegal miners to transition into legal operations.

Incorporating Human Rights Standards:

Mining policies should be revised to explicitly incorporate human rights standards. This means ensuring that mining operations do not infringe on the rights of local communities to a clean environment, health, and livelihood. Policies should mandate environmental and social impact assessments for all mining activities, including small-scale operations, to identify and mitigate potential human rights violations.

2. Stronger Enforcement Mechanisms

Improving Monitoring and Surveillance:

To strengthen enforcement, governments should invest in better monitoring and surveillance technologies. Drones, satellite imaging, and geospatial technologies can be used to monitor mining activities in real-time, making it easier to detect illegal operations. This technological approach can be complemented by regular field inspections by environmental and mining authorities.

Empowering Law Enforcement Agencies:

Law enforcement agencies should be empowered with the resources, training, and authority to effectively combat illegal mining. This includes increasing the budget for anti-illegal mining task forces and ensuring they are equipped to operate in remote and challenging environments. Agencies should also collaborate with other stakeholders, such as environmental NGOs and local communities, to improve intelligence gathering and enforcement actions.

Combating Corruption:

Addressing corruption within enforcement agencies is crucial. Anti-corruption measures should be put in place, including the establishment of independent oversight bodies to monitor the activities of law enforcement agencies involved in anti-illegal mining operations. Transparency initiatives, such as public reporting on enforcement actions and the prosecution of offenders, can also help reduce corruption.

3. Community Involvement

Engaging Local Communities:

Community involvement is key to the success of any anti-illegal mining strategy. Local communities should be actively engaged in decision-making processes related to mining activities in their areas. This includes involving them in the design and implementation of policies, as well



Vol.5, Issue No.1, pp 1 - 12, 2025

as in monitoring and enforcement efforts. Community leaders and members can provide valuable insights and intelligence about illegal mining activities, which can enhance enforcement efforts.

Education and Awareness Campaigns:

Raising awareness about the negative impacts of illegal mining and the importance of environmental protection is vital. Education campaigns can be conducted in schools, communities, and through media outlets to inform people about the long-term consequences of illegal mining. These campaigns should also promote the benefits of legal, sustainable mining practices and the availability of government support for transitioning away from illegal activities.

4. International Collaboration

Leveraging International Funding and Expertise:

Countries affected by illegal mining can seek support from international organizations, such as the United Nations or the World Bank, to fund anti-illegal mining initiatives and access technical expertise. International cooperation can also help in the implementation of certification schemes, like the Kimberley Process for diamonds, to ensure that minerals are sourced legally and ethically.

Strengthening Regional and Global Partnerships:

Illegal mining often extends beyond national borders, making international collaboration essential. Governments should work together with neighboring countries and international organizations to combat cross-border illegal mining operations. This can include joint enforcement actions, sharing intelligence, and harmonizing mining regulations across regions.

CONCLUSION

In this paper, I have delved into the interaction between illegal small-scale mining, or "galamsey," and human rights in Ghana. I have also highlighted the historical development of small-scale mining, showing how it evolved from traditional practices to the more widespread, mechanized, and often illegal operations seen today. The persistence of illegal mining has been driven by a combination of economic pressures, weak regulatory frameworks, and insufficient enforcement, resulting in significant environmental and social harm.

Key findings include the severe environmental degradation caused by illegal mining, such as water pollution, deforestation, and land degradation, which have dire consequences for public health and the right to a clean and safe environment. Additionally, the disruption of local economies, particularly in agriculture and fishing, underscores the negative impact on the right to livelihood. The paper also documented specific instances where illegal mining activities have led to direct human rights violations, further emphasizing the urgent need for action.

While this paper has covered a broad range of issues, there are several areas where further research is necessary. Future studies could focus on the long-term health impacts of illegal mining on local

Vol.5, Issue No.1, pp 1 - 12, 2025



communities, as well as the effectiveness of current rehabilitation efforts on degraded lands. Research into the socio-economic dynamics within mining communities, particularly the role of gender and youth in illegal mining, could provide deeper insights into the social challenges that need to be addressed. Additionally, comparative studies between Ghana and other countries facing similar challenges could offer valuable lessons on successful strategies to combat illegal mining and protect human rights.

Addressing illegal mining in Ghana is not just an environmental or economic issue; it is fundamentally a human rights imperative. The destructive consequences of galamsey on the environment, health, and livelihoods of Ghanaians are profound and far-reaching. To protect the rights of current and future generations, the government, civil society, and international partners must work together to implement effective solutions. This includes policy reforms, stronger enforcement, and, most importantly, the empowerment of local communities. By tackling illegal mining head-on, Ghana can preserve its natural resources and uphold its citizens' human rights, ensuring a sustainable and just future for all.

REFERENCES

- Agariga, F., Abugre, S., & Appiah, M. (2021). Spatio-temporal changes in land use and forest cover in the Asutifi North District of Ahafo Region of Ghana,(1986–2020).
- Akyeampong, E., & Xu, L. (2023). Chinese technology and the transformation of the rural economy in Ghana: Evidence from Galamsey in the Ashanti and Savannah regions. African Affairs, 122(448), 329-351. <u>https://doi.org/10.1093/afraf/adad023</u>
- Alhassan, E. H., Dandi, S. O., & Atindana, S. A. (2022). Effects of small-scale mining activities on fisheries and livelihoods in the birim river in Atiwa District, Eastern Region of Ghana. Tanzania Journal of Science, 48(3), 703–717. <u>https://doi.org/10.4314/tjs.v48i3</u>.
- Alhassan, I. A. (2014). Galamsey and the making of a deep state in Ghana: Implications for national security and development. Research on Humanities and Social Sciences, 4(16), 47–56. <u>https://www.academia.edu/download/87130929/234674063.pdf</u>
- Arah, I. K. (2015). The impact of small-scale gold mining on mining communities in Ghana. African Studies Asociation of Australasia and the Pacific (AFSAAP) 37th, Annual Conference-Dunedin-New Zealand-25-26 November 2014 Conference Proceedings. <u>https://afsaap.org.au/assets/final-abstracts-for-Conference_30-october.pdf</u>
- Asare-Donkor, N. K., Kwaansa-Ansah, E. E., Opoku, F., & Adimado, A. A. (2015). Concentrations, hydrochemistry and risk evaluation of selected heavy metals along the Jimi River and its tributaries at Obuasi a mining enclave in Ghana. Environmental Systems Research, 4(1), 12. <u>https://doi.org/10.1186/s40068-015-0037-y</u>
- Ayad, A., & Bakkali, S. (2022). Economic impact of derangements on mining process–Case study: Sidi Chennane. Journal of Mining and Environment, 13(4), 989–996. https://doi.org/10.22044/jme.2022.12326.2236

Journal of Modern Law and Policy

ISSN 2958-7441 (online)



Vol.5, Issue No.1, pp 1 - 12, 2025

- Ayamba, H. A., Dramani, A., & Agbenyega, O. (2017). Legalizing small scale gold mining in Gbane in the Upper East Region, Ghana. Journal of African Political Economy and Development, 2(1), 78–95. <u>https://journals.co.za/doi/abs/10.10520/EJC-c3d16e03</u>
- Boateng, D. O., Nana, F., Codjoe, Y., & Ofori, J. (2014). Impact of illegal small scale mining (Galamsey) on cocoa production in Atiwa district of Ghana. Int J Adv Agric Res, 2, 89–99. https://www.academia.edu/download/77743706/Boateng_et_al.pdf Bondah, D. A., Command, U. A., &
- College, G. S. (2020). Natural resource exploitation and national security: A case study of illegal mining in Ghana [PhD Thesis, Fort Leavenworth, KS: US Army Command and General Staff College]. <u>https://apps.dtic.mil/sti/citations/AD1124575</u>
- Bruno, D. E., Ruban, D. A., Tiess, G., Pirrone, N., Perrotta, P., Mikhailenko, A. V., Ermolaev, V. A., & Yashalova, N. N. (2020). Artisanal and small-scale gold mining, meandering tropical rivers, and geological heritage: Evidence from Brazil and Indonesia. Science of the Total Environment, 715, 136907. <u>https://doi.org/10.1016/j.scitotenv.2020.136907</u>
- Bryant, C., & Mitchell, M. I. (2021). The political ecology of cocoa in GHANA: Past, present and future challenges. Natural Resources Forum, 45(4), 350–365. https://doi.org/10.1111/1477-8947.12232
- Crawford, G., & Botchwey, G. (2016). Foreign involvement in small-scale gold mining in Ghana and its impact on resource fairness. In Fairness and justice in natural resource politics (pp. 193–211). Routledge. https://www.hilarispublisher.com/environmentalanalyticaltoxicology.html
- Doamekpor, L. K., Abusa, Y., Acheampong, C., Klarke, R. K., Nartey, V. K., & Aoamekpor, M. (2019). Assessment of some heavy metals and polycyclic aromatic hydrocarbons in soot from the exhaust of standby generators. International Journal of Applied and Natural Sciences, 8(3), 81–94. https://www.iaset.us/journals/internationaljournals/internationaljournal-of-applied-and-natural-sciences
- Donkor, L. A. (2015). Assessing the environmental and health impact of small-scale mining in the Amansie West District of Ashanti region, Ghana [PhD Thesis]. https://dspace.knust.edu.gh/bitstreams/54ee6d20-c73a-4599-aadf8cfb1e4a0716/download



©2024 by the Authors. This Article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/)