

DOWNSTREAM HARM: A CASE STUDY OF WATER POLLUTION IN GHANA

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ABSTRACT: This article examines Ghana's unfolding water crisis as a self-reinforcing dynamic in which environmental degradation, political interests, and economic profit are mutually entangled and amplified. Drawing on *zemiology* – the study of social harm beyond legal frameworks – it argues that the pollution, profitization, and politicization of water in Ghana amount to a form of 'accumulation by contamination', whereby ecological degradation has become a mechanism of economic gain. The analysis traces how water is being transformed into a contested and commodified resource due to illegal mining, infrastructural neglect, (e-)waste flows, and the privatization of potable water. Focusing on case studies of gold mining and urban mining, the article demonstrates how profit fuels pollution, pollution feeds political manoeuvring, and politics in turn sustain profit. The article empirically follows the flow of water from Ghana's hinterlands to its coast and shows how water connects and transforms – revealing the socio-political structures that sustain inequality and environmental degradation. Water becomes, then, not merely infrastructure or resource but a catalyst of harm and a site of political struggle.

KEYWORDS: water pollution, irregular mining, accumulation by contamination, zemiology, Ghana

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Introduction

In August 2024, the state-owned Ghana Water Company Limited (GWCL) announced that 60% of its catchment area was polluted and silted up, compromising the deliverance of raw water and reducing its operational capacity to 25% (Afful 2024). This was largely the cumulative outcome of extensive, long-standing and interlinked polluting activities associated with illegal small-scale gold *galamsey* mining in rural areas; urban mining and unregulated industrial production in urban areas; and (electronic) waste, underinvestment in sewage, and flooding throughout the country. One of the results is that GWCL, which supplies water to approximately 19 million urban residents, now distributes only 7,500 cubic meters per day – or barely half a litre per person.¹ Yet the problem is not merely an urban one. In rural areas,

¹ Calculation based on statistics from Ghana 2021 Population and Housing Census (see GSS 2024a). Comparatively, in Denmark, average consumption is 105 liters of drinking water per person per day (see Vandetsvej.dk).

pollution of wells, ponds and waterways has increased distance to new sources of drinking water, making portable water more than thirty minutes per round trip for 10% of the entire rural population to fetch (GSS 2022, Table 16.1). Throughout the nation, what used to be a common good has become scarce and unsafe.

In this article, we propose that Ghana's water crisis can be grasped through an analysis of *harm* and *accumulation by contamination*, in which environmental degradation, political interests, and economic profit fuel and amplify one another. Drawing on research in zemiology (Canning and Tombs 2021; Boukli and Kotzé 2018), we show how harm is produced and identify political and economic structures that uphold and intensify this harm. Our research adjusts to Giacomo D'Alisa and Federico Demaria's framework *accumulation by contamination* (2013, 2024), as we show how environmental harm feed into shortages, which result in intentional and nonintentional lines of profitization.

Zemiology – from the Greek word *zemia* meaning 'harm' – provides here an apt analytical point of departure as it enables us to highlight processes that are not necessarily defined as illegal but are nonetheless damaging and illicit. Emerging in the 1990s as an alternative to studying crime as circumscribed within legal frameworks and criminology (Hillyard and Tombs 2004), the approach settled as the study of harm caused and experienced (Boukli and Kotzé 2018). The problem with criminology, Hillyard and Tombs argue, is that what is considered criminal is always defined by the centre of power and often used to render that which challenges it illegitimate. As a discipline, criminology, then, runs the risk of supporting the work of power. As it takes its point of departure in a criminal/non-criminal divide it naturalises and further substantiates dominance. Looking at harm rather than crime allows us, in this manner, to look beyond what is stipulated by law and critically research transgression, dominance and abuse. While the body of work defining zemiology at times becomes slightly Manichean, it enables us, in the current case, to ask deeper, structural questions about pollution, displacement, and resource depletion in Ghana by moving beyond legal frameworks. It emphasizes that the environmental degradation observed – leading to pollution of water bodies and, consequentially, the devastation of cocoa farms, flooding of low-lying slums, ruining of livelihoods, and a lack of access to clean drinking water – is not always against the law but remains ethically flawed nonetheless, harmful if not illegal.

While zemiology allows us to unfold the idea that polluted water in Ghana is not just an environmental issue but a social harm with political and economic roots, D'Alisa and Demaria's framework of *accumulation by contamination* helps us to deepen the analysis of some of the intended and non-intended consequences of such environmental degradation and

damage. It clarifies how harm may give pace to profit-seeking and become profitable. More precisely, by combining economist Karl William Kapp's work on 'cost-shifting' (1950) with critical geographer David Harvey's notion of 'accumulation by dispossession' (2003), D'Alisa and Demaria's framework show how capital expands not just by dispossession, but also by socialising environmental costs, that is by shifting them to ecosystems and society at large (D'Alisa and Demaria 2024). Contamination, they argue, is a form of cost-shifting, and they thus add an ecological dimension to Harvey's work on the predatory processes by which people are deprived of a common and subsequently forced to buy access to it, dispossessing some at the same time as enriching others. Both, in other words, look at privatisation and commodification of previously non-commodified assets, yet accumulation by contamination at a specific kind of it. Both frameworks thus decentre legality and focus on harm. Pollution, dispossession and predation are often fully legitimate and lawful.

Similarly, in the present study, traditional and urban mining are not necessarily criminalized practices, yet by ethnographically following the harm they cause we are able to show how such detrimental processes become both profitable and politically sustained. Combining these perspectives, we show how harm unfolds not just as environmental degradation and lack of clean drinking water, but also as damaging to livelihoods, economies and communities unfolding over time.

The empirical material, that the article builds upon, stems from multi-sited and collective fieldwork (cf. Clerke 2014), conducted as part of the interdisciplinary 'Environmental Crime and Illegal Ecologies' (ILLECO) project.² The fieldwork used ethnographic methods such as participant observation and semi-structured interviews with regulatory bodies and civil society actors in different parts of the country; and quantitative reviews of geo-referenced, statistical and historical data, such as those available from repeated national household surveys. Fieldwork was periodically conducted in 2022, 2023 and 2024 in Ghana's Greater Accra, Central, Western and Ashanti Regions. Author 1 conducted fieldwork on discarded electronics, scrap, and policy work in the capital. Author 2 visited illegal mining sites in Asankragua, Tarkwa, Bogoso, Prestea, Ankobra and Obuasi; and interacted with state agents such as municipal chief executives, policemen, teachers, ordinary citizens, food traders, illegal miners and operators. Author 3 and 4 interviewed representatives of institutions and organizations as well as government officials related to mining activities, environmental affairs and water purveyance. Conducting fieldwork across sectors and in different sites across Ghana enabled

² Environmental Crime and Illegal Ecologies (ILLECO), Independent Research Fund Denmark.

us to see the politics of water and the contradictions emanating from them. The fieldwork connects the hinterlands to the urban centres, akin to how water flows from north to south in Ghana, from river bodies in the countryside to small streams and drains in the city scape, providing insights into how harm moves downstream.

The remaining part of this article follows the flow of water from Ghana's hinterlands to its coast, mapping the intersections of pollution, politics, and profit. We begin by examining irregular, artisanal, small-scale, *galamsey* gold mining and its entanglement with political actors. We pause along the Ankobra River, where conflicting realities and narratives coexist. Finally, we trace the polluted waters downstream to Accra, where the Odaw River empties into the Korle Lagoon – known as one of the world's most polluted waterbodies (Boadi and Kuitunen 2002) – and onward into the Gulf of Guinea, where water mixes with plastic, textile, and other forms of waste.

Convergence of pollution, politics, and profit

Ghana is woven together by waterways that move from its interior and to its coastal areas. As natural infrastructure water links regions and people, allowing for exchange, trade, and the sustaining of communities. Yet, these same connections can also link and amplify problems. Lower quality or availability of it may result in the destruction of ways of life and be the cause of suffering across space and time. The current state of water source degradation in Ghana has resulted in shortage of drinking water, and increased uncertainty for the younger generation who consequently face a future of water scarcity and insecurity. With more than half of its waterbodies polluted (Adombila 2024), the country does not currently have enough available clean water to meet quality standards at affordable prices and, hence, diminished capacity to sustain livelihoods, ecosystems and human health on daily and long-term perspectives (cf. Grey and Sadoff 2007). As a vital resource people depend on availability and delivery, making water management and distribution a crucial interface between state agencies and the population (Appel et al. 2018).

The problems linked to water pollution are not new in the country and both its causes and consequences have been amply debated over the last couple of decades. The impact of irregular mining on water bodies has been recognized as a main source of concern for decades (see for example Akabzaa et al. 2005). Yet, contrary to common belief, the pollution of Ghana's water sources is not solely attributable to such local extractivist activities in the country's rural areas. Instead, the problem points to water resource management and the connection between politics and profit. Access to water in Ghana today is not only unreliable, it is unevenly distributed.

Sachet and bottled water have become substitutes, but are expensive, and of declining quality – partly because the GWCL is also an important source for the companies supplying them. This is less of a problem for the affluent, for whom water remains available also via GWCL tankers; and more so for the poorest, as it places a burden on already strained household economies. To get drinking water, people need to buy water from private providers – at a far larger economic and environmental costs. While one may think that the cost of sachet water is negligible, at 0.40-0.60 cedi per bag, it is, in fact, an increasing large expenditure for the urban poor. Between 2010 and 2017, the proportion of Ghanaian households using sachet water as their primary drinking source increased from about 9% to almost 30%. In urban areas, specifically, sachet water use rose from 14% to 51% in the period; and in the Greater Accra Region grew from 28% to 80% (Moulds et al. 2022). Furthermore, the increase in use of sachet water also means an increase in waste generated: non-biodegradable plastic bags containing drinking water and ice cream constitute a large part of plastic waste daily generated in Ghana (Stoler et al. 2012).

‘Water is the new gold,’ an interlocutor told Author 4 in Accra, as the politicization, privatization, and profitization of portable water have evolved. The quote echoes citizens’ fears more broadly of escalating potable water shortage and deteriorating quality. Ghana may face the unfortunate fate of adding water to its already too tall list of imported items, if action is not taken (Ampaw et al. 2024). Such risk exists also in other contexts, especially in Sub-Saharan Africa, where challenges due to climate change are becoming wider, more severe, and extend the obstacles to securing adequate and reliable water supplies (Yomo et al. 2019). However, while much of this is related to droughts and climate change, the global water crisis is also a geo-political water governance issue. It is not merely related to the anthropo-/capitalocene (Crutzen 2006, Haraway 2016). Pollution and climate change clearly connect to local economic and political processes when looking at the overall politics of water (Moore 2024). In Ghana, social scientists have paid particular attention to the different kinds of infrastructure that facilitate and stabilize water flows from sewage systems (Farmer 2014; Chalfin 2023), to sociopolitical networks and brokerage relations (Schwenkel 2015, Anand 2017), and climate change and droughts (Agodzo et al. 2023). However, there is an increasing need for scholarly attention to the commodification and political-economy of water, which highlights how water quantity and quality relate to historical and contemporary political relations that make water flow or stagnate (e.g. Muehlebach 2017, Helmreich 2011). Studies need to draw attention to water not only as a resource but also as a connector and transformer across space and time (cf. Orlove and Carton 2010, Hastrup and Hastrup 2016, Strang 2006): both a result and catalyst of politics.

Water degradation is only the most visible component of the unfolding environmental crisis in Ghana. Due to its devastating effects on waterbodies and forest reserves, it has been catapulted to the fore of social, economic and political debates and political parties' electioneering. Similarly, it has spurred research on the pollution of waterbodies related to mining activities (Smedley et al. 1996; Hilson 2002; Aragón and Rud 2016; Emmanuel et al. 2018), the negative impact of urban industry and waste related to rural-urban migration (Boadi and Kuitunen 2002; Eduful and Shively 2015), waste (Boahen and Owusu 2023), and the ways coastal areas are affected by the preceding two (Rain et al. 2011; Ackah-Baidoo 2013; Van Dyck et al. 2016). Yet, little attention has been paid to how these environmental issues are structurally contingent, socio-economically sustained, and politicized. The Ghanaian case today shows the pollution of water is an unintended consequence of irregular mining and the politics and profit tied to it. But this carries with it a further set of consequences, for example, that profit has subsequently been sought and made from this increasing scarcity of clean water; and that politics, protest and contestation emerge from this pollution and commodification of a common.

The galamstate and rural harm

Obtaining clean water in Ghana has not always been a problem. One of our interlocutors recalls coming home after football practice and drinking directly from the tap. Another remembers how he fetched cool water from the fridge.³ Now, 'people have lost faith', we were told, 'you can't really blame people: when you see videos of people turning on the tap and then it is all brown. It is from galamsey', she continued. Galamsey (from 'gather' and 'sell') is a term used to describe unlicensed, illegal small-scale gold mining. The quote tells a story of the temporalities involved in Ghana's deteriorating water quality. It has been a process that has been going on for more than a decade, where economic and political interests have worked against efforts to alleviate it.

³ Interview with TA, Accra. January 2024.



Photo

by Humphrey Asamoah Agyekum.

Galamsey has been Ghana's long-term environmental nemesis. It dates back decades in Ghana's history (Stacey 2025; Pijpers 2020; Ntewusu 2015-2017). Initially, it involved the exploitation of mineral deposits using crude mining and processing technique relying on rudimentary tools such as shovels, pickaxes. However, galamsey is now conducted with heavy equipment such as excavators, bulldozers and dredgers. The heavy mechanization of what was originally an artisanal practice and the prospect of making it bigger, attracts large communities of migrant labourers to mining areas (GAAS 2024). New technologies introduced by Chinese miners (Botchwey et al. 2019) are salient and mean faster irreparable damage to the environment through larger and more dangerous excavations, heaps of waste, vegetation destruction, pollution of soil, air, and, not least, water bodies (Pijpers 2020; Kuffour et al. 2018).



Photo by Humphrey Asamoah Agyekum.

The use of mercury and cyanide in gold extraction, and the arsenic deposits in the related mine tailings, create residual deposits of these hazardous chemicals and other heavy metals in rivers, ponds and lakes, which trickle down into water aquifers over time (cf. Jacka 2018). The consequences are multifarious and alarming. Not only do they increase morbidity and mortality, but they also have severe economic effects at both national and local levels, by destroying livelihoods and rendering formerly fertile agricultural areas barren. For instance, over 5000 hectares of the Western North Region farmlands for cocoa production have been destroyed, largely due to externalities of irregular gold mining operations (Ampaw et al. 2024). The destruction of cocoa means increased poverty for an already impoverished rural population.

The way contamination spreads from galamsey into other sectors provides an example of how capital expands indirectly by shifting environmental costs and health damage to the rural population and the ecosystem (cf. D'Alisa and Demaria 2024: 12). At the same time, galamsey mining, the very same activity, that causes both environmental and social harm, stands out as one of the only local sources of employment to be found, due to constant growth and labour demand. In this way, the pollutive externalities of galamsey cause not only pollution, but is also feed into processes that eventually amplify environmental and social harm.

As small-scale mining expands, it degrades the land and water resources upon which agriculture depends, thereby eroding the sustainability of the economic practices it temporarily sustains.

Galamsey's environmental harm is not only tied to deep economic consequences but also sustained by a range of overlapping and at times conflicting interests and political collusion and contestation. After 2010, the use of heavy machinery and crude gold processing in galamsey drew public attention to environmental degradation and political collusion. Although there had been rumours for many years about – and the occasional reports of – the environmental effects of galamsey in Ghana's hinterlands, the pollution of some of the country's most iconic and prominent waterbodies like the rivers Pra, Birim, Densu, and Ankobra (Amankwah 2013) has made the environmental harm associated with galamsey visible to the broader public, triggering fierce public debate. Investigative journalism (Affre 2023), civil society, and NGOs (GhanaWeb 2019; Anas 2022)⁴ have highlighted the issue, especially as river and tap water pollution became visible. Organizations like the Ghana Academy of Arts and Sciences (GAAS), the Ghana Medical Association (GMA), and the Rastafari Council (GhanaWeb 2024) called for urgent state action. Demonstrations emphasized the existential and public health threats, with GAAS and GMA reporting rising cases of heavy metal poisoning, cancers, birth defects, and other conditions (GAAS 2024; GMA 2024).

While the ruling party New Patriotic Party (NPP) tried to downplay galamsey in the 2024 elections, the opposition party National Democratic Congress (NDC) pledged to address the environmental damage. Initially, the NPP responded by intimidating activists and muting debate (MFWA 2024; Naadi 2024). This backfired, exposing a disconnect between citizens' demands for clean water and the government's reluctance to intervene, and contributing to an NPP's historic electoral defeat.

Interlocutors noted that those who challenged galamsey were silenced. Some interlocutors equally note that fighting galamsey remains difficult due to 'political interference and involvement'.⁵ For instance, when security operatives arrest an individual engaged in galamsey, they receive a call from the political actors, who are the actual owners of the concessions, mining sites and equipment, to get the galamseyers released from custody without state prosecution. An interlocutor notes: 'we receive orders from above'⁶. There is widespread belief among our interlocutors that the state could stop galamsey if it wanted to. 'Our laws are

⁴ See also the work by Muntaka Chasant: <https://muntaka.com/>

⁵ Interview with Commander. Accra. February 2024.

⁶ Interview with Commander. Accra. February 2024.

beautiful,’ said a senior civil servant, ‘it’s just that people do not follow them.’⁷ Another interlocutor added:

I think the [NPP] government is only doing lip service to the fight against galamsey. I say that because [Ghana’s] President [Nana Addo Dankwa Akufo Addo] came out to clear some political actors involved in galamsey; people like Chairman Wontumi’s Akonta Mining. They are *not* serious about the issue.⁸

Bernard Antwi Boasiako, alias Chairman Wontumi, NPP’s Ashanti Regional chairman, owns Akonta Mining, and was caught mining illegally in the Tano Nimiri Forest Reserve (Minerals Commission 2022). The president’s statement that ‘Akonta Mining is not engaged in any irregular mining as we speak’ (MyJoy 2023) was seen as shielding party elites from prosecution. This lack of accountability signals impunity, frustrating both the public and state officials. One water sector worker said:

If you are doing illegal mining and political power is bestowed unto you, you become lawless like Wontumi. [...] Our mandate is to manage water and its quality and not *hausa koko*⁹. This galamsey business really impacts our work heavily.¹⁰

In all the mining communities visited during our fieldwork, miners describe how influential political actors – such as municipal chief executives, Members of Parliament or executives of political parties – are directly involved through concessions and as purchasers of machinery and chemicals used in gold extraction. The politically exposed persons use their accomplices as proxies to mine on their behalf and the parties split the benefits. The political actors involved are fully aware that their activities are against the law and engage through proxies to maintain distance in legal terms. Doing so grants them the possibility to deny involvement in such business, while still reaping the benefits. For the proxies involved, conniving with political actors has the benefit of being protected from arrests, harassment and prosecution for criminal endeavour.¹¹ Furthermore, gaining access to corridors of power gives them a semblance of political recognition and influence, which in turn cuts bureaucratic red tape and speeds up paperwork. In the words of an interlocutor central to the phenomenon: ‘it’s a win-win situation’¹².

Political actors involved in galamsey also bring in Chinese miners from China to mine for them on their concessions irregularly and with (heavy) mining equipment. In the words of

⁷ Interview with EB, Civil Servant, Accra. February 2024.

⁸ Informal Conversation with Col. D. Accra. 5 January 2024

⁹ Hausa koko is a local millet porridge which has a light brown color.

¹⁰ Interview with Dr. M, Accra. February 2024.

¹¹ The political actors are accompanied by chiefs and security services operatives. Informal Conversation with a seasoned illegal miner.

¹² Informal conversation with a state bureaucrat, Nima. February 2024.

an interlocutor, who has been operating a mining site for two decades and is very familiar with galamsey in rural Ghana:

The big men prefer the Chinese to Ghanaians because they are deemed more honest. When you as a big man have a deal with a foreigner, for example, that you want your cut in grams of gold, the foreigner will abide by it. He is dependent on the big man. So, the foreigners will work hard to get a lot of gold so that when things are not going very well and he cannot find as much gold, he can still pay the big man. The locals cannot compete. That is also why when a Chinese is arrested, he is released because of some big man's interest.

The quotation clearly positions governmental actors as engaged in galamsey via proxies such as Chinese mining labour. It shows Ghanaian irregular miners' unease with Chinese involvement in mining activities as they are unable to compete with them. The Chinese actors have access to more capital, which enable them to bring in earthmoving machinery and to finance their business operations. These facilities are mostly unavailable to the irregular Ghanaian miners, except for seasoned investors and political actors in the industry. Moreover, whereas the Chinese miners will continue to pay the concession owner in grams of gold, even when business is not thriving, a Ghanaian would in such a situation try to renegotiate the terms of the agreement.¹³ Another reason for political actors to use Chinese miner is also that local miners pose a danger for politically exposed persons trying to cover-up their involvement in galamsey, thus making Ghanaian miners less attractive as proxies.¹⁴ Such differences in approach and dynamics have resulted in the 'political big men' (Nugent 1995) shying away from Ghanaian proxies.

The influx of political actors into the galamsey arena has generated the public perception of not just a seeming lack of governmental oversight of the irresponsible use of heavy machinery and environmentally unfriendly processing technology, but also of political collusion in the problem. Irregular mining is so prevalent that it has come to be viewed as an aspect of state. The heavily polluted waterbodies represent what some pundits have described as consequences of a 'Galamstate' (Aning 2024; Appiagyei-Atua 2024). The term is used to describe a state in which there is a blend between 'criminally minded politicians' and 'politically minded criminal gangs', who connive to create a hybrid form of governance that serves their interests. This practice flourishes as the state's ability to enforce the law is silenced, corrupted, or incapacitated (Aning 2024; Appiagyei-Atua 2024). In other words, the intersection between political power and personal interest – that defines the galamstate – makes

¹³ Informal conversation with A. Asankragua. February 2023.

¹⁴ Informal conversation with A. Asankragua. February 2023.

it impossible for any state agency to bring these actors to respond for their crimes, even when they are exposed.

The way that ‘political big men’ profit from galamsey could be seen as a case of ‘accumulation by dispossession’ following Harvey (2003); communities lose access to clean water, at the same time as this process enriches others. However, as also noted by D’Alisa and Demaria, in cases where economic gains are tied to waste and pollution, it is productive to move the analysis a bit further (2024). Contamination from galamsey does not only deprive people of a common, clean water, but also endanger their means of existence. The involvement of political actors in galamsey show how harm is structurally contingent and socio-economically sustained and politicized. As it has become clear to the public that the cost-shifting of environmental and social harm leads to accumulation of both profit and political power, it has triggered a political response.

For our interlocutors, the involvement of politically connected persons in these activities also means that only the state has the muscle to intervene and stop galamsey. Although most people in Ghana are employed informally (GSS 2024b), our interlocutors stress the necessity for more state intervention in galamsey. As the environmental and political consequences of galamsey become more evident, Ghana is witnessing growing environmental awareness and resistance, which increase the vulnerability of the political actors involved.

Though rural communities may struggle to protest water scarcity, the downstream effects make the crisis visible across Ghana. Brown tap water in urban homes has brought galamsey’s impact into public view. The visibility of illegal mining along major roads – like the Accra-Konongo Highway – and near police stations has intensified since 2024. Galamseymen now operate not only near waterbodies but also in forest reserves (Adomonline 2024; Mustapha 2024; Tijani 2024). Much of this expansion is linked to the NPP, which in 2023 passed L.I. 2462, permitting mining in protected areas. This has led to deforestation and pollution of tributaries, pushing the damage downstream. During fieldwork, Author 2 witnessed this firsthand. On the Asankragua-Bogoso Road, in Hiawa – a town with no secondary or tertiary schools – a former Prisons officer explained that most men aspire to be drivers or galamseymen due to limited opportunities. The River Ankobra runs through Hiawa, visibly affected by mining. While photographing the polluted river, two men approached. One said: ‘Please document what is going on here very, very well. We need the state to know this and to intervene.’ The other man vehemently disagreed with his fellow villager: ‘There is nothing going on here.’ As Author 2 pointed to the turbidity of the river, he went silent. His companion continued:

There is only one truth in the world and that is that galamsey is affecting our water, as we can see. We need to do something for future generations. We now use sachet water for everything; for our everyday activities, such as bathing, cooking, and drinking.

This exchange highlights two important things. First, the assumption that the state is unaware of the environmental harm, though it likely is. Second, the shift from denial to acknowledgment of galamsey's impact on daily life – especially the reliance on sachet water – shows how pollution in rural areas affects broader regions. Pollution from galamsey amplifies and moves. It is not only an example of 'cost-shifting' of environmental harm to society, but it also has ripple effects such as making livelihoods such as farming and fishing impossible. Despite the environmental degradation and social harm that become increasingly visible, the activities accumulate profits for miners and political actors involved by proxies. This shows how harm becomes both profitable and politically sustained. While political actors depend on profits from galamsey, it also became clear that the consequences of that pollution exposed their political vulnerability which led to political push back and their electoral defeat.

Importantly, these entanglements of pollution, politics, and waterbodies are not only limited to galamsey areas in Ghana's hinterlands. In fact, pollution serves as a travel companion, when we follow the rivers downstream to waterbodies in the capital of Accra. The turbidity takes new forms and adds political dimensions too. In the following section, we extend our analysis from traditional and illegal mining to urban mining in the capital.

Stagnant water and urban degradation

Our fieldwork around the Korle Lagoon (a large basin in the centre of Accra, where a major waterway passes through, but, more importantly, where it stagnates before entering the Gulf of Guinea), tells a story that comprises droughts, livelihood, scrap work, waste, flooding and, once again, politics. Our interlocutors speak nostalgically about what the lagoon used to be like; a place for fishing, bird watching, and recreation. The area has become infamous due to its proximity to a former scrap yard, *Agbogbloshie* (Rams 2021, Little and Akese 2019) as well as the densely populated area of Old Fadama, established on reclaimed land from the lagoon and river. In the early 1990s, city authorities relocated street vendors and a yam market to the edge of the Korle Lagoon to decongest the central business district of Accra (Njoku et al. 2023). The scrap market took shape around this area. It became initially a hub for services such as vehicle repair, spare parts trading, welding, and tire servicing for yam trucks (Grant 2006); and, later, for repairment, recycling, processing of discarded electronics and other types of scrap, and trading in the secondary raw materials extracted from these products (Grant and Oteng-Ababio

2012). Large amounts of used electronics for refurbishment and repair are imported to Ghana – a trade mostly facilitated by Ghanaians living abroad in Europe and the US. While the lifespan for some of the used electronics is expanded upon arrival in Ghana, others are beyond repair and add to the bulky pile of the country's electronic waste.

Discarded electronics in scrapyards like Agbogbloshie give rise to a new activity. Besides the 'rural mining' activities of galamsey as described above, Ghana is equally troubled by the negative environmental consequences of so-called 'urban mining' (Grant 2016) i.e., the mining of depleted electronics, cars, and other products for valuable metal scrap. The mined metals are sold on to intermediaries and onwards to melting companies and most of them exported out of Ghana into secondary-use industries (see also Corwin 2018). Most of the workers in the capital's scrap sectors are migrants from the Northern parts of Ghana. Farming in the Northern regions has become increasingly insecure due to drought and other unpredictable weather patterns caused by climate change (Kpenekuu et al. 2024; Dumenu and Obeng 2016). Droughts in the Northern regions make people move. Migrants from the North do not only find employment in rural mines but also in urban ones, engaged in, for example, the scrap economy around the Korle Lagoon. Yet as they are pushed from their homes by drought, they arrive to a setting characterised by too much, rather than too little, water. The area around the Korle Lagoon struggles with frequent floods (Farouk and Owusu 2012) making waste and water intersect in the form of discharged chemicals, sending pollutants flowing further afield.

Agbogbloshie has been influential on global discourses on 'electronic waste' (e-waste) as one of the world's most well-known scrapyards for discarded electronics (Grant et al. 2024). Journalists, photographers, and researchers came here to tell the dramatic story of black smoke from bundles of wires that are burned to melt the plastic to reach the copper inside. While there has been critique of this representation of Agbogbloshie (e.g. Oteng-Ababio and van der Velden 2019), there is no disagreement about the presence of heavy pollution at the site (Grant et al. 2024). Discarded electronics is a complex waste stream, complicated and toxic to dismantle. The dramatic representation of the burning wires drew international media and scholarly attention to the severe health and environmental effects of toxic fuels, such as dioxin, furans, carcinogenic gases being emitted into the air and surroundings (e.g. Huang et al. 2014). A recent study for example showed that the Korle Lagoon is contaminated by heavy metals due to the disposal of sewage and urban waste (Adomako and Dellor 2023). Once the valuable metals have been extracted from the depleted electronics, the rest – plastic covering, foam and glass, what we may call the *waste of the waste* – is left on the ground, in the river, or in the open draining system in the area. A high-ranking scrap dealer told Author 1 that the acid inside

car batteries is one of the most dangerous components that they handle at the scrapyards. Scrap workers empty the batteries and drop the acid in the gutters. Similarly, an official who works with waste management in Accra, shared his view on waterbodies around the Korle Lagoon:

The most harmful ones [...], when they break these gadgets, [is that] some of them have certain fluids in them. So, they drain everything into a nearby stream. The oxygen level within the waterbody is depleted. [...] It cannot sustain any aquatic life. Because there is no more oxygen for the fishes. So, the water will be there, but it's dead. So, in river bodies or streams that our grandfathers those days [could] just throw their fishing net and be catching fish, now... not even frogs, tadpoles [...] It's dead.

The change from a site for fishing to a 'dead' water stream within a few generations highlighted by the official points to the rapid developments of water pollution in the capital. The contamination of the water has fundamentally changed the area. In the case of urban mining, it is productive to think with the notion of harm as it allows us to move beyond legal frameworks and instead show how environmental degradation is connected to social issues as it unfolds over time.

While 'e-waste' and urban mining become a source of livelihood for internal migrants, they are also the ones affected by the environmental degradation it causes, as they both work and live in the area around the lagoon. As such, the contaminated Korle Lagoon shows urban mining as another example of cost-shifting of both environmental and social harm. Further, as most metals mined in this scrap sector are exported to secondary-use industries, hungry for metals, the profit margins largely accrue beyond Ghana's borders.

Around the Korle Lagoon, the urban mining activities intersect with other types of industrial waste from the area and city. Given that the lagoon is the capital's principal outlet to the sea, around 60% of the residents of Accra live in the catchment of the Odaw river and the Korle Lagoon (Abraham et al. 2006). Officers at Accra Metropolitan Assembly (AMA) shared with Author 1 that around 5,000 MT of waste is generated daily in Greater Accra. Apart from organic waste, textiles and plastics – especially bottles and sachets – constitute a large part of the daily pile (see also Stoler et al. 2012). The men on the Asankragua-Bogoso Road that we met above are not alone in replacing tap water with sachet water for drinking and bathing. The decreasing quality of drinking water in Ghana, means that the use of sachet water is both a fast-growing source of water – and business too (Preko 2017). The contamination of waterways thus creates new markets. Sachet water has become a major business, a nonintentional line of profitization following contamination. Sachet water, also called 'pure water' in Accra (Morinville 2017), has become an essential part of water provision for the city's low-income households, yet at an ever-increasing price. Sustained harm in this way becomes profitable.

Sachet water is only surpassed by bottled water in price. Both types of water are perceived to be of higher quality than tap water.

However, the water bottles and sachet polyethylene plastic bags are also a major risk to the environment both in terms of air pollution if burnt, and water pollution if dumped around the capital. When plastic finds its way into the gutters, it makes it difficult for the drainage systems to flow (Preko 2017). Due to Accra's limited sanitation infrastructure, the lagoon receives huge amounts of wastewater as well as solid waste through the Odaw River (Boadi and Kuitunen 2002). The seasonal heavy rain means that everything along the way gets guided by runoff water and ends up in the dead river that then functions as a vehicle of toxicity. Thus, the Korle Lagoon is a site for accumulation and mixing of pollutive forms of waste which blocks the outlet. The water fails to flow into the sea and thus becomes stagnant. Here, benevolent metaphors of water fluidity need to be rethought (cf. Ballesterio 2019). Drainage in Accra consists of a network of gutters that serve a dual purpose as storm water drains and collectors of domestic wastewater (Abraham et al. 2006). The clogged-up drains lead to periods of flooding during the rainy seasons (Boadi and Kuitunene 2002). Here the harm caused by both traditional and urban mining intersect. As environmental harm resulting from *galamsey* leads to a lack of clean drinking water, the increasing market for sachet water generates an environmental catastrophe in its own right: flooding due to clogging and pollution of water from the plastic sachets in the capital of Accra. As such economic gains is enabled by environmental degradation from both gold and urban mining, a form of accumulation by contamination. Following the contamination downstream in a *zemioloigcal* perspective illustrate the mobility of harm (cf. White 2011). We can thus see how cost-shifting of both traditional and urban mining has ripple effects.

Drainage in Accra is deeply political (Foli 2025), in the sense that it highlights how water (and waste) management and distribution are interconnected for both state agencies and the population. The Agbogbloshie/Old Fadama area has long been a site of state intervention and struggle. While residents expect authorities to dredge drains to prevent flooding, officials blame them for polluting the lagoon and occupying land that is needed for dredging (Rams 2015). Forced evictions along Accra's rivers are justified by the 'illegality' of settlements. In June 2015, after deadly flooding at Kwame Nkrumah Circle, over 20,000 residents were evicted (Rams 2015). International attention to Agbogbloshie's scrap work has further politicized the site. In 2021, under pressure from global and local actors, the area was demolished as part of the 'Make Accra Work' initiative led by Regional Minister Henry Quartey (Grant et al. 2024: 2). This echoed President Akufo-Addo's 2017 pledge to make

Accra the ‘cleanest city on the African continent’ and transform the Korle Lagoon into a tourist site (GhanaWeb 2017). The demolition removed homes and workshops, but, according to Njoku and colleagues (2023), it was more about ‘decongestion’ than pollution control. Both pollution from scrap work and flooding have been used to justify evictions and relocations (Ej Atlas 2021; Lepawsky and Akese 2015).

Old Fadama, next to the former scrap market, remains densely populated, and a place where scrap work, trade, and politics intersect. From rooftops, young men from the Northern region overlook the market and lagoon. Along the road, one can buy chili peppers, rice cookers, dumb phones, and pots made from scrap aluminium. Though the demolition in 2021 reduced visible black smoke, scrap activities persist. As one NGO worker noted: ‘It’s just moving the problem somewhere else.’ At the time of our fieldwork in 2024, scrap work had fragmented across the city. One interlocutor explained that before the demolition, harmful activities were confined to a known area; now, they occur closer to residential zones, complicating political dialogue around regulation. One new scrap site sits directly across from the old market, still polluting the Korle Lagoon. Consequently, the water is still ‘dead’ around here.

While media coverage of the ‘famous’ Agbogbloshie has disappeared since the demolition (Grant et al. 2024), the scrap work and the dumping of waste near the waterbodies continue and travel on. As the lagoon twines around the scrap market bound South, it ends in the open sea in the Gulf of Guinea. A waste management official described the impact:

Everything enters. And then the debris, like the foam, the fibre [...] even whole fridges can be washed into the ocean. There is a stockpile of refuse right at the ocean bed coming up. [...] Because you go several nautical miles, you won't get fish to catch. So, if we don't get a solution, and we keep stockpiling these things in the ocean, it is leading to the extinction of aquatic life. On land, the river body is dead anyway. But the oxygen in the ocean is adequate. Yet, there is so much debris that there is no more planting for the fishes to survive. And they move far away.

The quotation describes the costs that are shifted to the ecosystem in the process of mining discarded electronics for valuable remains: accumulation of waste and threaten aquatic life. As the waste and water from the Korle Lagoon spills into the sea, it becomes part of new wastescape with textile tentacles: tangled masses of discarded clothing, some over ten meters long, that wash up to Accra’s beaches (The Guardian 2024). During high tide, the effluents from the outfall are backwashed back into the lagoon (Karikari et al. 2006), and the water and waste undulate back and forth as the rhythmic backdrop of political discussions and interventions.

Urban mining shows not only a form of ‘accumulation by contamination’, whereby ecological degradation has become a mechanism of economic gain. In the scrap sector, we also

see how negative feedback loops perpetuate the harm produced. Internal migrants find precarious work in the scrap sector in the capital due to climate change induced unpredictable weather patterns in Northern Ghana. However, that scrap work causes environmental harm in the Southern part of the country. Simultaneously, the scarcity of clean water fuels a booming market for sachet water, which simultaneously clogs drainage systems, drains household economies, and generates profit – further entrenching the spiral of pollution and privatization.

Conclusion

The water crisis in Ghana highlights the complex political interlinkage of water degradation and access. As we followed the flow of water from the illegal mining areas in the hinterlands through the capital and urban mining activities and spilling into the sea, we have demonstrated how pollution of waterways is embedded in political and economic structures. Combining zemiology and its focus on harm with the idea of accumulation by contamination allows an analysis of the self-reinforcing dynamics in which environmental degradation, political interests, and economic rents and profit feed and amplify each another and unfolds over time. An analytical attention to harm enables us to illuminate how environmental degradation is connected to social issues such as livelihood and living situation; accumulation by contamination allows us to turn focus to how harm becomes both profitable, politically substantiated, as well as politically contested.

Traditional and urban mining are, as such, environmentally and socially connected in Ghana. On the one hand, the pollution from both rural or urban mining runs into rivers and gutters and diffuses into aquifers as rain and gravity draws it underground. On the other hand, both types of mining provide precarious livelihood opportunities in a country where other professions have become more difficult – fishing because of polluted water due to galamsey, and farming in the Northern region because of drought and other unpredictable weather patterns. Labour migration to the mining areas provides proximity to livelihoods for some, and projects to the capital a way to cope with socioeconomic uncertainties. The comparison of these two types of mining shows that the pollution of waterways is not just causing environmental, but also social harm. Further, it makes clear how negative feedback loops perpetuate the harm produced – just as the economic interests tied to such mining do as well.

The profits of galamsey can be traced from mining areas throughout the country into networks of powerful political actors. As the causes of pollution have become profitable and entangled into politics, politicians that should be part of defining and implementing solutions are seen by our interlocutors as part of the problem instead. What used to be a livelihood

strategy has, in other words, become highly politicised big business. Profits from *galamsey* have been used to sustain political dominance through financing election campaigns and buying loyalty, showing how economic gains are made while the environmental costs are shifted to ecosystems and society at large in a process of ‘accumulation by contamination’ (cf. D’Alisa and Demaria 2024).

The intensifying shortage of clean water is turning it into capital in its own right, by deepening existing inequalities. As clean water has become difficult to access, sachet water has become a major business, a nonintentional line of profitization following contamination. This is not only the case with the GWCL, that will deliver clean water at an increased rate to those who can afford it. It is perhaps even more evident in the massive sachet water industry in the country, which is developing at a remarkably large scale. While sachet water is an alternative to polluted water in the rural and urban areas, it comes at a cost – both financially and by clogging of sewage systems, amplifying flooding and feeding back into political contestation, as seen in the area of the Korle Lagoon. While a burden for some, the development is a possibility for others and, as such, also a version of accumulation by contamination.

Lacking access to clean water has made it a resource to control and profit from. As is commonly the case with such a type of accumulation, the ones paying the price are those who are already struggling. The burden on households is economically skewed. Practically all the people in the richest quintile of Ghana’s wealth distribution have access to water as a basic service – that is, access to water from an improved source, either on site or from a round-trip collection that is less than thirty minutes. The same is true but only for half of the population in the poorest quintile of the wealth distribution (GSS 2022, Table 16.2). Those who cannot afford sachet water are left depending on contaminated or unsafe water and suffering the associated health effects. Yet, even dependency on sachet water is a health issue. Though termed ‘pure water’, it is often not, as it has had a range of negative health effects in the past and, ultimately, it still depends on the same sources of raw water. While sachet water is an alternative to polluted water in the rural and urban areas, it comes with a cost – but financially and by clogging of sewage systems and amplifying flooding feeding back into political contestation as seen in the area of the Korle Lagoon. Diverting from the deep-seated idea of a hydrological cycle where water moves in a never-ending circuit, what we currently observe is that the availability of water is defined by both scarcity and excess. Water becomes, then, not merely infrastructure or resource but a catalyst of harm and a site of political struggle.

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