

## **PRESS RELEASE**

# **Consortium of Industry, Academics, NGOs, and International Development Agencies Come Together Seeking Solutions to Electric Vehicle Battery Life-Cycle Challenges and Reduce Lead Pollution**

**DHAKA, Bangladesh, April 2, 2024** - Bangladesh has 30-40 lac Electric Three-Wheelers - EZ Bikes, Mishuks, and e-rickshaws; moving more than 112 million people per day. As countries shift to sustainable transport, and electric mobility, with its growing fleet of electric three-wheelers, this offers a significant opportunity for urban mobility and climate action. However, this industry has major challenges linked to the circular management of end-of-life lead-acid batteries, the primary technology used in Bangladesh's electric mobility.

There are potentially viable solutions to this challenge, encompassing the adoption of high-quality lead-acid batteries and alternative technologies with enhanced energy density, innovative business models, and sustainable practices. **Pure Earth Bangladesh** and the **United Nations Conference on Trade and Development (UNCTAD)** co-hosted a workshop titled *'Working with the Battery Industry on Solutions for Quality, Sustainability, and Market Access'* on April 2, 2024, at the Gulshan Amari Dhaka Hotel to dig deeper into this topic. This intensive 3-hour workshop convened over forty experts from international development agencies, lead and lithium-ion battery manufacturers, academia, NGOs, and financial institutions, aiming to devise comprehensive industry and policy responses. The workshop was facilitated by Amrita Kundu from Georgetown University, Washington DC, and Prof Erica Plambeck of Stanford University.

Each EZ Bike's batteries hold 125 kg of lead, 15 times that of a car battery. Recycled yearly, they create 167,000 MT of lead waste, often informally, causing contamination and health risks. Research shows that over 20% of Bangladesh's population resides within 5 km of informal smelting sites, with a 6 percentage point rise in terminated pregnancies among those living nearby.

Two-thirds of Bangladeshi children, that is about 36 million children, have high levels of lead in their blood, linked to loss of intelligence, hindering education and future earning potential, and causing cardiovascular and renal diseases.

**Dr. Mahfuzar Rahman, Bangladesh Country Director, Pure Earth Bangladesh** stated, *"About 60% of Bangladeshi children are impacted by lead pollution, it is causing around 140,000 cardiac deaths among the adults. A collaborative approach is imperative between the private sector and government to prevent pollution from informal lead-acid battery recycling by reforming the policy and introducing new battery technologies including lithium batteries and li-cells. The success of this pilot intervention can be replicated in other countries and can be a model to follow."*

**Henrique Pacini, Economic Affairs Officer, United Nations Conference on Trade and Development (UNCTAD)** said, *"With much attention devoted to the global energy transition and circular economy, we need to pay attention to the type of resource circularity we don't want. Informal recycling of lead acid batteries used in 3-wheeler e-mobility creates persistent pollution and toxicity, exerting a heavy toll on the environment and health of present and future generations. At a minimum, markets should move towards better lead-based systems with organized reverse logistics. Ideally, lead-based technologies should be phased out in e-mobility, towards cleaner and more efficient technologies such as Lithium-ion. As Bangladesh's market is highly insulated with significant import tariffs for foreign new and used batteries, it is equally important to ensure that markets for batteries and recycling services are both competitive and well-regulated, backed by innovative business models being developed through the FCDO-UNCTAD SMEP Programme."*

Electric three-wheelers in Bangladesh use over 5% of the country's electricity, mainly from fossil fuels like natural gas, straining the grid and hindering e-mobility's aim to cut fossil fuel use in transport, worsening climate change. Lack of regulation on battery standards and high import tariffs and taxes on battery imports have led to extensive local recycling, often resulting in very poor-quality batteries. A set of EZ Bike batteries costs over 72,000 Tk (or USD 650) but lasts only 8-11 months. This short life causes a high recycling rate and increased lead pollution. It also increases the operating cost of EZ Bikes, affecting the livelihood of millions of drivers and vehicle owners.

**Researchers Amrita Kundu of Georgetown University and Erica Plambeck of Stanford University said,** *“The first way to reduce lead emissions is through business model innovation to promote high-quality, durable batteries. Batteries that last long are recycled less often, and in this way, we could cut lead emissions by half. A manufacturer of long-lasting batteries can sell them with a microfinance loan, directly to end customers.”*

The market for batteries for millions of electric three-wheelers has grown rapidly, reaching around 8,710 crores BDT (USD 871 million) in 2022. Both the vehicles and this battery segment are often informal and unregulated, resulting in large tax losses for the government. Considering that only 30% of the Used Lead Acid Battery (ULAB) recycling is formal, the tax revenue loss for the government reaches USD 91 million per year.

Senior representatives from different organizations such as the Executive of Accumulators Battery Manufacturers & Exporters Association of Bangladesh (ABMEAB), the Chief Operating Officer (COO) of Navana Batteries Limited, the Manager of Confidence Batteries, the Deputy Executive Director of Shakti Foundation, the COO of Tiger New Energy Co. Ltd., CEO of SOLshare, Manager of SMKB, Health Specialist of Asian Development Bank, Senior Director of Microfinance of BRAC, Environmental Specialist of Asian Infrastructure Investment Bank, Senior Country Economist of International Growth Centre (IGC), Director of Advanced Energy Technology of USAID-BADGE, and Research Investigator of icddr,b joined the workshop.

This event, under the [Sustainable Manufacturing and Environmental Pollution \(SMEP\) project](#), is supported by the Foreign, Commonwealth, and Development Office (FCDO) and UNCTAD, and organized in collaboration with Georgetown University, Washington D.C., and Stanford University, California, U.S.A.

#### **DISCLAIMER**

SMEP Project is implemented by Pure Earth, and working in close collaboration with Georgetown University, has been awarded a grant by the UK Government through UK International Development to develop practical solutions for lead acid battery recycling in Bangladesh. The grant has been provided through the [Sustainable Manufacturing and Environmental Pollution \(SMEP\) Programme](#). The SMEP Programme is funded by the UK Foreign, Commonwealth and Development Office (FCDO) and is implemented in partnership with the United Nations Conference on Trade and Development (UNCTAD). The grant has been awarded from February 2023 to February 2025.

The UK Government funds this research and pilot activity through UK International Development; however, the views expressed do not necessarily reflect the UK Government's official policies.

## NOTES TO EDITORS

- **Impact of Lead Poisoning in Bangladesh:** A study, published in the Lancet Planetary Health journal in September 2023, titled “[Global health burden and cost of lead exposure in children and adults: a health impact and economic modeling analysis](#),” has brought to light the devastating consequences of lead pollution. Conducted by two World Bank specialists, Bjorn Larsen and Ernesto Sánchez-Triana. Lead poisoning affects 36 million children in Bangladesh with an average blood lead level of 6.8  $\mu\text{g/dL}$ , leading to a loss of 20 million IQ points and around 140,000 adult cardiac deaths. These health impacts cost 6 to 9% of the country’s GDP in 2019. Lead sources include aluminum cookware, ceramic foodware, paint, toys, informal lead-acid battery recycling, etc.  
Pure Earth Bangladesh has implemented the first few cleanups of severely lead-contaminated communities polluted by informal battery recycling (Kathgora, Mizrapur, and Khulna), but there are hundreds more, and the number of sites continues to grow. Systemic solutions are urgently needed to stop this cycle of lead pollution, and this workshop is a hopeful step in this direction.
- **Factsheet:** Rapid E-Mobility Transition, Lead Poisoning, and Market and Policy Innovation Opportunities can be accessed [here](#).
- **Report,** “*Unified Policies, Healthier Journeys: Addressing the Used-Lead-Acid Battery Challenge in Bangladesh*,” is available [here](#).
- **Workshop Schedule** can be accessed [here](#)

### Annex 1: Assumptions for the numbers in the press release

1. Number of people transported: The average number of trips made by an EZ Bike is 9 during peak hours and 5 during off-peak hours (from our survey data of 140 drivers). Assuming an average of 4 passengers per trip and assuming 2 million EZ Bikes, the total number of passengers in a day =  $14 \times 4 \times 2,000,000 = 112$  million
2. Annual lead waste generated: Assume 2 million EZ Bikes, each with 5 batteries containing 25 kg lead, recycled once in 1.5 years => 6.7 million EV batteries recycled annually =>  $25 \times 6,700,000$  kg or 167,000 MT of lead scrap generated in a year
3. Size of the EZ Bike battery market: From above, 6.7 million EZ Bike batteries are replaced every year and each battery costs around \$130, so the total annual market size =  $\$130 \times 6,700,000$  or \$ 871 million
4. Electricity consumption: For a typical EZ Bike with a 60V battery system with 140 Amp-Hr energy capacity, the amount of electricity required for use with a full charge is 8.4 kWh. Energy efficiency is 70% in the highest quality lead-acid batteries in the country. The total amount of electricity consumed annually by one vehicle is  $(8.4/0.7) \times 365$  kWh = 4.38 MWh. Very conservatively assuming 1 million vehicles in Bangladesh, the amount of electricity required to charge these vehicles is 4.38 TWh/year. The total electricity consumed in Bangladesh in 2020 was 82.5 TWh (<https://www.iea.org/countries/bangladesh>)
5. Assuming that only 30% of the ULABs recycling market is formal and pays 15% taxes, a 70% informality level results in tax revenue loss\* for the government in the range of =  $0.7 \times 0.15 \times 871$  million = USD 91 million or 915 crores BDT.

### For More Information, Contact:

Mitali Das, Communications Lead, Pure Earth Bangladesh [mitali@pureearth.org](mailto:mitali@pureearth.org)