International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

# Galamsey Saga Case Study: The Forensics Overlooked, International Intervention to Save the Ghanaian Sustainable Environment

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## ABSTRACT

Using googles scholar search engine, the phrase "Galamsey activities in Ghana" gave average results of about 3,160 articles from the 19th century through to present. This tells us the scholarly work done on the galamsey and its menace. The breath and length of galamsey inherent attention, through research works. But it is ironic to say that because as of September 2024 the entire nation is crying for a state of emergency and seeking intervention to stop galamsey operation, but the government is silent. This case study research focuses on the key research areas concerning galamsey such as analytical chemical research, social and political to argue the work done using the narrative approach. From the case study it can be concluded that the scholars have done their part to showcase the dangers associated with galamsey such as high concentration of heavy metals in the waters bodies that is namely Mercury (Hg), Cyanide (CN), Cadmium (Cd), Arsenic (As), Lead Pb), Manganese (Mn), Copper (Cu), Zinc (Zn) and Iron (Fe) and degrading of soil, the land and health with air contamination concerns. Recent development from health services at Komfo Anokye Teaching Hospital in the Ashanti region recorded deformities in babies born to parents living in galamsey environments which is due to heavy metal poisoning during pregnancy. Ghana Water Company which is the main water treating company in the country has failed to treat the polluted water due to over polluted water and breakdown of the water treating facilities. This is clear as treated tap waters from Ghana Water Company Limited (GWCL) have the same brown color (turbidity) as the polluted rivers. It finally concluded galamsey is still in operation due to political and legal imbalance from the major political parties in Ghana namely National Democratic Congress Party (NDC) and the New Patriotic Party (NPP) including landowners or chiefs. This case study underscores this galamsey case to the entire nations in Africa and the world to investigate this matter, suggest routes and aid to sustain the Ghanaian sustainable environment.

## INTRODUCTION

Ghana is one of the topmost countries in west Africa rich in mineral elements such as gold, silver, bauxite, manganese and more. Over the years the western African countries faced exponential growth in population, hence its troubles increase steeply. Due to hardship, inflated cost of living, exponential growth in population, the youths have engaged in galamsey activities as a straightforward way to make life bearable (Afriyie, et' al.,2023; Antwi-Boateng, O., & Akudugu, M., 2021). Galamsey is a primary slogan and falsification of the English phrase "gather them and sell" use in Ghana to referring to unlicensed, informal and illegal mining with dare consequences on the environment Malongza, J.N.M.F.I., & Bukari, P.K.
In discussion terms it is the extraction of gold without the use of right tools, a mining license, an explora-

tion and mineral transportation permit, or any other document that calls for legal and safe mining (Aneani et' al., 2017).

But the consequences of such illegal gold mining activity are beyond imagination. Cocoa farms, trees, water bodies poisoned are but few to mention resulted from such wicked acts (Aryee et' al., 2003; Tschakert and Singha, 2007; Hilson, G., & McQuilken, J., 2014; Boadi et al., 2016; Affum et al., 2016; Bansah et al., 2018).

Researchers, scholars including the media made public acknowledgement of the harm it causing to the Ghanaian waters, lands, health, and the environment at large. This case study focusses on the chemical analysis, social, health and legal/political instability research work in time past and present relating to galamsey activities in the Ghanaian environment and the call for international intervention.

## ANALYTICAL CHEMICAL RESEARCH WORK ON GALAMSEY

Due to illegality of the act, unprofessional methods or primitive methods are adapted in the mining of gold in Ghana. Mercury is their primary poisonous chemical used in concentrating metallic gold, it does so by dissolving or displacing other elements in the gold ore and bonds with the metallic target gold through amalgamation (Nur Okviyani et al 2023). The wastewater flows into streams, grounds and other linked rivers which finally fall downstream to find its way into the sea at Secondi Takoradi, genesis of the Ghanaian water's pollution. Figure 1.4 shows the route of the polluted water into the sea, a pictorial picture from space.

The water bodies are of major concern in that ninety percent of rivers faced heavy metals poisoning such as lead, cadmium, copper, arsenic, mercury, iron, and zinc to have high concentrations beyond normal belt (Ahiabu, M. K., & Aboagye, F. 2024; Bessah,E., et' al, 2021). Just like J. Mantey mention in their 2020 research to figure out the level of mercury contamination (Nur Okviyani., et al., 2023 using a confidence level of 95% (McDonald, 2014; D'Agostino and Stephens.,1986; Shapiro and Wilk, 1965), mercury recorded a highest concentration of 219-(200)mg/Kg at Mill house by far higher than safety belt. With even the least explored site to have a concentration median of (0.780-0.0006) mg/L at Dig& Wash and River Dredging, which is also far above the reference Ghana Environmental Protection Agency (GEG), Effluent/Water and Discharge guide which is 0.005mg/L.

The soil and drainage systems are polluting with levels of oil and grease across major hotspot assemblies. Such as Anona, Chamfi, Mill House, Washing Board and Washing plant galamsey O/G exceeded standards such Ghana effluent guideline value of 100mg/L for water pollution and the new Dutch lists target and intervention value of 50mg/L 500mg/L for solid/semi-solid materials research by J. Mantey et al 2020); Owusu-Prempeh, N., Awuah, K. O., Abebrese, I. K., & Amaning, E. N. (2022), conducted analytical research on the level of heavy metal contamination at Atewa forest landscape which is closest to the hotspot sites. The targeted heavy metals were Fe, Cu, Mn, Pb, Cd, As and Hg. He collected forty-eight samples from topsoil about (0-20cm) and subsoil of about (20-50cm) in four districts. Results show that topsoil has heavy metal pollution in the order: Hg>Cd>As>Pb>Mn>Cu>Zn>Fe and the subsoil have Hg>Cd>As>Pb>Cu>Mn>Zn>Fe, respectively. He also concluded on the risk of Hg, Cd, Pb and Zn poisoning in both topsoil and subsoil were of galamsey activities while Cu, Mn, Fe were naturally occurring which I agreed with him as an analytical chemist. (Bonah, D., & Belford, E. 2022; Appiah, S. K., et' al, 2018; Obodai, J., et' al, 2023). Different pollutions indexes such as Target Hazard Quotient (THQ), Heavy Metal Pollution Index (HPI) and Total Hazard Index (THI) were employed into play to evaluate pollution in water sources and realized that the mean indexes are all above the belt limit. (Faseyi,

C. A.,2022)

## THEORY

### a. ANALYTICAL ANALYSIS OF HEAVY METAL ON MEDICINAL PLANTS

The contamination of heavy metals in the Ghanaian environment does not only cover the water bodies but the very medicinal plants which serves as primary source of synthetic drugs have also polluted by such atrocities in Ghana. Research by Amerley Amarh, F., et' al, (2023) assessed research on selected heavy metals on twenty selected medicinal plants in Obuasi. Obuasi is the mother seat of galamsey as early as 1471. The target heavy metals As, Cd, Cr, Hg, Mn, Ni and Pb detected by inductive coupled plasma mass spectroscopy (ICP-MS) after wet digestion. The concentrations (mg/kg) of As, Cd, Cr, Hg, Mn, Ni, and Pb were 1.092 − 0.206, 1.341 − 0.253, 6.603 − 2.005, 0.045 − 0.001, 282.798 − 20.583, 4.967 − 1.676, and 26.410 − 0.629, respectively. According to their research concentrations of Cr, Cd, As, Mn and Pb exceeded World Health Organization (WHO) permissible limits for medicinal plants but Ni, As and Hg. Their mean concentration fell below the redocumentation by WHO. Plants including Moringa oleifera, Piper guineense, Lemon, Dalbergia saxatilis, Tetrapleura tetraptera among others assessed have such findings Rebecca Zida Afriyie., et' al (2023) conducted a research study on water samples on a galamsey site which confirmed high concentration of heavy metals. They went on to run Atomic Absorption Spectroscopy (AAS) analysis on cultivated vegetables in the same area using the same polluted water and found out bulk of the heavy metals are still in high concentration even in the vegetables hence concluded not safe for public consumption. However, the contradiction between Amerly and Rebecca Zida's research findings may be due to differences in locations sample sites, plants, concentrations among other factors. Also, Yalley .P.P., et' al., 2021 did research on heavy metal-based river water for concrete mixing and found out that it has cracks hence recommended using treated water for concrete in buildings.

### b. ANALYSIS ON FOOD INSECURITY- PHYSICAL

The researcher Nyantakyi-Frimpong and his colleagues made a profound photovoice research on the effect of galamsey on food and nutrition security in the East Akyem Municipality in the Eastern region of Ghana and the outcome was remarkable. Their research covered land degraded due to galamsey, the settlers also revealed associated impacts on agriculture and food production as pits left uncovered and lands will require intensive fertilizer application to restore soil fertility. A typical mercury poisoning was recorded on root tuber cassava which was confirmed at the hospital after harvesting and consuming cassava from galamsey covered pits.

Cocoa production is the primary source of Ghana's economy, a cash crop and source of tax revenue and export Aneani et al., (2017). The cocoa sector generates an average of 60% labor force in the country which is mostly on small scale basis between 2-3 ha with average yield of 400kg/ha (Afele., et al., 2021). This poor yield is a direct effect of soil fertility as a primary cause Najat Osman et' al., (2022) argued that landowners in the said areas give out their lands as sale or lease for galamsey. Meanwhile, these same landowners are the primary cocoa farmers which help to boast the Ghanaian economy through cocoa crop cultivation. Information gathered from tenant farmers revealed that it is mostly landowners who give out their lands for galamsey activities, landowners in every society or community has a seat tied to the chieftaincy of that very community. This implies that the chiefs in the various communities are in support of the triecious act of wickedness.

### c. POLITICAL ANALYSIS

In Ghana there are two main political parties NDC and NPP, these parties were set up during the end of

the military rule to run democracy. Late, Formal president Jerry John Rawlings was that head while Formal president John A. Kufour was the head of the NPP party. Soon after these two-party heads left office that their successors left the core values and seeking their own interest and ways to suit their time in office irrespective of the consequences. This was clear of the 3-million-dollar deal with IMF from the Chinese government in the year 2012 during the leadership of president John D. Mahamma. More Chinese now find their way into the country without restrictions as compared the predecessor's era of Dr. Kwame Nkrumah and Jerry J. Rawlings. This brought imbalance and dishonesty, all thanks to the 3million dollars loan trap, because the loan came with conditions attached. After two years, the rein of president John D. Mahamma came to a halt and President Akufo-Addo (NPP) assumed seat with many promises but end up borrowing much more money from the same wound that is causing political imbalance and more Chinese now set up companies in the country in the name of globalization and exploring our natural resources.

Political instability in relation to weak governance became a key factor that brought galamsey to a gun point today. The following analysis on publications show incompetency, indirect involvement of politicians as the head spear of galamsey activities in Ghana. The Politicians supervise, protect, and safeguard but they serve the people piecemeal. They have now turned to be a part of the major problem. In Richard Aidoo's qualitative study on "The Political Economy of Galamsey and Anti-Chinese Sentiment in Ghana" his research shows an unstructured interviews and information gathered in 2013 and 2014, particularly Awaso, in the Western Region—an area known for Ghana's major bauxite mine which is currently operated by the Chinese, as well as increasing galamsey activities in surrounding areas. He also found out that, different political actors in Ghana have contributed to the diverse reactions towards the illegal Chinese miners Hilson, G., Hilson, A., & Adu-Darko, E., (2014).

By law, Ghanaians can apply for licenses to run small-scale gold mining. The Chinese as foreigners can provide resources for machinery and the technical knowledge. This gave birth to series of joint endeavors between the Ghanaians and the Chinese in which the latter have no legal ownership since their documentation for stay and working in Ghana are mostly invalid. This is the primary spread of galamsey sites and destruction of water and lands.

In Africa, resource management and exploration focus on political and traditional elites. They are the arm in resource management and development (Asori, M. et' al,2023; Bebbington, A. 2015). Today any challenge associated with natural resources as far as gold mining is concerned must be attributed to mismanagement or incompetence of the elites placed in charge.

**d. SOCIAL MEDIA ANALYSIS.**

Research conducted on the impact of social media seems to have positive feedback on the case of galamsey operation in Ghana. Research made by Kamen Spassov and Ebenezer Agbozo., 2019 proved positivity towards the fight against galamsey action. They evaluated 11,000 tweets made between 1st March 2017 to 1st March 2018 on Twitter with the hashtag – #StopGalamseyNow. Their results reveal an insight into the retorts of Ghanaians and the level of fury expressed which led to the raising of awareness by the media, and government acting swiftly to curb the menace due to fear of the public demonstrations. A qualitative research study by Azumah F.D, Baah, E., & Nachinaab, J.O (2021) found that students drop out of school purposely for galamsey activities.

The media using narratives and symbols was able to reshape public discourse and policy in the extraction industry, use of security courts was able to calm the situation to some extent that is arrests, closure of illegal mines, land reclamation and programs to resettle the displaced galamsey operators which was late 2017-2021 Kpienbaareh, at' al (2021). Ayelazuno, J.A, & Aziabah, M.A. (2023) wrote an article

concerning the fact that we are in the computer age, and nothing hidden under the carpet will remain unrevealed. In their article they made mention of different media and the exposure of the power-elites behind galamsey, that is the politicians including how Professor Kwabena Frimpong-Boateng has exposed the power-elites but they were not explicit to convey their finding. Currently the social media such as Facebook, Twitter, Instagram, WhatsApp, and television stations are flooded with topic of galamsey activities as of September 2024 nationwide.

## MATTERS ARISING AS OF SEPTEMBER 2024

**Dishonesty of Political Leaders:** People are getting sick from the intake of contaminated water due to the action of galamsey activities. Residence along the major Pra river that depend on the water for survival are suffering. The treatment plant in treating water (GWCL) made a remark about the faulty problem with the process or treatment of water for safe drinking in the central region of Ghana. This calls for a state of emergency. Benjamin A. Teschner said in his research that, the people involved in galamsey are a highly crafted worked web of elites in power (politics) and he concluded that two forces are the electromotive forces of galamsey that political elites and corruption among the law enforcement all under one poor governance.

As of today, the situation is still the same without any concern of the current president, his excellency Nana Akufo Addo's silent granted mistrust in the government (politics) in solving the water crisis challenge in the country.

On BBC news[40] entitled "Ghana risk importing water by 2030", the news reported in a Ghanaian pidgin. The interpretation means that Professor Kwabena Frimpong-Boateng the chair for Inter-Ministerial Committee on Illegal Mining (IMCIM), in March 2023 authored a report "report on di work of di interministerial committee on illegal mining - di way forward". It was alleged that, the report sent to current president as of 2023 on the fact that ministers of the state are also involved in galamsey business and warrant chairman demotion from seat. Ministers' names were cleared out of report even with evidence that highlighting their wicked deed towards Galamsey.

Even though the Paramount king of Ashanti disentitled three kings after vivid investigation which proved that they involved in galamsey but that alone is not enough considering the current state of the waters in the country and the level of chemical pollution.

## CHEMICAL ELEMENTS IN WATER AS OF SEPTEMBER 2024

Again, research from the chemistry department led by professor D.K Essuman showed that all water bodies are constantly polluting with the highest concentration of heavy metals. The heavy metals, Hg, CN, Pb, among others. This confirms the research made by Richard Aidoo[41] that mercury concentration was so high that cassava product (konkontey; a starchy food obtained from dried and milled cassava) turn black after cooking it and even a family of nine had to be rushed to the hospital after eating a food product cultivated from an old galamsey reclamation land.

Also, professor Sampene Ossei alleged that, a lecturer at Kwame Nkrumah University of Science and Technology that upon research from Komfo Anokye teaching hospital explained that women that live in the affected areas of galamsey bring forth babies with deformities (Adam, Y. Tue Aug 2024). Research by Amonoo-Neizer et' el., 1996 revealed potential deformities such as neural tube defects, limb deformities and orofacial clefts a testimony to the sign of heavy metal poisoning among pregnant women.

## TROUBLE FACED BY GWCL AS OF SEPTEMBER 2024

The Ghana Water Company Limited established in July 1999 owing to the conversion of Ghana Water and Sewerage Cooperation to a state property. The Ministry of Sanitation and Water Resources is the sole body that oversees water policies, Ghana water company limited operations, funding, and sector investment. This company was mount up since Ghanaians using water directly from streams, lakes and rivers is not healthy. The primary role of the company includes provision of clean and safe drinking water to urban communities through system of treatment processes, ensuring top-quality water in terms of quantity and quality for Ghanaians among other functions.

GWCL is the sole company that manages treating large volumes of water to the entire nation. As of September 2024, is going through crisis in fulfilling its work to the nation. Ninety percent of the instruments used in treating water have broken down beyond repair and there are no funds to replace them. Due to this, the water supplied to the central region has been reduced to 30% lower than the normal full supply. It was alleged that Pra river which is the man source of water for GWCL has severely polluted beyond measure. This place immeasurable pressure on the treatment plant causing it to breakdown. They result in the use of other chemical alternatives such as chlorination followed by application of alum to get rid of heavy metals in the water which is quite expensive to run. From 2008-2023 the company alleged to spend four million Ghana cedis in treating the polluted water, statistics show that this money can use to buy new treatment plants that can last for about 25 years.

From early January this year, whenever there is water cut, the return always comes with about brown (high turbidity) coloured solution which flows at about 1.5000L/Min seen to linger on average 2-5hrs before getting back to normal. This is only serving as a warning to the reality ahead if galamsey activities continue. The communities affected are those in the western or communities closest to the Lower River Pra, in the Shama district and parts of central, among others.

## METHOD

The method of random sampling has been employed in this research case study to gather literature resources to highlight the researcher's analysis.

## TABLE OF RESULTS AND DISCUSSION

A survey of the current situation as of September 2024 using random sampling at galamsey community.

| | |
|---|---|
| 1 | Shama |
| 2 | Inchaban |
| 3 | Aboadze |
| 4 | Dwomo |
| 5 | Secondi |

**Table 1.1 showing list of communities affected by the tap water problem around the lower pra river.**

| | |
|---|---|
| 1 | Upper West |
| 2 | Upper East |
| 3 | Central |
| 4 | Western |
| 5 | Eastern |

| | |
|---|---|
| 6 | Ashanti |

**Table 1.2 showing a summary of regions affected by galamsey activities in Ghana.**

**Source; BBC news September 2024: figure 1.1**

**Source; BBC news September 2024; figure 1.2.**

**Source; BBC news September 2024; figure 1.3.**

**Figure 1.4 shows a treated tap water by water company limited as Sun, 15 September 2024 in the Lower Pra, Shama district.**

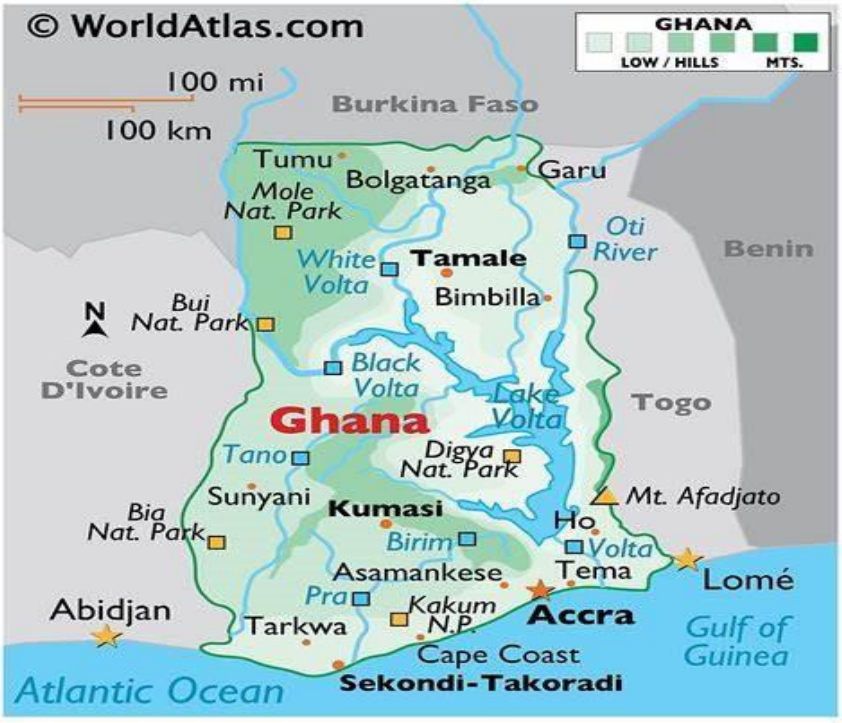


**Figure 1.5 show the various major rivers polluted in Ghana; Source; internet.**

| Chemical Name | Symbol | WHO guideline value (mg/L) | WHO guideline value (ug/L) |
|---|---|---|---|
| Mercury | Hg | 0.006 | 6.000 |
| Arsenic | As | 0.010 | 10.000 |
| Lead | Pb | 0.010 | 10.000 |

| | | | |
|---|---|---|---|
| Cadmium | Cd | 0.003 | 3.000 |
| Cyanide | CN | 0.17 | 170.000 |
| Copper | Cu | 2.000 | 2000.000 |
| Chromium | Cr | 0.005 | 50.000 |
| Iron | Fe | - | - |
| Manganese | Mn | - (0.400) | - |
| Zinc | Zn | - | - |

**Table 1.3 showing the dominant chemicals in the Ghanaian polluted waters and WHO' guideline values. (-); "means concentration is not of health concern".**

## DISCUSSION

### ANALYTICAL CHEMICAL ANALYSIS SUMMARY

From the information presented in this case study the main dominant heavy metals in water are Hg, CN, Cd, As, Pb, Mn, Cu, Zn, and Fe. Specifically, Hg, Cd, As, Pb, and CN perceived as the biggest threat to the entire nation. Researchers have done their work by telling us the toxicity level of the entire waters in the various regions and ways to treat it. However, is that all? Ghanaians are paying for treated tap water only to get treated water treated again in the various homes.

### GENERAL SUMMARY OF WATER STATUS IN GHANA

Already as of 2008, Awuah, E., Nyarko, K. B., & Owusu, P. A (2009) made research and discovered that, the performance of urban water supply by Ghana Water Company Limited is poor with a disputed coverage of about 60% and about 50% of the Company's water production lost through un-accounted-for water. The Ghanaian land has major rivers sources from which the GWCL limited get access to water for processing. In the greater Accra region, the main source of water is the Densu river which stretches to the western part of Accra and has suffered harm because of industrial and agricultural waste from Tema and Accra. In the volta region, the lake river volta which starches from volta to upper west is the main source. This river has also been heavily polluted, but new machinery provided by GWCL kept it running, hence good and safe drinking water had been running for the people. Enu river which serves Konongo people is heavily polluted and last received less attention. With same challenge in the Northern region, the Mawumi river faced pollution through sand winning activities by construction activities. In the Bono Ahafo region, the main source of water has blocked and channeled into galamsey sites for exploration of gold. Out of the major rivers sources in Ghana it is only the black volta which is less contaminated with galamsey activities. Figure 1.1- 1.4 show the extent of pollution of main river sources in the Western, Ashanti, central and Eastern region have exposed. This is a testimony to the fact that pollution in major rivers has broken down water treating facilities in the country. Figure 1.5 shows the current water treated by Ghana water company as September 2024. Indeed, GWCL has failed to fulfil its responsibility to the nation as said in their mission statement.

### POLITICAL SUMMARY

The current president is silent about the current doom of the affected areas and waters due to galamsey activities. It is quite pathetic that Dr. Mahamudu Bawumia who is the vice president is campaigning for the seat of the president come December 2024. His manifesto for election does not explicitly talk about the measures he would employ to eliminate galamsey or the way to manage galamsey as its at its peak

today. This presented distrust and disappointment to scholars while others were in full support because of favoritism and nepotism (Dr. Mahamudu Bawumia, Manifesto, 2024)

However, as mentioned earlier, it was the rein of president John D. Mahama that the country signed a 3-million-dollar deal with the Chinese government with dire conditions that made the Chinese to start exploring our natural resources. Today as of September 2024, the said president is campaigning again to come back to power. Again, his manifesto does not explicitly talk about the way to manage galamsey when he comes to power explicitly (Hon. John Dramani Mahama, 2024 Manifesto, page 61)

So, we as scholars, if these leaders really mean well for the benefit of this country or its doom? The researcher is not a prophet of doom, but from the look of things if any of these two leaders come to seat, the country will sink into more debts.

The two leaders in their manifesto does not explicitly tell the country how they will generate funds internally to support the country to overcome loan debts, raise salary of skilled and unskilled labors, ways to improve the agricultural sector since we have found out that cocoa farms have been destroyed for the sake of gold through galamsey activities.

**RECOMMENDATIONS**

Research findings from universities need maximum attention. From research conducted, research on galamsey activities have solid finding but I can say only 1% has used. So there comes the question why the universities? Are they for decoration? Are the research works not meeting standards? If so, what is the provision to produce practical analytical people not theoretical.

Galamsey is at gunpoint due to political instability. From the information gathered politicians are the engineers of the galamsey saga. Political leaders borrowing smoney from developed countries with strict strings attached should stop but generate funds internally to avoid endangering the lives of innocent Ghanaians. They pay these through heavy taxes and levies.

Also, there should be a university purposely to train politicians. Furthermore, the political side and the 1992 constitution on politics need attention, revision, and amendment. The year 2024 is another year to elect a new president into power but the media reports concerning the plan of the presidential aspirants are not clear enough.

In amending the 1992 constitution about politics, effective attention to research works such as grants to expand research in STEM beyond the laboratory scale should see improvement. In doing this, work opportunities generation for graduate students who worked in the same work of research while unskilled laborers would be employed. This will minimize the bunch of theologians produced by the traditional universities in the country.

Traditional chiefs are the land rulers or owners of land in various communities that give out their lands for galamsey activities in turn to have a short-term return. Ghana need Centralized Data to watch all chief and chief executives including land policies.

From the research done so far it can be seen that greed and the desire to get rich within a brief period among urban youth is also a primary cause. The youth need formal training and education on the fact that it is good to get rich overnight, but the consequences of their action will ruin the future generations. Also, they use manual intensive approach in mining minerals this made them use sedative drugs which is harmful thereafter.

Research by Michael Eduful at'al.,2020 suggest that through arrests, confiscation and destruction of galamseyers equipment has brought some water bodies turbidity to normal but said due to political

influence from government officials and chiefs in high position became ineffective due to "catch and release" leading to imbalance in dealing with the problem. And concluded that the use of military -style will not since youths left unemployed. They recommend plans to deal with poverty, unemployment, and rural illiteracy.

Military- style ruling must apply to start state affairs on clean sheet considering the current state of the country while deciding to secure job opportunities to urban areas. Also, the rent- seekers or the elites described by Antwi-Boateng, O., & Akudugu, M., 2021 which are the wicked and soulless politicians must be dealt with holistically by holding the bull by the horn if we really intend to kill it once and for all.

Research made by Asante K. (2023) argues that a combined use of biochar and poultry manure mixed in a ratio of 1:1 at a weight of 10ton per hectare yielded highest cassava stover biomass of 22.9 in the first year. Which went with a reduction in Arsenic accumulation by 168.9% and that of lead to be 149.8%. This could be a good start, but further research to check the potential safety of the product for public consumption must continue vividly. Because Richard Aiidoo made physical research without any intensive chemical analysis and found that the cassava from the reacclimated galamsey site without treating is highly poisoned with mercury in that it nearly took the life of a family of six.

Further research should be conducted on all food crops cultivated at galamsey affected farming communities before releasing to the various markets, thus locally and internationally.

## CONCLUSION

In conclusion, it follows that the scholars or researchers have done the best in research by highlighting threat of galamsey activities through heavy metal poisoning, medical health effect, political elites, and social media. However, the political instability in the country is seen as the electromotive force behind galamsey activities. The government which is the fortress against such calamities are seen as the engineers of galamsey, hence research works or forensics indeed overlooked. It is also clear that traditional chiefs and landowners are part of the galamsey saga. The writer argues that until politicians, the chiefs and landowners face justice, the researchers/scholars write in vain and long live galamsey.

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