



## SCALING SOLUTIONS in Africa

Support Our Expansion in a  
Global Hotspot for Lead Pollution

**Africa faces severe and likely under-measured lead exposure risks. Pure Earth is working with governments to scale proven interventions across the region to reduce lead exposure, strengthen public health systems, and protect children and future generations from lead poisoning. We are seeking funding to complete this expansion.**

### Magnitude and Impact

An estimated half of children in low-and middle-income countries have elevated blood lead levels (BLLs), with a substantial share living in sub-Saharan Africa.<sup>1</sup> In Sub-Saharan Africa alone, more than 55 million children have blood lead levels above 10 µg/dL—twice the WHO level of concern.<sup>2</sup> This is just the high-exposure segment; many more children are exposed at lower but still harmful levels. Unlike infectious diseases, lead poisoning is invisible and chronic, which has historically contributed to under-prioritization. Exposure to lead is associated with lifelong cognitive impairment, reduced educational attainment and earnings, cardiovascular disease, and premature death.<sup>3</sup> Further, because lead crosses the placenta and is mobilized from maternal bone stores during pregnancy, exposure often begins in utero. This early-life exposure can impair brain development and create lasting cognitive and economic impacts, perpetuating cycles of vulnerability across generations.<sup>4</sup>

The African continent bears a heavy burden driven by structural drivers like rapid urban population growth, informal economies, weak hazardous waste management systems, limited laboratory capacity for blood lead testing, along with competing public health priorities.<sup>5</sup> The annual economic losses from childhood lead exposure in Africa are estimated at \$134.7 billion in lost productivity, equivalent to 4.03% of the continent's GDP.<sup>6</sup> Moreover, surveillance in Africa remains uneven, and the absence of nationally representative BLL data in many countries suggests the true burden is likely underestimated.<sup>7</sup>

Reducing lead exposure is widely considered one of the highest-return public health interventions in low-and middle-income settings due to the long-term economic and public health benefits. Leaving this issue unaddressed or underprioritized undermines global progress and investment in maternal and child health, early childhood education, economic growth, and environmental sustainability.

### High-Burden Regions and Hotspots

Lead exposure is pervasive across Africa, with some hotspots experiencing exceptionally high levels.<sup>8</sup> Well-documented hotspots include: Zamfara State in Nigeria, one of the world's worst lead poisoning crises ever recorded, caused by artisanal gold

mining, where hundreds of children died due to extremely high blood lead levels ( $\geq 100 \mu\text{g/dL}$ );<sup>9</sup> Kabwe, Zambia, often called one of the most polluted cities in the world from legacy mining and smelting in lead and zinc, resulted in widespread soil contamination and dangerously high BLLs among children and communities; Dakar (Thiaroye-sur-Mer), Senegal, a place where dozens of child deaths occurred and severe soil contamination in residential areas occurred from informal recycling of used lead-acid batteries (ULABs). Agbogbloshie, Ghana is another example, where e-waste recycling, from burning electronics, and mixed heavy metal exposure (including lead) caused high exposure among workers and nearby communities.

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## Multiple, Overlapping Exposure Sources

Africa's exposure profile is broader and more diffuse than in high-income countries. Lead sources in Africa are diverse and often overlapping. Some are visible, such as unsafe lead-acid battery recycling, contaminated cookware, and lead paint. Others are less visible, including contaminated cosmetics, spices, crops, and soil. This creates chronic, multi-source exposure, often starting in utero and continuing through childhood. Across Pure Earth's footprint in Africa, the strongest evidence points to a multi-source problem: informal and sub-standard used lead-acid battery recycling, contaminated consumer products, such as cookware and cosmetics, paint, and food-related exposure pathways.

- **Used Lead-Acid Batteries (ULABs)**

ULAB recycling is a critical environmental and health challenge in Africa, where a significant share of collection, breaking, and smelting still occurs in informal, substandard, and poorly regulated conditions. The Center for Global Development's (CGD) modelled estimates suggest that around 33% of lead exposure in low- and lower-middle-income countries may come from battery recycling.<sup>10</sup> Africa generates an estimate of 1.2 million tonnes of used lead-acid batteries,

much of which ends up being recycled through informal or substandard operators.<sup>11</sup> These activities can release large amounts of lead into surrounding homes, soil, air, and water, creating severe and persistent risks for children and nearby communities. Reducing exposure requires a systems-level approach, including safer lead recovery practices, stronger collection systems, formalization, and regulations and enforcement

**KEY COUNTRIES: Tanzania, Egypt, Kenya, Nigeria and Ghana.**

- **Cookware**

Lead can enter metallic cookware through contaminated raw materials, scrap inputs, and poor manufacturing controls, turning an everyday household item into a chronic source of exposure. Pure Earth's global consumer products work has shown that metallic cookware is one of the most common product categories exceeding relevant health thresholds.

**KEY COUNTRIES: Ghana, Egypt, South Africa.**

- **Cosmetics**

Cosmetics are an important and often underestimated source of lead exposure in Africa. Traditional eye cosmetics and other informal or poorly regulated products can contain high levels of lead, and because they are applied directly to the face, often to infants and young children, they can create frequent exposure. Contaminated cosmetics are a critical programmatic focus for Pure Earth in Africa, where contaminated eyeliner was correlated with elevated blood lead levels in Northern Ghana and Egypt.

**KEY COUNTRIES: Ghana, Nigeria, and Egypt.**

- **Food, Agriculture, and Spices**

Food-related lead exposure may be one of the most significant and least visible pathways in Africa, and globally. Crop and food contamination may be a major driver of lead poisoning, potentially linked to upstream industrial air emissions, contaminated soil, and irrigation water.

The processing, storage, or lead adulteration of food and spices is also problematic. Food is a particularly important pathway because it can affect large populations, including people far from obvious industrial hotspots, and because contamination can enter the diet through staples, crops, or condiments used every day. An isotopic study in Kenya found that lead contamination in kale was directly attributable to airborne emissions from a nearby battery recycling facility, highlighting industrial air pollution as a key driver of food-based exposure.<sup>12</sup>

**KEY COUNTRIES:** Nigeria, Ghana, Kenya, Ethiopia, Senegal, Tanzania, Zambia.

- **Behavioral Pathways**

Children are exposed to lead through a range of behavioral pathways including hand-to-mouth ingestion of contaminated dust, play in polluted environments, mouthing of objects, consumption of contaminated food and water, and take-home exposure from caregivers, adults bringing lead dust home on their clothes, skin, or tools.<sup>14</sup> Geophagy, the intentional consumption of soil or clay, has been documented globally and is more common in some regions, including parts of sub-Saharan Africa. It is most prevalent among pregnant women and young children, as it's used to treat micronutrient deficiencies, especially iron and calcium, in pregnant women. But because soils and clays may contain lead and other toxic metals,

geophagy represents a potential and preventable source of prenatal lead exposure.

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## Pure Earth's Footprint in Africa

Pure Earth has worked in Africa since 2009, and over that time has built a regional footprint spanning Cameroon, Egypt, Ethiopia, Ghana, Kenya, Nigeria, Senegal, Tanzania, and Zambia. Across the region, our work has included toxic site identification, contaminated site assessments, safer recycling and waste management, mercury and lead exposure reduction.

- **Pure Earth Ghana** is one of our flagship programs in Africa. Since beginning our Toxic Site Identification Program (TSIP) in 2009, the team has partnered with local stakeholders to identify and address major sources of toxic exposure, including e-waste, mining-related contamination, and consumer products. Our work spans contaminated site assessment, source analysis, remediation, community education, and government engagement. In 2023, Pure Earth, UNICEF and the Ghana Health Service signed a Declaration of National Action Against Lead Poisoning, marking the beginning of a concerted effort to tackle lead exposure in the country. Today, Pure Earth Ghana is advancing priority lead programming, including the first-ever lead reduction intervention study through a randomized-control-trial (RCT), and our Ending Lead-Contaminated Cosmetics in Ghana for Healthier Futures Project, ranked the #1 most cost-effective intervention for improving the wellbeing of others by the Happier Lives Institute.
- **Ethiopia** is becoming an important hub for Pure Earth's expansion in East Africa as we expand our footprint across the continent. Our Ethiopia team will help anchor deeper government partnerships, stronger technical capacity, and the rollout of lead surveillance, source analysis, and targeted interventions. To ensure a comprehensive approach to reducing lead poisoning in Ethiopia, several key interventions are currently underway. These



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# Pure Earth Partners and Stakeholders Across Africa

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## GOVERNMENT PARTNERS

Ghana Ministry of Environment  
Ghana Environmental Protection Authority  
Ghana Ministry of Health  
Ghana Health Service  
Ghana Standards Authority  
Ethiopian Environmental Protection Authority  
Rwanda Environmental Management Authority  
National Environment Management  
Council (NEMC)—Tanzania  
Malawi Department Environmental Affairs  
Malawi Environmental Protection Authority

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## OTHER KEY PARTNERS

Mountain Research Institute (MRI)  
UNICEF  
PAN Ethiopia  
CEOSS  
GreenAd  
Global Development Incubator (GDI)  
Women & Youth Development International (WYDI)  
University of Nevada, Public Health Department  
Sustainable Resource Industries (SRI)  
FCDO  
Australian AID  
Vital Strategies  
CDC Foundation  
Lead Exposure Elimination Project (LEEP)  
Resolve to Save Lives  
World Health Organization

efforts include conducting Toxic Identification Assessments to pinpoint specific sources of contamination alongside Community-Based and Market Assessments to better understand exposure pathways within local populations. To track the flow of lead through the environment and economy, Mass Balance Studies are being implemented, supported by an extensive desk review of existing research and data.

- **In the next two years**, Pure Earth will continue to expand and deepen our work in Rwanda, Tanzania, Malawi, South Africa, and Egypt, while exploring opportunities in Kenya, Nigeria, Uganda, and Zimbabwe. Working with governments and local partners, we will strengthen blood lead surveillance, identify the most harmful and preventable sources of exposure, and implement targeted interventions that support safer practices, stronger government systems, and lasting reductions in lead exposure.

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## Where We're Heading

Pure Earth's expansion is based on our proven 5-Phase Approach. Our clear and ambitious goal is to reduce childhood BLLs by 20% in over 20 countries. We are turning modeled estimates into documented evidence by expanding nationally representative surveys and in-depth source assessments. This data-driven approach lets us go beyond pilots to large-scale actions that get rid of lead from important supply chains, clean up contaminated soil, and make national regulatory bodies better at enforcing the law.

Our main goal for the deepening and expansion of work across Africa is centered on institution strengthening within government structures. We are working to embed lead monitoring into routine national healthcare and environmental operations, ensuring that lead-free initiatives are locally owned and sustained by governments and the communities where we operate. By mobilizing political will and building durable systems, Pure Earth is committed to creating a future where every African child can grow and thrive free from the toxic burden of lead.



# Our Expansion in Africa

## SPOTLIGHT ON UPCOMING ACTIVITIES



### ● Egypt

- Homebased Source Assessment
- Blood Lead Level Measurements
- Laboratory Capacity Assessment

### ● Ethiopia

- Toxic Site Identification Assessment
- Community Based/Market Assessment
- Mass Balance Studies

### ● Ghana

- Toxic Site Identification Assessment
- Community Based/Market Assessment
- Randomized Control Trial to Assess Feasibility of Replacing Cookware and Cosmetics

### ● Tanzania

- Signing of Memoranda of Understanding (MoU) with government
- Desk review
- Setting up of National Lead Technical Working Group

## Transformational Funding Opportunity

Africa’s lead burden is large, but the response gap is still larger. Many countries do not yet have nationally representative blood lead data, routine screening systems, or sufficient laboratory and regulatory capacity to detect, trace, and control exposure. That means philanthropic and catalytic funding can have an outsized impact.

Pure Earth’s Audacious Project provides a historic opportunity to combat global lead poisoning at scale by protecting over 500 million children in at least 20 low- and middle-income countries. This expansion is built upon 25 years of field experience, working with governments, and strategic funding partnerships, including Coefficient Giving, Takeda Pharmaceuticals, and the Clarios Foundation. Now, with anchor

commitments from Bloomberg Philanthropies and the Audacious Project totaling \$128M of a \$154M initiative, Pure Earth is moving forward with full implementation. Investments at this phase will support interventions in one of the world’s most at risk geographies, Africa.

From the remaining \$26 million, we request \$10-20 million to support our work in Africa. All contributions will be multiplied many times over; every dollar contributed will be matched 5X through **The Audacious Project**, a TED initiative bringing together some of the world’s most influential philanthropists to fund bold, proven solutions. This additional support will allow us to further expand programming throughout the continent.

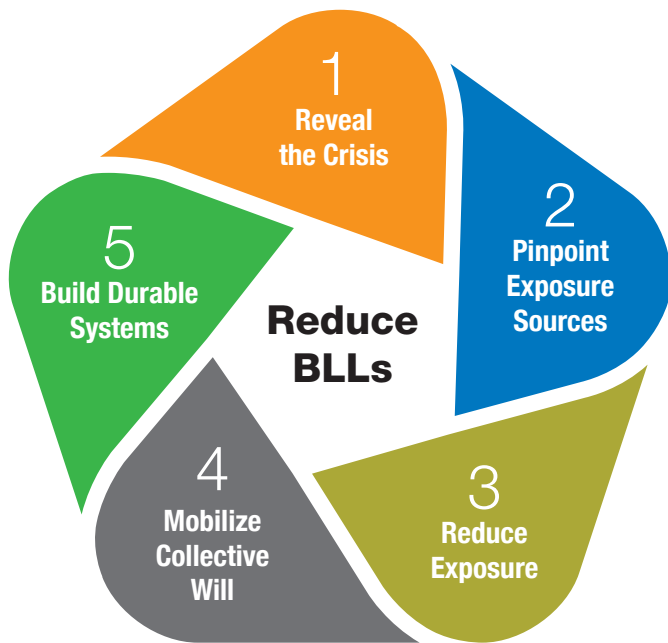
INVESTMENT:  
2026–2033

**\$154M**  
TOTAL PROGRAM

**\$128M\***  
SECURED

**\$26M**  
GAP

\*Anchor Funding Commitments: Bloomberg Philanthropies and the Audacious Project



## Our Commitment to Impact and Sustainability

We integrate lead mitigation into national health and regulatory systems so that countries can sustain impact long after our support ends. Our work strengthens protections for women and children—particularly during pregnancy, but also across the life course. We exit when governments and local partners can sustain progress, indicated by: BLL decline, with at least a 20% reduction; national systems are in place to monitor, prevent, and clinically respond to lead poisoning; governments allocate sustained funding and coordinate action across sectors; and when enforceable standards limit lead in consumer products and the environment. This approach ensures lasting health gains, stronger maternal and child outcomes, and scalable impact.

### END NOTES

1. World Bank. (2021). *The Global Health Cost of Lead Exposure*; Pure Earth program analyses.
2. United Nations (UN)/Africa Renewal. *Lead poisoning: The persistent threat from mismanaged waste*.
3. GBD 2019 Risk Factors Collaborators; *The Lancet Planetary Health* (2023).
4. WHO (2010); CDC (2022); Bellinger (2013); Attina & Trasande (2013).
5. OECD, 2025; World Bank, 2023; Yussif et al., 2023; Smith & Giles, 2025
6. Attina TM, Trasande L. 2013. *Economic costs of childhood lead exposure in low- and middle-income countries*. *Environ Health Perspect* 121:1097–1102; <http://dx.doi.org/10.1289/ehp.1206424>
7. UNICEF & Pure Earth. (2020). *The Toxic Truth: Children's Exposure to Lead Pollution Undermines a Generation of Future Potential*. World Bank. (2021). *The Global Health Cost of Lead Exposure*; Pure Earth program analyses.
8. Ibid
9. Dooyema, C. A., et al. (2012). *Outbreak of fatal childhood lead poisoning related to artisanal gold mining in northwestern Nigeria, 2010*. *Environmental Health Perspectives*. CDC (2010–2012). Lead poisoning investigation in Zamfara State.
10. Crawford, L., Hu, J., & Mitchell, T. (2026). *Beyond Hot Spots: Estimating Population Lead Exposure from Battery Recycling*. Center for Global Development.
11. UNEP (2017); World Bank (2021); Pure Earth/GAHP analyses
12. Pure Earth (Innovation Lab). *Kenya isotopic lead study* (program data/unpublished). Ericson et al. (2016); UNEP (2017) on ULAB emissions pathways.
13. BMJ, 2022; CDC, 2025; ARNEC, 2025

## EXPANDING PURE EARTH'S 5-Phase Approach:

- 1 **Reveal the Crisis** by implementing nationally representative BLL surveys revealing the true prevalence, severity, and distribution of exposure.
- 2 **Pinpoint Exposure Sources** by conducting in-depth exposure source assessments to understand how people are getting poisoned.
- 3 **Reduce Exposure** by targeting mitigation efforts on the most critical sources of exposure.
- 4 **Mobilize Collective Will** by educating communities, policymakers, peer organizations, and funders on the health and economic toll of lead; and
- 5 **Build Durable Systems** by embedding policies and practices into routine government operations, including national BLL monitoring, training health workers, and strengthening enforcement capacity, to ensure sustained reduction of lead exposure over time.