Thematic Fact Sheet

RESOURCE CONSERVATION INITIATIVE

HEALTH FACT SHEET

What Land-Use Conflict Costs the Human Body

Evidence from Asutifi North and Atwima Mponua Districts on exposure to toxic chemicals, contaminated water and pollution, and the health burden of illegal mining

RESCONI . AUGUST 2026.

ABOUT THIS FACT SHEET

Every figure in this fact sheet is drawn from the RESCONI Final Study Report, Support to Promote Community Resilience and Rights in Competing Land Use for Mining, Agriculture and Forest Utilization in Ghana (November 2023), and is referenced to the sections, tables or figures it came from. The health evidence presented here comes from three parts of that study: laboratory analysis of four water samples collected on 5 April 2023 in the Tano Offin Forest Reserve and analysis at the KNUST Central Laboratory; a household survey across the two project districts; and the report's review of documented health consequences of illegal mining in Ghana. Institutional engagement included COCOBOD's Cocoa Health and Extension Division, alongside the Forestry Commission, Ministry of Food and Agriculture (MoFA) and district assemblies. The study did not include a dedicated community health survey — the health evidence here is drawn from laboratory results, survey responses on environmental challenges, and secondary sources reviewed in the report. Charts have been redrawn from the report's own tables and figures

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1. Why health belongs in a land-use study

Land-use conflict is usually measured in hectares. This study also counted it in by quantifying heavy and poisonous metals in drinking water, what they breathe, what they treat themselves with, and the number of affected persons.

KEY FACTS

- River Desiri recorded turbidity about **90 times** the WHO/GS potable-water limit, iron about **57 times the limit**, lead 4.3 times the limit and chromium **3.6 times** the limit.
- Roughly **65%** of Ghana's freshwater bodies have been polluted through illegal mining.
- Mining-related toxic emissions are associated with **neurological disorders, respiratory problems and developmental abnormalities**.
- **16.15%** of respondents in Atwima Mponua named decreased water quality as an environmental challenge they face, against **6.38%** in Asutifi North.
- Around **15%** of respondents in *both* districts named inappropriate use of agro-chemicals — a health exposure unrelated to mining.
- Forests remain a primary source of medicine: **18.2%** of respondents in Asutifi North and **12.03%** in Atwima Mponua derive medicinal benefit from them.

Health is not a separate chapter

The RESCONI study set out to examine competing land use between mining, agriculture and forest utilization in the Asutifi North and Atwima Mponua Districts. Health was not a stated objective. It surfaced anyway — in the laboratory results, in what households reported, and in the documented national records the report reviews.

That is the point. Where land use goes wrong, the harm does not stay in the environment. Generally, the negative impacts of poor land use from competing claims extend beyond environment to human health. It moves into water people drink, soil that grows their food, air they breathe, and the ground they walk on. The report is explicit that illegal mining poses a threat to human health,and that the mining process emits toxic chemicals into the environment.

What the study measured

Four water samples were collected on 5 April 2023 from two water bodies running almost parallel through Compartments 165 and 168 of the Tano Offin Forest Reserve, and analysed at the KNUST Central Laboratory for physicochemical parameters, nutrients, and heavy metals and metalloids. One river — Desiri — has intense galamsey activity in its floodplain. The other — Apapramasu — is relatively undisturbed and served as the control.

Because both run through the same reserve under the same rainfall and geology, the difference in their chemistry is a measure of what mining puts into water that people downstream use.

The study's institutional engagement crossed the same boundary. Alongside the Forestry Commission and district assemblies, the team consulted COCOBOD's Cocoa Health and Extension Division and the MoFA Directorate — reflecting the intersection of agricultural, environmental and health concerns in the project landscape.

Four ways the damage reaches people

WATER

Heavy metals and sediment enter rivers that feed tributaries of the **Tano and Offin**. Contaminated sources become unsuitable for domestic and agricultural use. Treatment costs rise and are passed to consumers.

SOIL & FOOD

Soil contamination from illegal mining has **serious implications for food crops and human health when consumed**. Land degradation removes topsoil, threatening food production and nutrition.

AIR

Toxic emissions from the mining process are associated with **respiratory problems**. Decreased air quality was named as an environmental challenge by **6.00%** of respondents in Asutifi North and **4.69%** in Atwima Mponua.

PHYSICAL & SOCIAL

Disturbed Landscapes with uncovered pits have caused **deaths from falls** and miners trapped while working. Galamsey settlements are associated with violence, drug use and the spread of **sexually transmitted diseases** due to social vices.

Source: RESCONI Final Study Report (2023), Sections 2.4, 2.5.3, 3.3, 4.2 and 5.1.

What communities themselves report

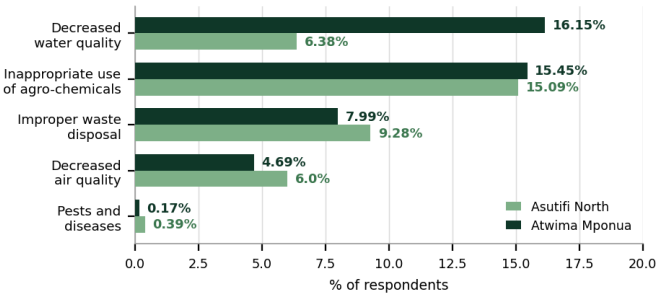

Figure 1. Health-relevant environmental challenges per project districts.
Source: Report Figure 2.21, p. 39.

Two findings are of particular significance. Decreased water quality is named more than twice as often in Atwima Mponua (16.15%) as in Asutifi North (6.38%)— the district harbouring the Tano Offin Forest Reserve and the sampled rivers sit, and where mining pressure on water bodies is higher.

Inappropriate use of agro-chemicals, by contrast, is observed at the same rate for both districts (15.09% and 15.45%) - It is the one health exposure that is unrelated to about mining but directly attributable to farming. Its negative impacts equates to water quality in Atwima Mponua District which is the worst affected of the two (2) districts.

2. What the evidence shows

A river people live beside carried lead, chromium and arsenic at or above the limits set for drinking water. A stream a few metres away, in the same reserve, did not.

How far above the safe limit

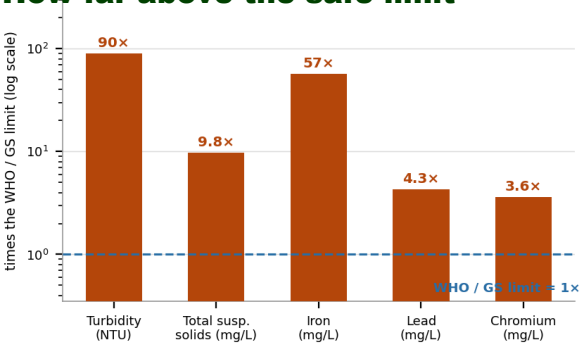

Figure 2. Worst reading recorded in River Desiri for each parameter, expressed as a multiple of the WHO/GS limit for potable water. **Source:** RESCONI Final Study Report (2023), Table 3.2, p. 59.

The metals that matter for health

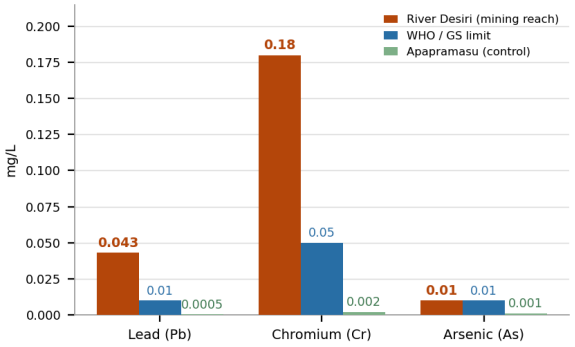

Figure 3. Lead, chromium and arsenic in the mining reach of River Desiri, against the WHO/GS limit and the Apapramasu control. **Source:** RESCONI Final Study Report (2023) , Table 3.2, p. 59.

Water from River Desiri is of poor quality and does not meet the physicochemical and heavy-metal requirements stipulated by WHO, GS 175-1:2013 and the WRC — with a strong correlation to sediment runoff and chemical discharge from illegal mining along the river floodplain.

Paraphrased from RESCONI Final Study Report (2023), Section 3.3, Discussion.

65%

The RESCONI study cites estimates that roughly 65% of Ghana's freshwater bodies have been polluted by illegal mining. **SDG Goal 6 — safe, affordable water for all by 2030 — will stay out of reach while this continues.**

Health-relevant readings, side by side

Parameter	Desiri mid	Desiri down	Apap. mid	Apap. down	WHO / GS
Heavy metals and metalloids					
Lead, Pb (mg/L)	**0.013**	**0.043**	0.0003	0.0005	0.01
Chromium, Cr (mg/L)	**0.06**	**0.18**	0.002	0.002	0.05
Arsenic, As (mg/L)	0.004	0.01	0.001	BDL	0.01
Mercury, Hg (mg/L)	0.0002	0.0001	BDL	0.0000021	0.01
Manganese, Mn (mg/L)	0.20	0.16	0.033	0.034	0.4
Nickel, Ni (mg/L)	0.015	0.012	0.001	0.001	0.07
Copper, Cu (mg/L)	0.03	0.021	0.01	0.001	0.05
Selenium (mg/L)	0.01	0.009	0.008	0.006	0.01
Iron, Fe (mg/L)	**17.22**	**11.75**	**0.86**	**1.02**	0.30
Physico-chemical					
Turbidity (NTU)	**451**	**168**	**5.1**	**8**	5
Total suspended solids (mg/L)	**47.0**	**49.0**	**22**	**21.0**	5
pH (SU)	7.03	6.98	7.02	7.01	6.5–8.5

Table 1. Laboratory analysis of water samples. Values in rust exceed the WHO/GS limit. BDL = below detection limit. **Source:** RESCONI Final Study Report (2023), Table 3.2, p. 59 (KNUST Central Laboratory).

What the report concludes from this

Lead in the mining reach was recorded at a level the report describes as posing *a serious health concern to downstream users*. Downstream, lead sat exactly at the WHO/GS ceiling of 0.01 mg/L — no margin at all. Chromium exceeded the limit at both Desiri points. Iron exceeded the permissible limit in every Desiri sample, though the report notes iron is an essential mineral in moderate amounts.

The control tells the opposite story: almost every parameter at the Apapramasu mid-stream point fell within WHO, GS and WRC limits — no immediate health or environmental concern.

Exposure downstream

These are not readings from an isolated pond. River Desiri feeds tributaries of the Tano and the Offin — two of Ghana's major river systems — so the lead and chromium measured at Kasotie travel on to communities that had no part in the mining and no way of knowing what is in the water

Why this is a local exposure, not a national abstraction

Illegal mining dominates the mining surveyed in both districts — **82.35%** of mining respondents in Asutifi North and **100%** in Atwima Mponua were unregulated illegal operators, and the Tano Offin Forest Reserve sits inside the study landscape. The national health-risk pathways are therefore live pathways for the communities surveyed here. ***Source:*** *Report Figure 2.13, p. 31; Sections 3.1 and 4.2.*

3. Why it matters, and what must change

The documented health burden

Toxic chemicals emitted by the mining process are associated with **neurological disorders, respiratory problems and developmental abnormalities**. Water bodies including the Pra, Densu, Ankobra and Birim have been heavily polluted with mercury, lead and arsenic — substances toxic to human and aquatic life — reported as causing skin diseases, babies born with deformities, cancer and other health problems. Soil contamination carries the exposure into the food chain, with serious implications for food crops when consumed.

Injury, death and social harm

Not all of the harm is chemical. Pits left uncovered have become a threat to life, with reported incidents of people falling into them and of miners being trapped and dying while working. Mining operations expose workers and neighbours to toxic chemicals, accidents and inadequate safety measures. Galamsey settlements carry a further social-health burden: violence that has led to deaths at campsites, open sale and use of cocaine and marijuana, and a rise in sex work with the associated spread of sexually transmitted diseases.

The compounding burden associated with 'galamsey'.

Illegal mining damages water-treatment equipment, and the high cost of treating polluted water is passed on to consumers. Communities pay once in exposure, and again in price. It is also a recognised threat to food security: where topsoil is stripped, farming becomes nearly impossible.

Forests are also a health asset

The same forests under pressure are where people get their medicine. Medicinal use was reported as a benefit of forests by 18.2% of respondents in Asutifi North and 12.03% in Atwima Mponua, alongside firewood, game and non-timber forest products. Losing forest cover is therefore not only an environmental loss — it removes a primary healthcare resource from communities that rely on it.

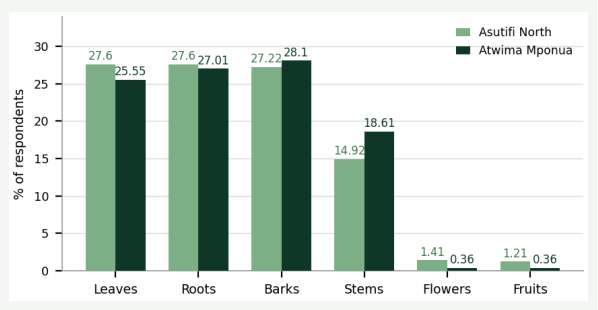

Figure 4. Plant parts used for medicinal purposes, by district.
Source: RESCONI Final Study Report (2023), Figure 2.23, p. 40.

Barks, roots and leaves account for the overwhelming majority of medicinal use in both districts — all parts that require a living, standing forest to harvest.

What RESCONI recommends

The strategic recommendations set the governance framework; the operational measures beside them are what district health authorities, water agencies and assemblies can begin now.

Strategic and governance Frameworks *(Sections 5.1 & 5.2)*

- Adopt **IFAMMA** — the Integrated Forestry and Mining & Management Approach — explicitly intended to reduce the threats posed to human health and the environment.
- Address competing land use within a **national land use plan** binding assemblies, regulators, traditional authorities and the private sector.
- Redefine **artisanal mining permits** to require the consent of Traditional Authorities before any grant.
- Build a **web-based reporting solutions** with CSOs to report illegal felling and mining to law enforcement authorities.
- Strengthen **inter-agency coordination** with clearly defined roles, and promote **sustainable farming practices** to reduce agro-chemical exposure.

Operational public health *(immediate district-level action)*

- Establish **routine water-quality monitoring and public health surveillance** in communities downstream of illegal mining sites — particularly along River Desiri and similarly affected water bodies — and publish the results.
- **Cover and rehabilitate mined-out pits** and abandoned mining sites to eliminate the physical hazards that has already caused deaths from falls and entrapment.
- Expand **community public health education** in mining-affected communities, covering chemical exposure risk, sexually transmitted diseases and substance use alongside safe water practice.
- Support **alternative livelihoods** in communities under illegal-mining pressures, to reduce the economic drivers exposing residents to these risks in the first place.

REFERENCES

1. Resource Conservation Initiative (RESCONI). *Support to Promote Community Resilience and Rights in Competing Land Use for Mining, Agriculture and Forest Utilization in Ghana* — Final Study Report: RESCONI, November 2023. Executive Summary, p. x; Sections 2.4, 2.5.3, 2.5.4, 3.1, 3.3, 4.2, 5.1 and 5.2; Figures 2.19 (p. 37), 2.21 (p. 39) and 2.23 (p. 40); Tables 3.1 and 3.2 (pp. 57, 59).
2. Laboratory analysis by the KNUST Central Laboratory, Kwame Nkrumah University of Science and Technology, on samples collected 5 April 2023. Reported in RESCONI Final Study Report (2023), Table 3.2, p. 59.
3. Reference standards cited in the source report: WHO guideline values; GS 175-1:2013; GS 1212:2019 (sampling); WRC raw water requirements.
4. Secondary sources quoted within the source report and cited there to: Emmanuel et al. (2018) on the environmental and health impacts of mining in Ghana; Owusu et al. (2016); Aning (2023) on pollution of the Pra, Densu, Ankobra and Birim; Asante (2021) on water treatment costs; and reporting cited at Section 4.2 on pit fatalities, violence and social vices in mining settlements.