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THE CENTRE
FOR CHILD RIGHTS AND BUSINESS

Research Brief

ENDING CHILDHOOD LEAD POISONING THROUGH BUSINESS ACTION: INSIGHTS FROM BANGLADESH ANALYSIS

This publication is an edited and shortened version of a longer diagnostic report prepared to support tackling the global challenge on lead poisoning identification and prevention through a private sector lens. The full report examines the role of businesses and supply chains in safeguarding child rights, with a focus on lead exposure risks across key industries and value chains in Bangladesh.

Published on World Environment Day, this shortened version aims to raise awareness among the business community and encourage stronger private sector engagement in addressing lead exposure.

(This research was conducted in Q4 2024/Q1 2025 and should be read in the context of the period in which the data was collected. While some contextual factors, policies, practices, or market conditions may have evolved since then, the findings, insights and conclusions remain relevant and continue to provide a valuable understanding of the issues examined.)

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At a Glance

Childhood lead poisoning is one of the most widespread and preventable environmental health threats today, affecting an estimated **one in three children globally**. Bangladesh is among the most affected countries, with over **20 million children** living with elevated blood lead levels.

The consequences are profound and far-reaching. Lead exposure damages brain development, reducing IQ, impairing learning and limiting lifetime opportunities. Across low- and middle-income countries, this translates into **annual economic losses of nearly $1 trillion**, while in Bangladesh alone, lead exposure is estimated to cost **more than 6% of GDP** through lost productivity, increased healthcare costs and broader social impacts.

New nationally representative data from UNICEF's Multiple Indicator Cluster Survey (MICS) 2025 – which tested over 10,000 children and 2,000 pregnant women – found that nearly 40% of children in Bangladesh have elevated blood lead levels, rising to 65% in Dhaka Division. Elevated levels are not confined to lower-income groups; more than half of children in the highest income group are also affected.

Lead exposure cuts across society, reflecting how deeply it is embedded in the way products are made, traded, and used. It persists in consumer products where it is not needed, and in industrial processes where it is not always safely managed—resulting in widespread, often unnoticed exposure across homes, communities and workplaces.

This is where the private sector plays a defining role.

Businesses—especially local businesses—are closest to where lead risks occur and are a critical part of the upstream solution. Companies can prevent harmful lead exposure by improving lead use, management and replacement – combined with responsible business practices and strong human rights due diligence.

Businesses can be leaders by ensuring safe practices across operations and supply chains, phasing out non-essential uses of lead—particularly in consumer products—and careful handling where lead remains necessary. Taking action today will protect children and communities while strengthening compliance, improving access to global markets and building more resilient, future-ready businesses.

Ending childhood lead poisoning by 2040 is achievable—but only through a collective, whole-of-system effort across government, business and society.

This research brief examines childhood lead poisoning through a private-sector lens, focusing on how business activity, supply chains and market incentives can reduce childhood lead exposure risks. These insights are drawn from an extensive desk review, expert interviews and some field analysis of the lead acid batteries and lead additives (e.g., lead-based pigments in consumer products like textiles) sectors in Bangladesh. There were some limitations to the analysis, particularly the limited direct engagement with businesses in Bangladesh, which may have constrained the depth of insight into current private-sector practices and perspectives.

Key findings:

01 Lead persists because it is cheap, accessible and legally permitted in some applications, while substitutes may be more costly or technically constrained.

02 Lead risks are amplified by substandard practices, especially in used lead acid batteries (ULAB) collection and recycling.

03 Traceability is weak: lead compounds can be traded under multiple names, and end-use verification is limited.

04 Regulatory gaps and fragmentation reduce deterrence and dilute accountability for businesses.

05 Stronger private-sector engagement can accelerate solutions that will protect children from lead poisoning—especially when paired with incentives, due diligence expectations and enforceable standards.

06 Human rights due diligence regulations (e.g. EU CSDDD, German LkSG) now require businesses to identify, prevent and mitigate lead exposure risks across their entire supply chain —with explicit implications for children's rights to health and a safe environment. This renders substandard practices and weak traceability untenable for multinational buyers and their suppliers.

Bangladesh Context: Lead Exposure Pathways and Economic Development

Bangladesh's exposure risks are closely linked to industrial growth, urban expansion and export-led development, with studies finding higher lead deposition in environmental media—such as soil, air, water, and crops—around industrial and urban areas. This lead contamination is associated with both product-related exposure from consumer goods and process-related exposure arising from manufacturing, recycling, smelting, and wastewater.

Manufacturing and trade dynamics that increase risk

- Bangladesh has prioritised sectors such as light engineering (including batteries), plastics and export manufacturing. Policy incentives and market growth—particularly around transport and energy—have increased LAB production and throughput, while waste systems and enforcement capacity have struggled to keep pace.

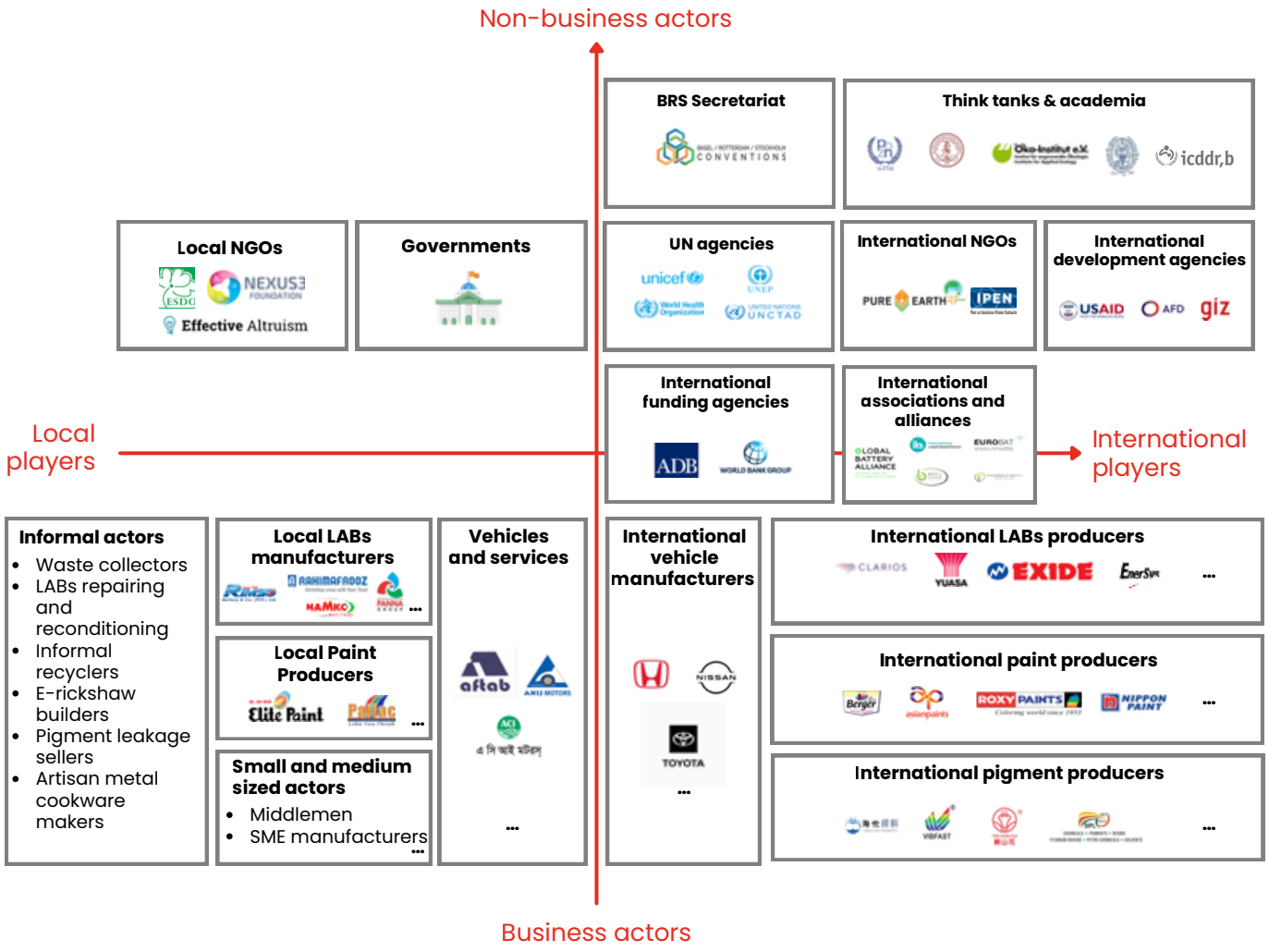
Private-sector-related risk accelerators

- Expansion of e-mobility (e-rickshaws) and continued reliance on LAB due to cost.
- Growth in solar home systems and backup power demand generating significant ULAB volumes.
- Increased trade in battery inputs (including hazardous compounds such as lead oxide) can raise risk when not managed within closed-loop systems.

Stakeholder landscape

- Bangladesh's lead problem involves a dense ecosystem. Fragmented programmes and overlapping mandates can dilute impact unless coordination is strengthened.

Figure 1: *Maps of key stakeholders involved in ending childhood Bangladesh leading poisoning (as of December 2024)*



Note. This map is based on literature review conducted in 2024 by The Centre.

Regulatory Framework: Strengths, Gaps and Business Implications

Bangladesh has various laws on lead and pollution control, but enforcement is inconsistent and gaps remain. In particular, there is a lack of clarity in standards across product categories, as well as insufficient tracking and management of lead throughout product lifecycles—especially in rapidly growing sectors such as batteries for e-mobility and energy.

Successful Eradication of Illegal Adulteration of Turmeric with Lead Pigments

Despite challenges in policymaking, Bangladesh has made significant strides in eradicating lead contamination from turmeric. The success of this intervention offers important lessons for the review of regulatory and policy frameworks in Bangladesh:

- **Public pressure and political will:**
  Sustained advocacy and awareness campaigns, especially on the international market, created momentum for decisive government action.
- **Private sector influence:**
  International buyers drove compliance by demanding safer practices to maintain competitiveness in global markets.
- **Importance of research**:
  Detailed investigations of the affected populations and the spice supply chain provided critical data for targeted policy design and enforcement.
- **Scalability:**
  The low-cost nature of this intervention demonstrates its potential for replication in other regions facing similar challenges.

Implications for the private sector

Weak deterrence: limited penalties and low probability of enforcement reduce incentives to invest in safer systems.

Ambiguity increases compliance costs: unclear guidance and inconsistent enforcement can discourage investments in lead-free alternatives.

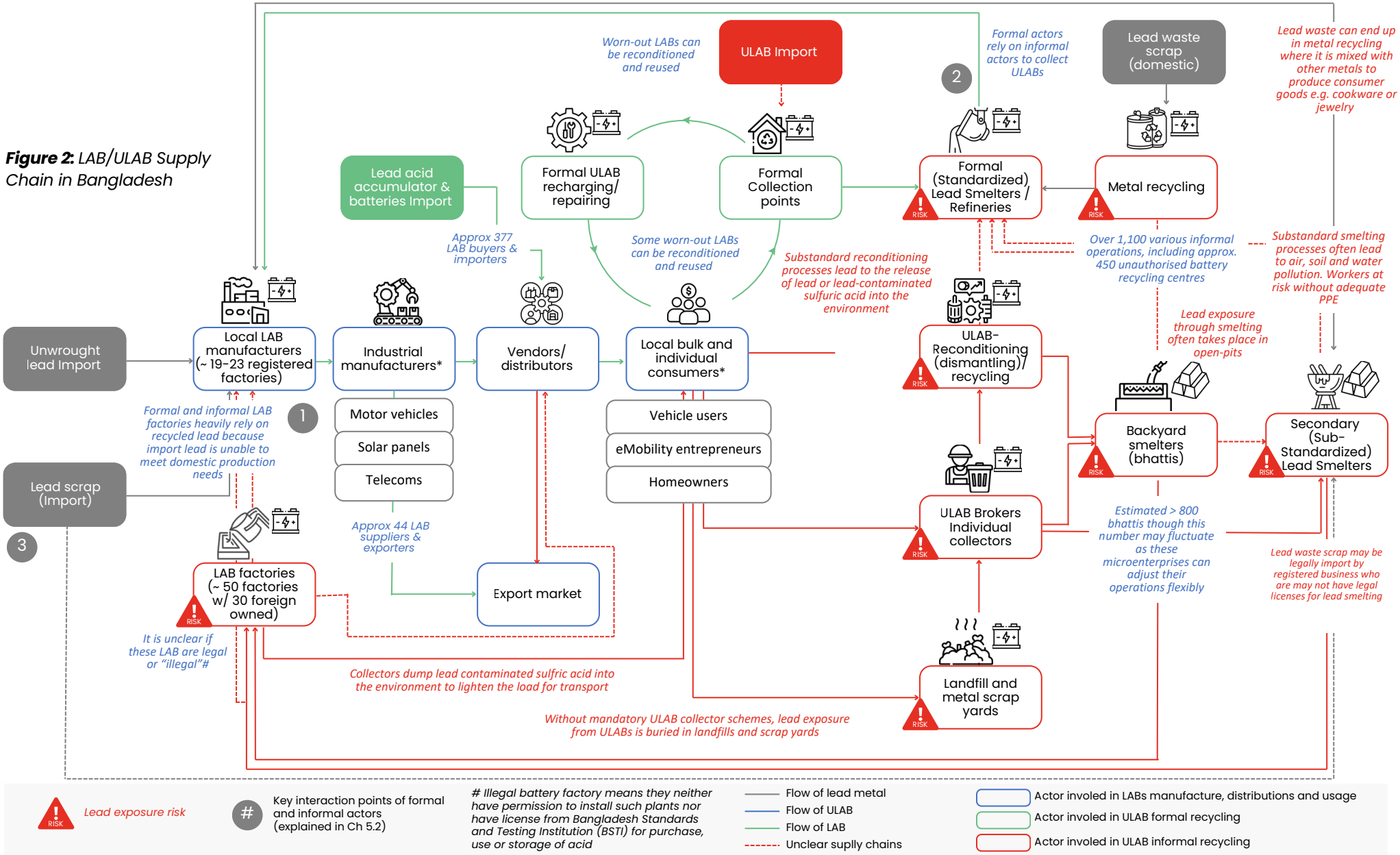
Competitiveness risk: weak standards can jeopardise access to markets where lead requirements and due diligence expectations are tightening.

Photo credit: The Centre for Child Rights & Business

Supply Chain Deep Dive: LAB/ULAB

Evidence consistently links high lead pollution risk to sites near LAB manufacturing, repairing/reconditioning, recycling and smelting. The central issue is the interaction of rapid market growth, informality and weak governance across the battery lifecycle.

Figure 2: *LAB/ULAB Supply Chain in Bangladesh*



Note. This is based on literature review conducted by The Centre in 2024/2025.

Why LAB demand is high

- Transport (including e-rickshaws and motorcycles)
- Solar home systems and distributed storage
- Telecommunications backup power

Where lead exposure risks concentrate

- **Collection and brokerage:** dispersed ULAB generation creates reliance on informal networks that pay more and operate with low transparency.
- **Reconditioning/dismantling:** substandard practices can release lead and lead-contaminated acid into the environment.
- **Informal and low-standard smelting ("bhattis"):** open or poorly controlled smelting increases air/soil/water contamination and exposes workers and communities.
- **Leakage into broader metal recycling:** lead can contaminate other metal streams, potentially appearing in consumer products (e.g. cookware or jewellery) if controls are weak.

System dynamics

- Formal actors may still depend on informal collectors and informal lead sources when formal recycling capacity is insufficient.
- Lack of tracking systems and take-back enforcement limits accountability.
- Unauthorised factories and substandard products shorten battery lifespan, increasing waste volumes.

Actions for improving lead supply chain due diligence

- Clarify imported "waste battery" flows and how they are processed.
- Map lead scrap transactions to understand formal and informal linkages.
- Validate supply chains of authorised and unauthorised manufacturers.
- Analyse the procurement behaviour of formal smelters that buy from informal actors.
- Review governance of "green" investments (solar/e-mobility) to ensure waste management is real, enforced and funded.

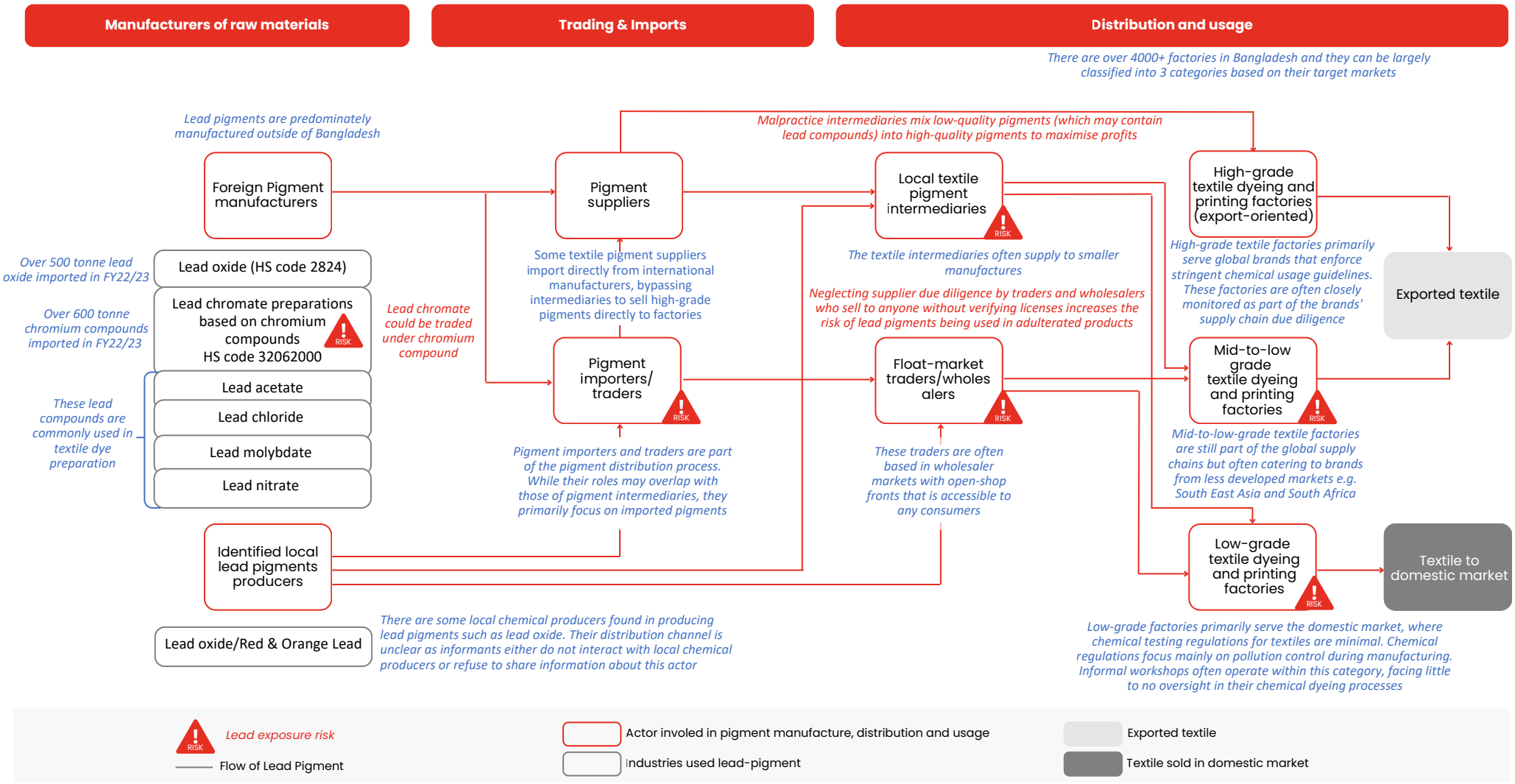
What this means for business practices

1. Shift economic incentives (so safer practices become competitive).
2. Align business decisions with safer practices by factoring in the risks and long-term costs of unsafe lead use on employees and customers and investing in safer alternatives where possible.
3. Improve traceability across supply chains to better understand where lead is used, sourced, and handled, enabling stronger accountability and risk management.
4. Strengthen internal controls and consistency in safety and compliance, ensuring that standards are applied across operations, suppliers and partners.
5. To meet evolving expectations from global buyers, investors and regulators, local businesses need to proactively manage lead risks and embed responsible practices.

Supply Chain Deep Dive: Lead Additives and Pigments

Lead has been found in paints, spices, toys, cookware, cosmetics and ceramics. This brief focuses on lead pigments in the textile sector - a less discussed pathway in existing literature. However, evidence suggests garment factories contribute significantly to chemical pollution in Bangladesh. As the world's second-largest exporter of ready-made garments, this sector accounts for nearly 80% of national exports and is the country's largest source of industrial water pollution. Although top-tier export factories often have stronger controls, mid- and lower-tier factories typically have limited due diligence and testing, despite being part of broader global supply chains.

Figure 6: *Key Actors in Textile/Pigment Supply Chain in Bangladesh*



Note. This map is based on literature review, expert interviews and field visits conducted in 2024 by The Centre.

How the pigment supply chain creates risk

- Pigments are largely imported, and oversight focuses more on import documentation than verified end-use
- Traders/wholesalers may sell broadly with minimal due diligence, increasing the risk of misuse (including adulteration)
- Local intermediaries can mix pigments (including lead compounds) to reduce costs, creating contamination and reputational risk for higher-standard suppliers

Identified chokepoints/hotspots

- Weak oversight of imported lead pigments and limited end-use verification
- Low-transparency wholesale markets and intermediaries
- Insufficient chemical management capacity (training, protocols, verification)
- Need for ongoing environmental monitoring in garment hubs, including soluble lead compounds that can enter wastewater and ecosystems

What more effective interventions look like

- Stronger import controls that account for multiple trade codes and compound names
- Risk-based due diligence by pigment manufacturers/suppliers and distributors
- Factory-level chemical management support plus verification (not just paperwork)
- Routine testing and monitoring targeting high-risk clusters and lower-tier suppliers

What this means for business practices

1. Improve visibility and control over inputs by ensuring imported materials no matter the trade codes and compound names for items like pigments are properly classified, documented and used as intended.
2. Apply risk-based due diligence across sourcing and distribution, working with suppliers and partners to identify and reduce lead-related risks.
3. Strengthen chemical management at the factory level by combining clear procedures with training, oversight and verification—not just documentation.
4. Introduce regular testing and monitoring, particularly in higher-risk operations and supplier tiers, to ensure consistent standards and build trust across supply chains and with customers.

Recommendations: Private Sector Engagement Toward a Lead-Free Bangladesh by 2040

The brief proposes three priority recommendations to mobilise business actions at scale.

Recommendation 1: Multi-Disciplinary Engagement Strategy

Goal: Fix fragmentation, enforcement and business responsibilities across supply chains.

Actions:

- Bangladesh has established its first 19-ministry multisectoral steering committee under the Ministry of Environment, Forest and Climate Change (MoEFCC), creating a national platform for coordinated action on childhood lead poisoning prevention. The private sector should actively participate in this mechanism and others to ensure child rights are respected and child-safe outcomes are achieved throughout their supply chains.
- Engage businesses and clarify business responsibilities and those of the supply chain partners (e.g. importers, manufacturers, distributors, recyclers, financiers).
- Align voluntary ESG reporting with mandatory requirements so disclosure cannot replace accountability.

Recommendation 2: International Cooperation with Multinational Buyers and Suppliers

Goal: Use global standards and buyer power to reduce lead risks for children throughout a supply chain.

Actions:

- Engage with multinational buyers, suppliers and local industry partners through working groups to align approaches to lead risk management—for example, by co-developing and implementing practical safety protocols that go beyond minimum requirements, including training, handling, storage and verification practices.
- Build local capacity through public-private partnerships aligned with responsible business conduct standards that embed child rights and child-safe practices.

Recommendation 3: Empower Local Business Leaders Through Finance and Market Access

Goal: Make safer practices financially attractive and investable.

Action:

- Integrate child lead-exposure risk assessment into lending and investment criteria (including via central bank and financial regulators).
- Promote investments that enable closed-loop systems (e.g. safe, higher-standard lead recycling infrastructure).
- Use the influence of international clients, industry associations and high-tier suppliers to pull local businesses upward—rewarding performance that exceeds minimum compliance and protects children.

Childhood lead poisoning is preventable—and businesses have a unique opportunity to act upstream, where the greatest impact can be achieved. The fastest progress will come from combining: **(1) enforceable rules, (2) supply-chain transparency, (3) buyer and investor expectations and (4) viable business pathways to upgrade technology and practices—especially where informality currently drives exposure.**

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