

Scale of Lead Exposures & Strategies for Mitigation of Impacts in Indonesia

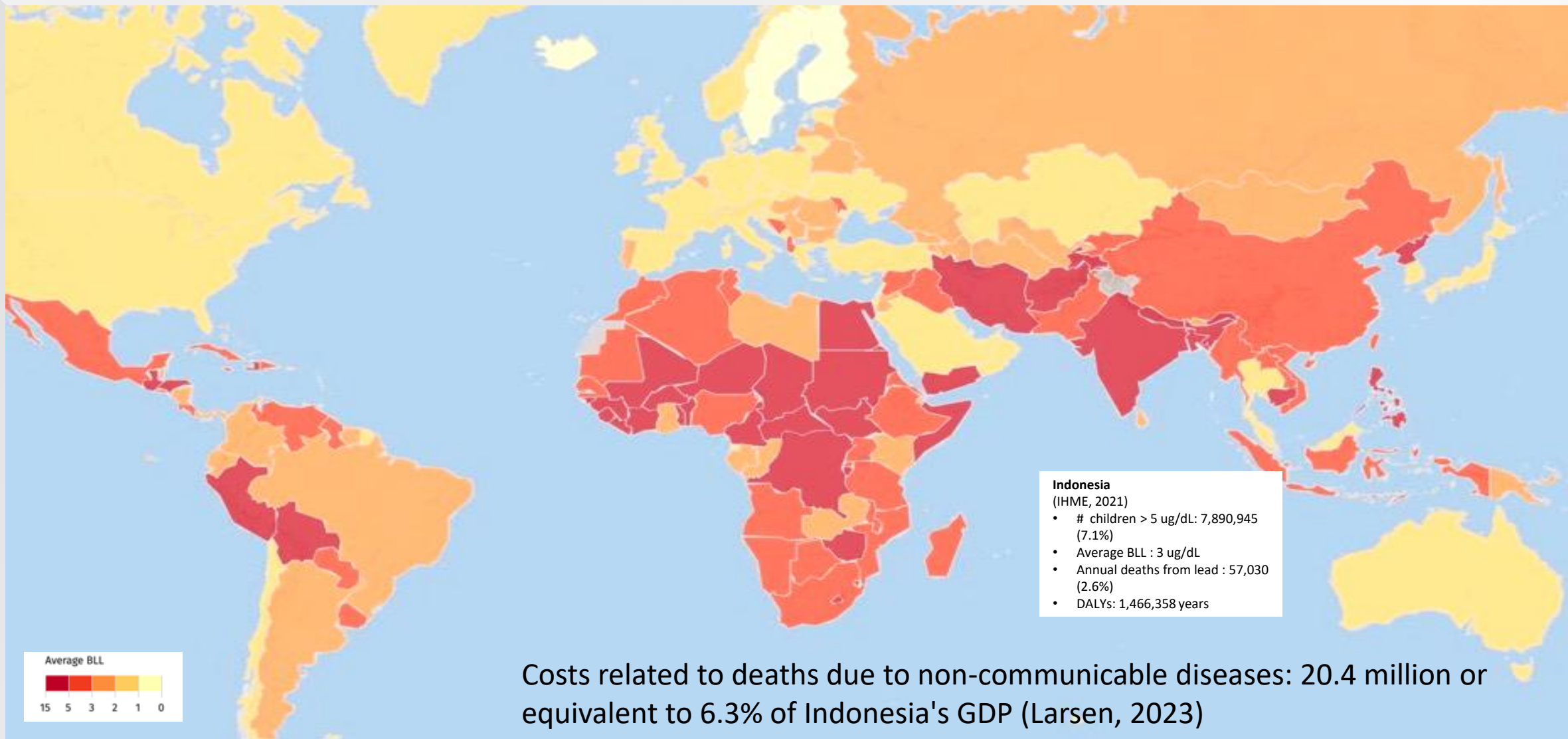
Nickolaus Hariojati

Kota Kinabalu, 2 September 2025

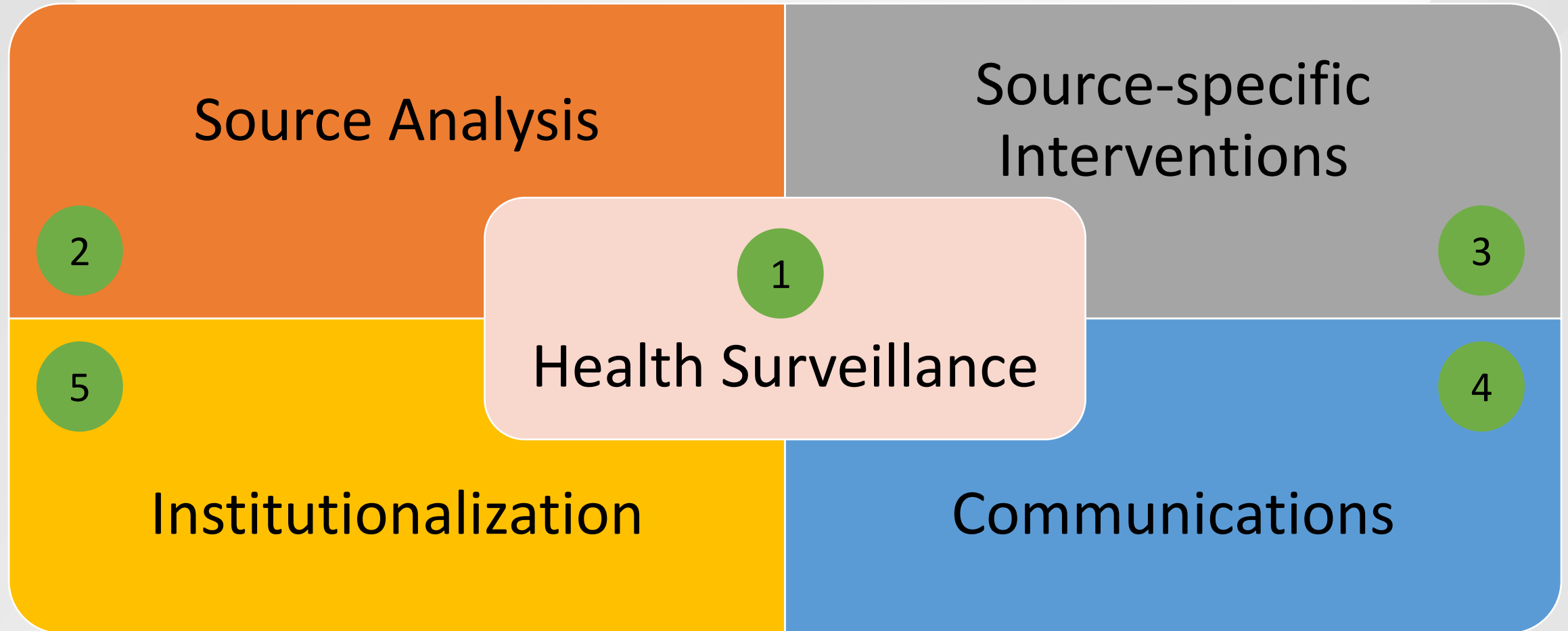
Yayasan Pure Earth Indonesia

An environmental health non-profit organization with focus to mitigate impacts of toxic pollution to the environment and health through approaches which combine research, technical intervention, public education, capacity building and policy recommendation.





5 Steps to Solve Lead Pollution

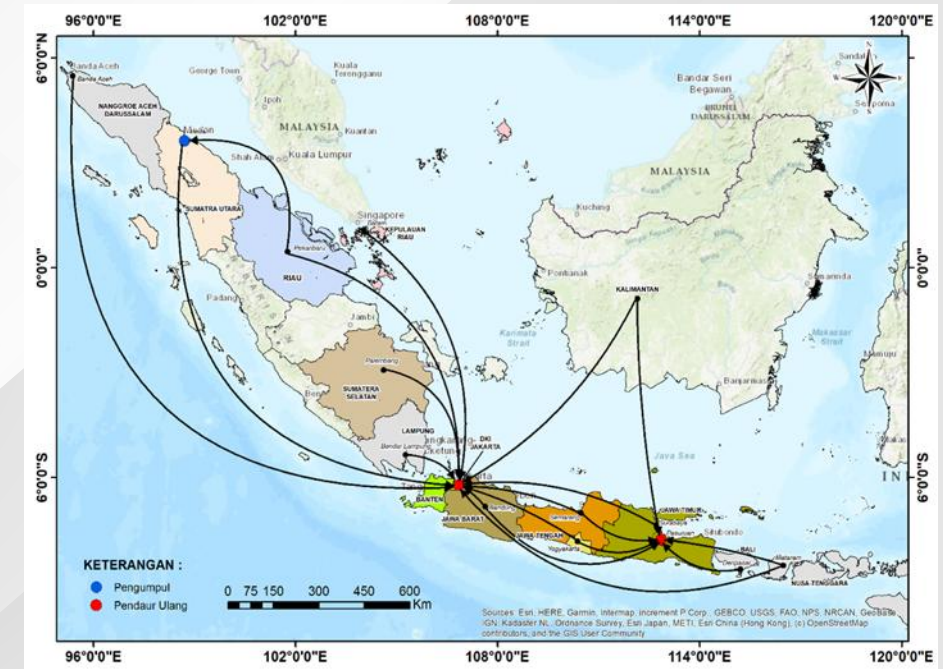
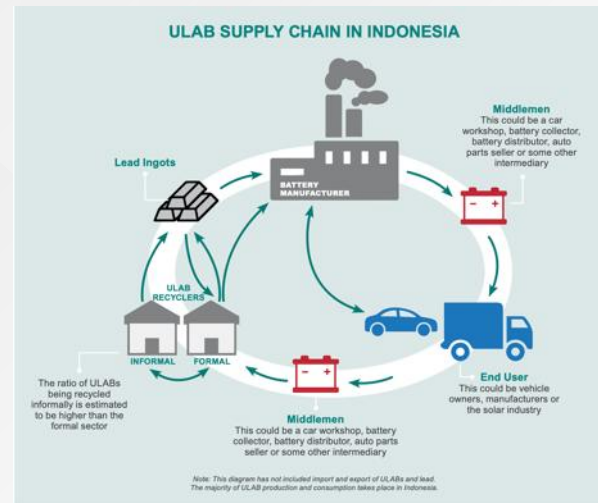


Toxic Sites Identification Program (2021-2022)

- 63% of 95 locations in Java and Sumatra were contaminated with lead (above the quality standard 300 ppm), with 85% of cases related to used lead acid battery (ULAB) recycling (Pure Earth and Institut Teknologi Sepuluh Nopember Surabaya, 2021–2022)
- Informal ULAB recycling activities were found on Jawa and Sumatra Islands

Source :

<https://www.unicef.org/indonesia/media/15306/file/Policy%20brief%20-%20Reducing%20childhood%20lead%20poisoning%20in%20Indonesia.pdf>

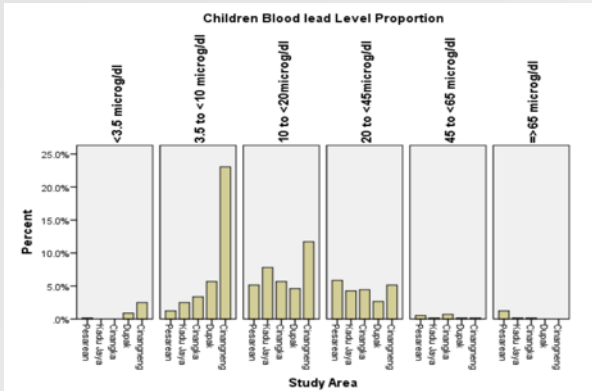


BLL Study in Lead Exposed Areas in Indonesia (2023)

Kadu Jaya Village
(Tangerang)



JAVA



BLL	Frequency n(%)	
< 5 µg/dL	64	11,3
5 to < 10 µg/dL	158	28,0
10 to < 20 µg/dL	197	34,9
20 to < 45 µg/dL	126	22,3
45 to < 65 µg/dL	10	1,8
>= 65 µg/dL	9	1,6
Total	564	100,0

The determinant factors of children BLL are :

- Low socio-economic status;
- Living in lead exposed areas;
- Using aluminum cookware and foodware;
- Not cleaning houses;
- < months breast-feeding

Report

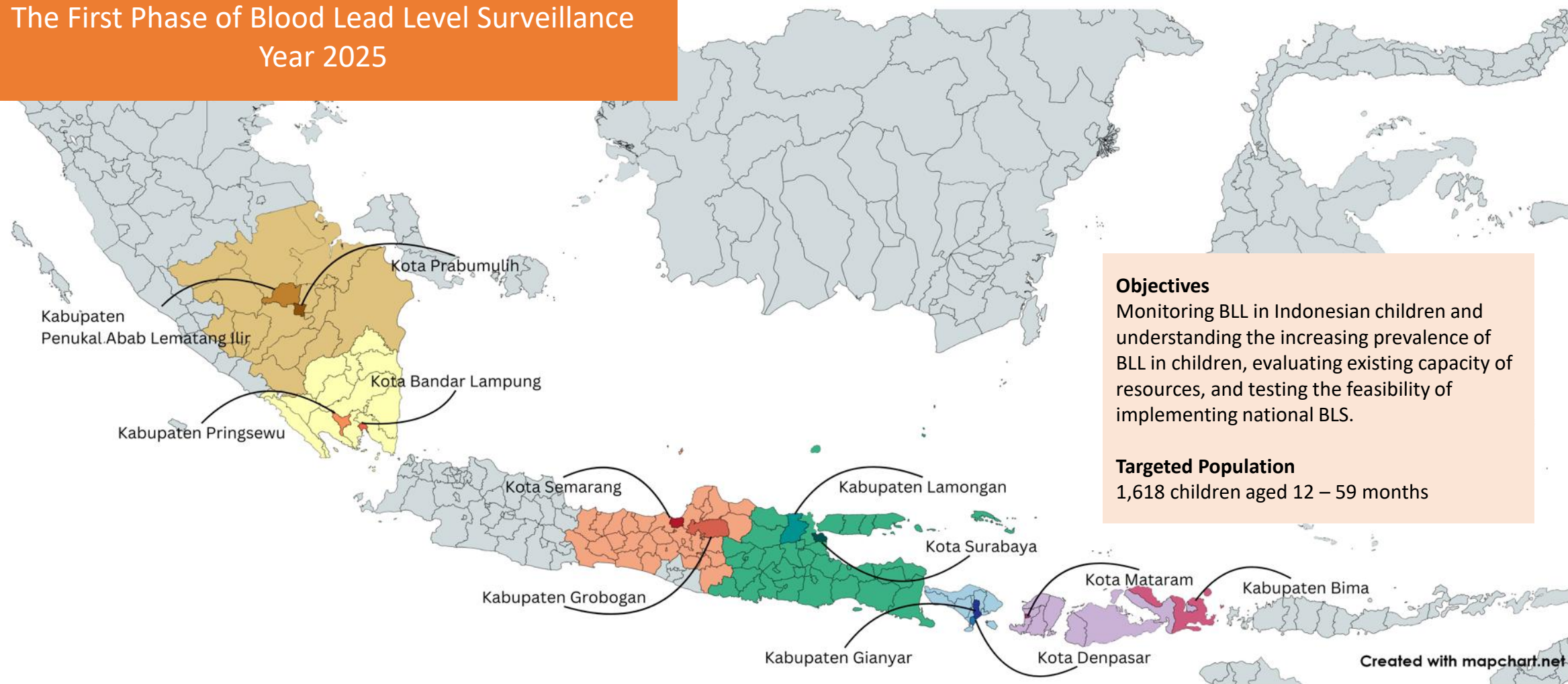


Documentation



WHO threshold of BLL is 5 µg/dL and threshold for treatment is 45 µg/dL

The First Phase of Blood Lead Level Surveillance Year 2025



Strengthening Health Systems to Reduce Lead Exposure in Indonesia : 2023 - 2027

Home-Based Assessment

- To identify sources of lead and pathways of exposure in individual children; and
- To identify community-level trends



1. Capacity building to monitor exposure of children to lead

2. Improvement of environmental health data collection by establishing a national system of monitoring exposure of children to lead



3. Increasing knowledge about sources & pathways of exposure of children to lead

4. Strengthening ability of health care professionals to identify, treat and prevent lead poisoning & educate children on lead poisoning, how to avoid/mitigate risks

Metallic Cookware Studies

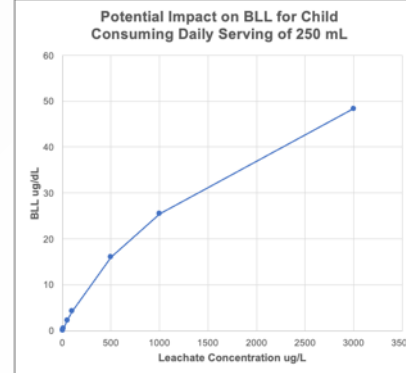
Rapid Market Screening (2022)

- 167 samples from Indonesia, i.e. Medan in Sumatra, Surabaya in Java, and Makassar in Sulawesi
- No lead detected in spices (n = 34)
- 60% cookware with lead > 100 ppm (n = 45)
- 33% cosmetics with lead > 2 ppm (n = 36)
- 10% toys with lead > 100 ppm (n = 21)
- 97% paint with lead > 90 ppm (n = 31)



Cookware Study in Educational Institutions (2024)

- 11 foster houses in the Greater Jakarta and Bandung
- Except in 1 foster house in Bandung, there is at least 1 cookware with lead > 100 ppm in every foster house
- Leachate test shows 4 of 6 samples have leachate rate > reference level (10 ppb)



Cookware Supply Chain Analysis (2024)

- Done in the Greater Jakarta, West Java and Central Java Provinces
- Formal & informal producers
- Aluminum comes from formal & informal suppliers
- In informal sector, aluminum comes from scrap metal recycling and used perfume bottles
- Cast aluminum cookware have more Pb contamination
- Cookware is distributed to Java, Sumatra and exported around Southeast Asia
- There has been a standard of lead content in food packaging in Indonesia

Mitigating Lead Exposure from ULAB Recycling in Indonesia : 2024 - 2027



Background

- 570,000 tons of ULAB annually
- > 50% are recycled in the informal sector

Highlights from Project Launch : June 23, 2025

- Gained support from various stakeholders, incl. GOI, Indonesian Foundry Industries Association/APLINDO & formal ULAB recyclers)
- Follow up meeting by APLINDO to gather private sector POV regarding ULAB management
- More stakeholders meetings will follow



Mitigating Lead Exposure from ULAB Recycling in Indonesia : 2024 - 2027

Source Analysis

- ULAB ecosystem stakeholders mapping, supply chain analysis, review hazardous waste management regulations & requirements to be adapted to ULAB sector
- Research estimated baseline of volume of ULAB produced & recycled in formal & informal facilities, produce recommendations & policy brief

Source Specific Interventions

- Regulatory guidance & capacity development to sub-national government & LAB producers for ULAB collection

Health Surveillance

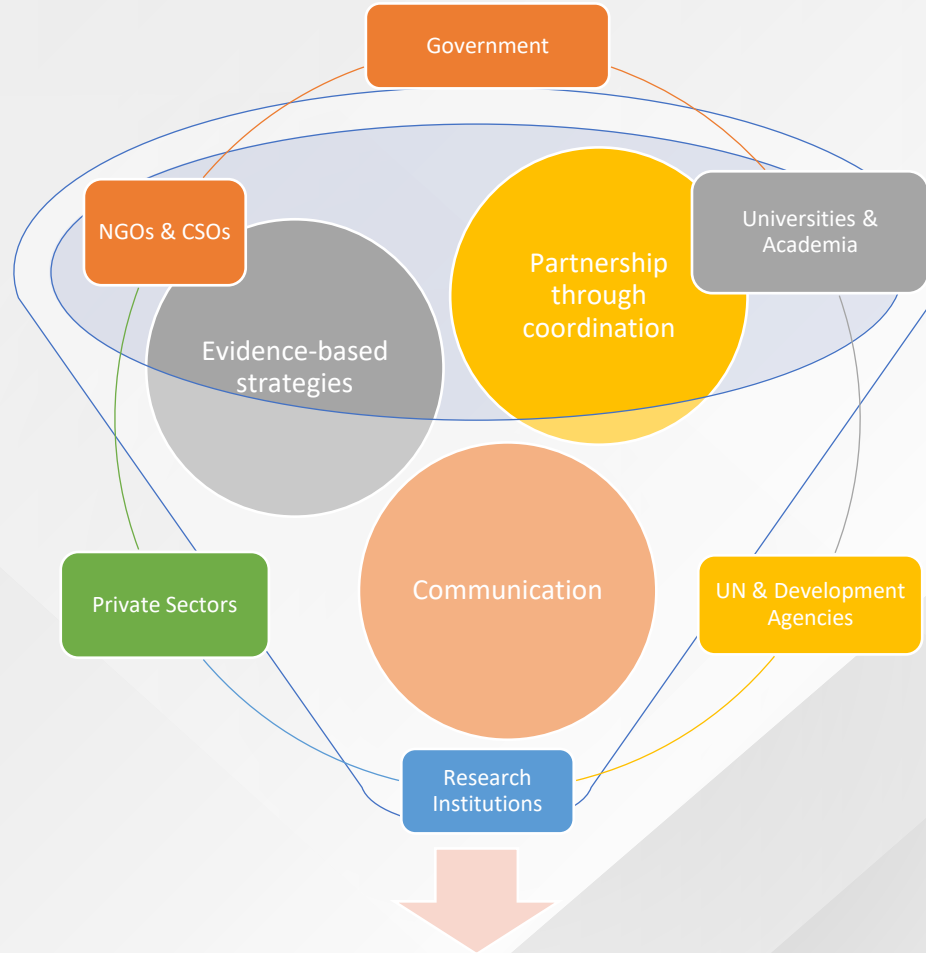
Institutionalization

- Technical support to government & formal recyclers on regulatory development & enforcement : operations, trade analysis & occupational risk monitoring
- Support adoption of new Basel Convention Technical Guidelines

Communications

- Awareness raising & community education in ULAB polluted areas

Towards the Golden Indonesia 2045



**LEAD EXPOSURES CAN BE MINIMIZED
AND IMPACTS CAN BE PREVENTED**

Thank You



Pibi si Timbal