



ISWA 2024

WASTE TO WEALTH: SOLUTIONS FOR A SUSTAINABLE FUTURE

15 - 18 Sept | CTICC, CAPE TOWN



Balancing Act: Managing Economic Growth and Environmental Concerns in Recycling of Used-Lead Acid Battery (ULAB) in Bangladesh

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United Nations Conference on Trade and Development



Presentation Outlines:

1

The Roles of E-rickshaws in Bangladesh

2

Relevant Regulatory Policies and Standards

3

Gaps and Recommendations



1

The Roles of E-rickshaws in Bangladesh

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The Roles of E-rickshaws in Bangladesh

The Daily Star

Sports Business Entertainment Life & Living Youth Tech & Startup Multi

'Tesla of Bangla': Nasrul Hamid defends battery-run three-wheelers

The Daily Star, Thu Feb 8, 2024



- 3 million three-wheelers (e-Rickshaws)
- Rickshaws are responsible for generating 77% of total ULABs in Bangladesh
- Informal battery shops supply approximately 50% of the country's LABs

<https://www.thedailystar.net/environment/natural-resources/energy/news/tesla-bangla-nasrul-hamid-defends-battery-run-three-wheelers-3539466>

<https://thefinancialexpress.com.bd/views/columns/impact-of-ban-on-battery-run-rickshaws-in-districts-1643812426>



The Roles of E-rickshaws in Bangladesh



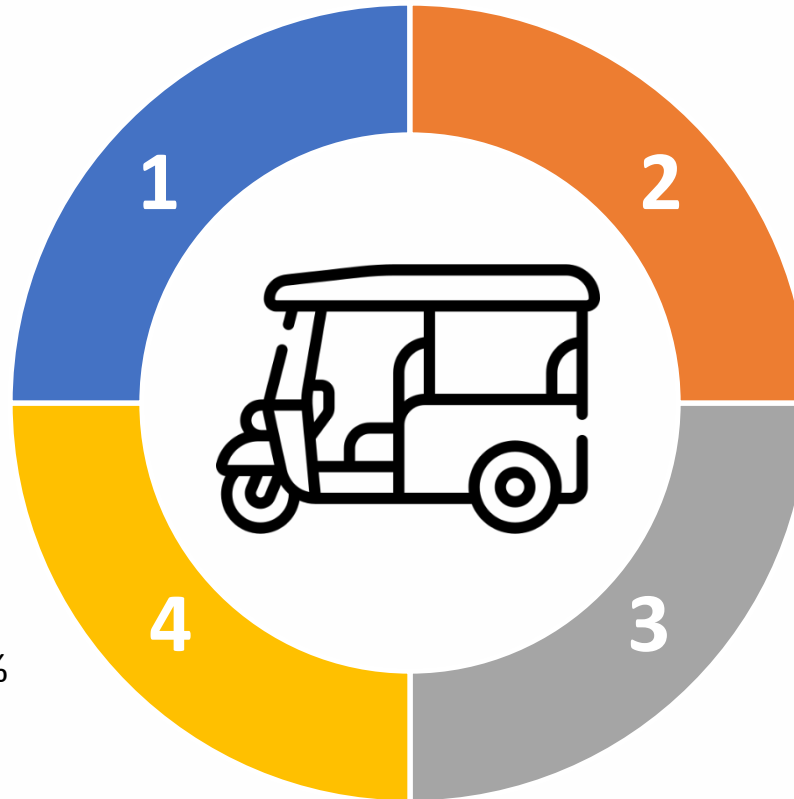
1. Socio-Economy

- Employments (3-4 million vehicles)
- Supply chain (manufacturing)
- Secondary employment (recycling)
- Cost-effective transport solution
- Decongestion and rural connectivity



4. Government/Strategic

- Reduced dependency on fossil
- National carbon emission reduction
- National electric vehicle targets (50% by 2050)
- Local industry and capacity building



2. Technology

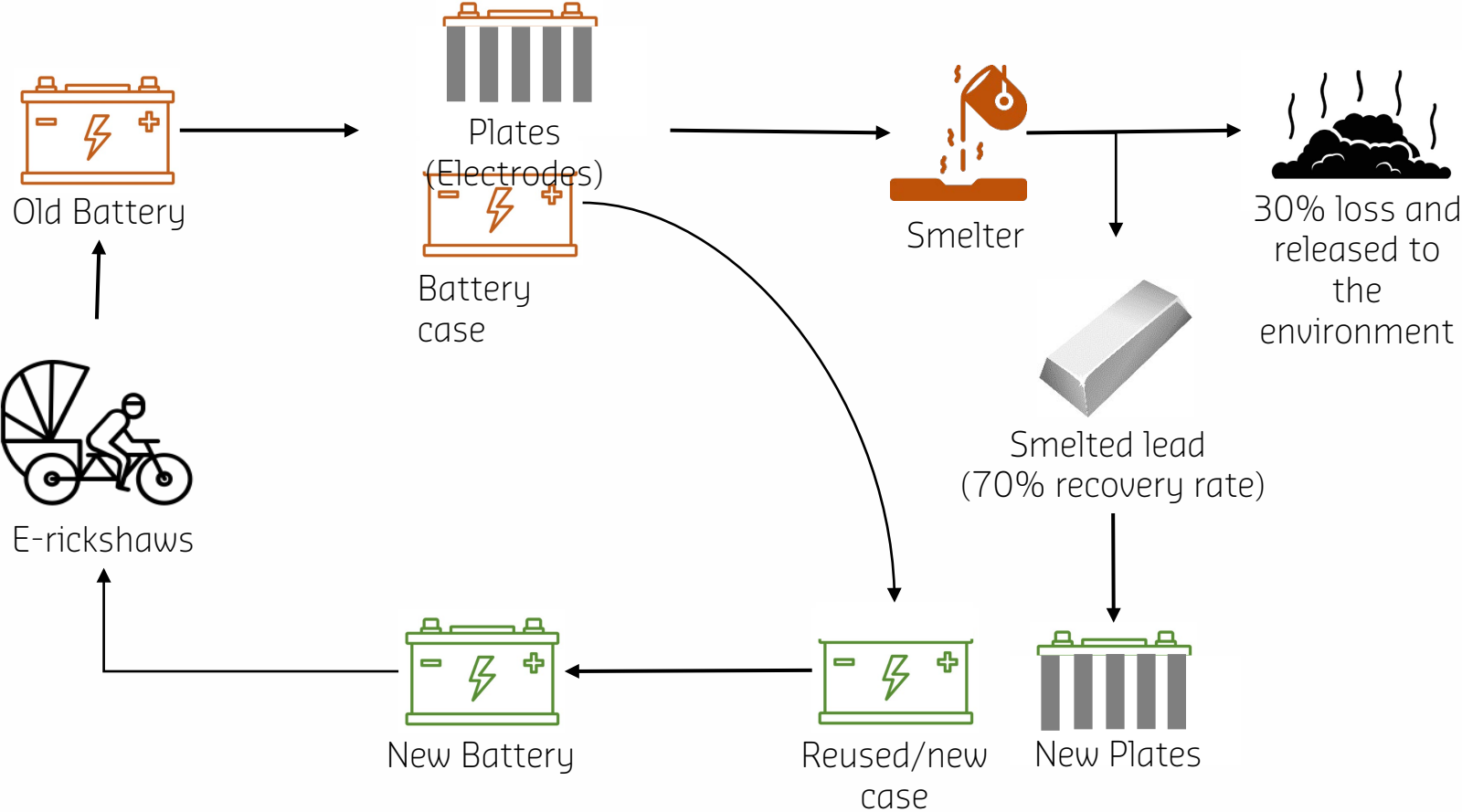
- Electric-mobility
- Diversification in transportation
- Technical capacity/skills (e-mobility)



3. Environmental Aspects

- Reduce noise pollution
- Potential for net-zero transport
- High recycling practices and potential for a circular system

The Supply Chain of Used-Lead-Acid Batteries(ULABs) in Bangladesh



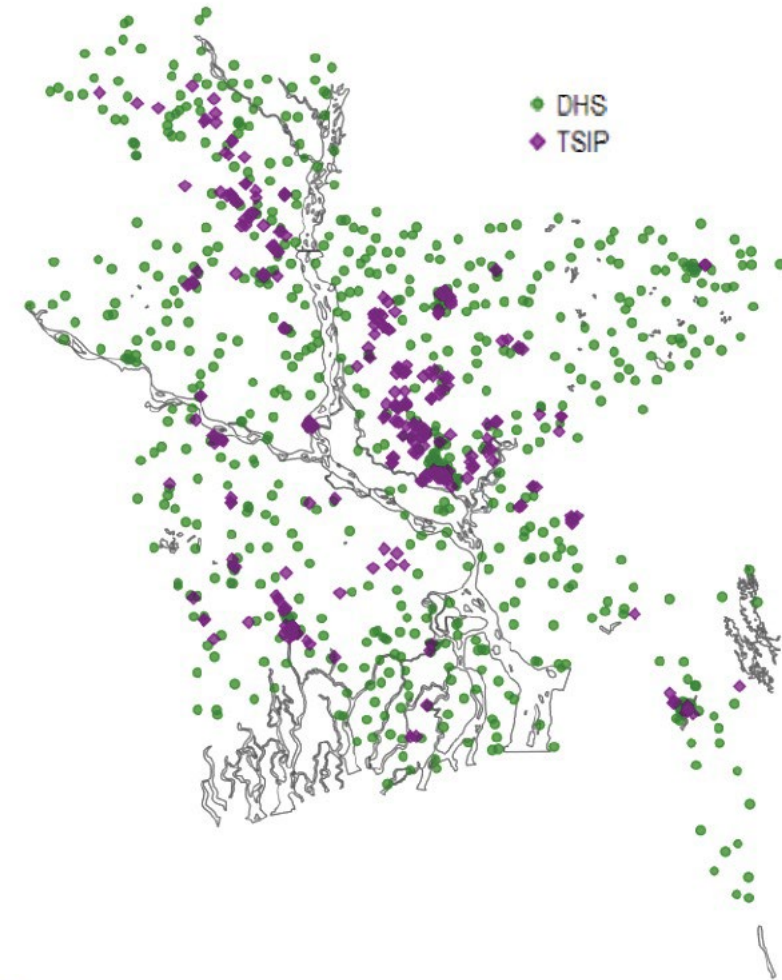
Challenges of E-rickshaws in Bangladesh



Environmental Lead Pollution and Health

Underutilised formal smelters

- High ULAB collection cost (financing and sourcing), high environmental compliance costs (ATP/ETP), VAT costs for formal recyclers
- High demand for informally smelted lead, over 80% of lead is being recycled in an environmentally hazardous manner
- The study found 6 percentage point increase in terminated pregnancies in households within 5 km of ULAB smelting facilities identified by Pure Earth in 2015
- Lead is a potent neurotoxin – that leads to loss of IQ, education and income ability in children and cardiovascular, renal and reproductive issues in adults.



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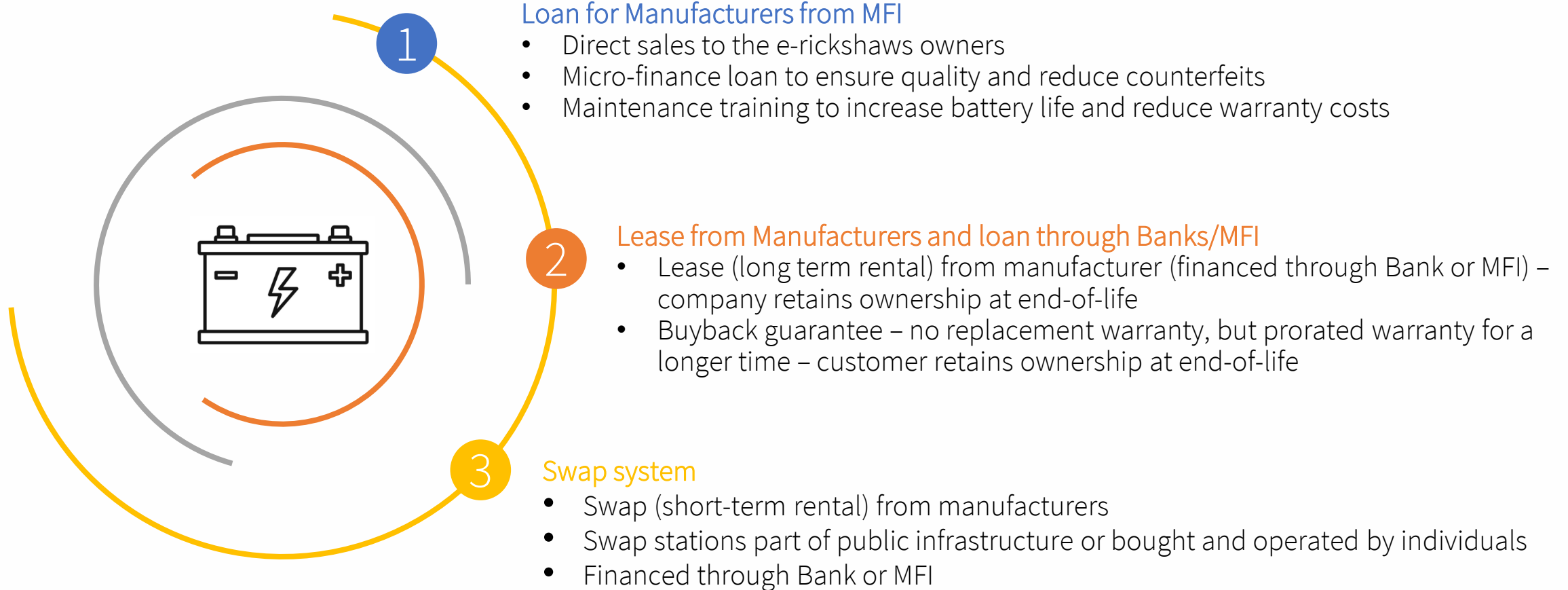
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Innovative Business Propositions in the E-rickshaws Sector in Bangladesh



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BUSINESS
SCHOOL



1

The Roles of E-rickshaws in Bangladesh

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Relevant Regulatory Policies and Standards

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Gaps and Recommendations

Relevant Stakeholders



4. Regulatory bodies

Department of Environment.
Ministry of Environment, Forest and Climate Change
Bangladesh Road Transport Authority



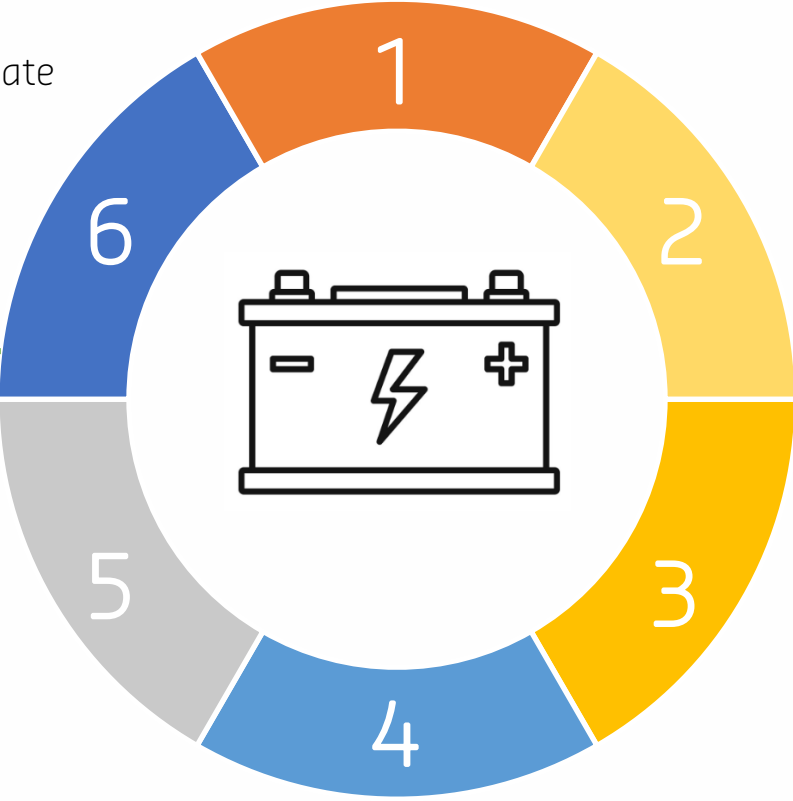
5. Funding bodies

Local banks and financial institutes
International funding bodies (ADB, AIIB, JICA, WB, etc.)
PPP-Public Private Partnerships



6. Communities and NGOs

Affected or Concerned communities and non-governmental organisations (NGOs)



1. Manufacturers/retailers

Formal manufacturers and retailers
Informal manufacturers and retailers



ULABs waste generators

E-rickshaw and automotive industry
Telecommunication and ICT industry
Microgrids/Integrated Power System (IPS)

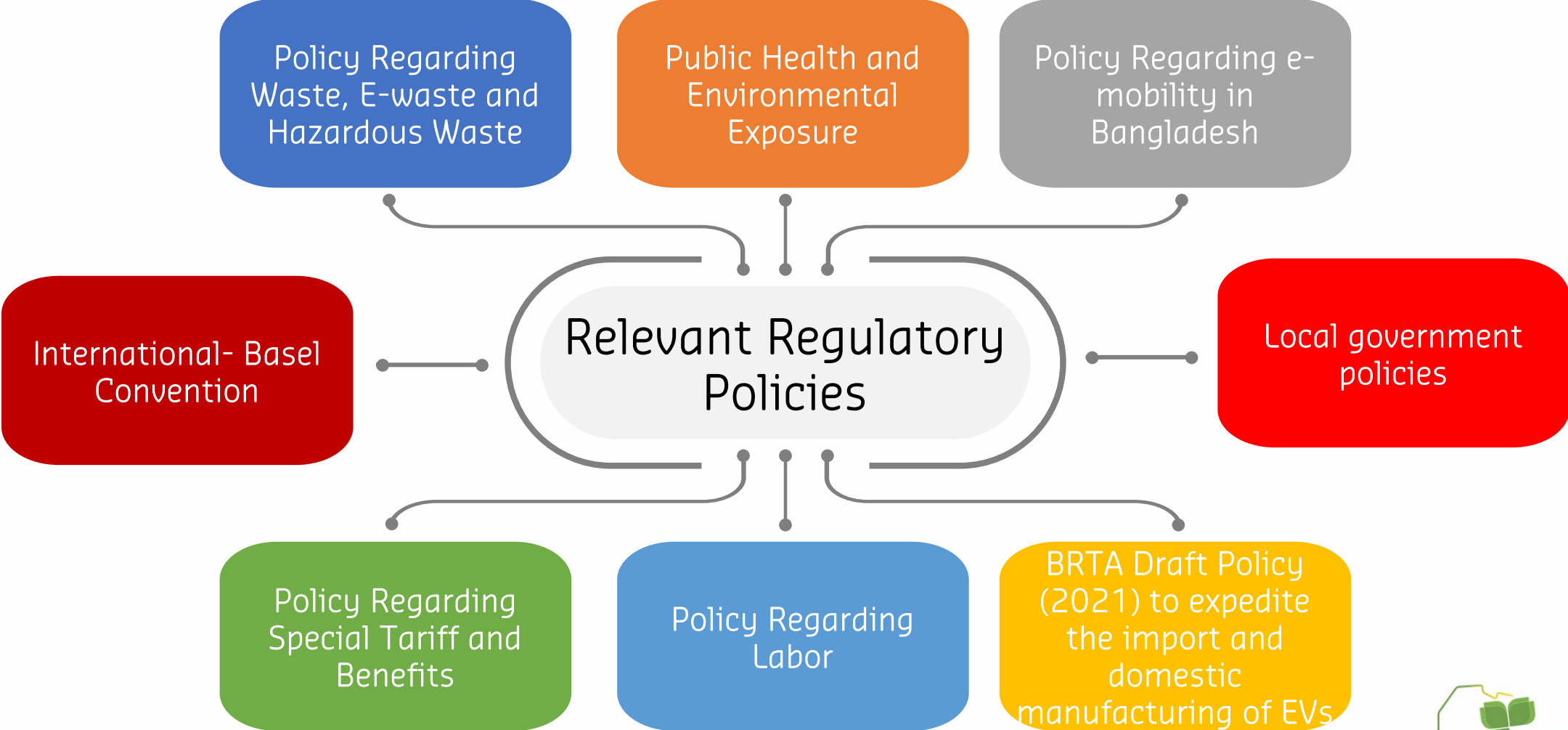


3. Recyclers/smelters

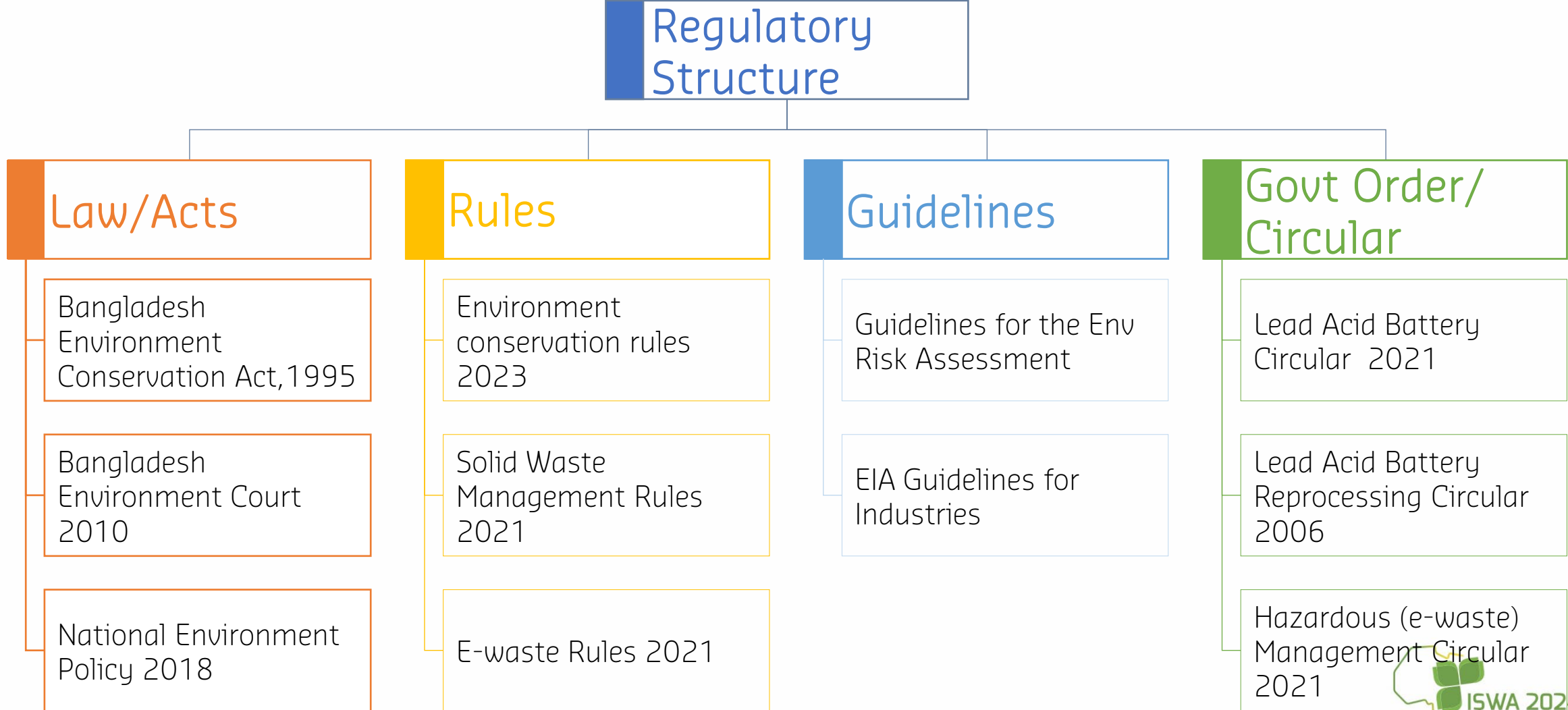
Formal recyclers and smelters
Informal recyclers and smelters



Relevant Regulatory Policies



Relevant Regulatory Laws/Policies/Guidelines



Relevant Regulatory Laws/Policies/Guidelines

বাংলাদেশ পরিবেশ সংরক্ষণ আইন, ১৯৯৫

(১৯৯৫ সনের ১ নং আইন)

বাংলাদেশ গেজেটের অতিরিক্ত সংখ্যায় ১৬ ফেব্রুয়ারি ১৯৯৫ তারিখে প্রকাশিত এবং
৯/২০০২ ও ৫০/২০১০ দ্বারা সংশোধিত।

রেজিস্টার্ড নং ডি এ-১

বাংলাদেশ



অতিরিক্ত সংখ্যা
কর্তৃপক্ষ কর্তৃক প্রকাশিত

মঙ্গলবার, অক্টোবর ১২, ২০১০

বাংলাদেশ জাতীয় সংসদ

ঢাকা, ১২ই অক্টোবর, ২০১০/২৭শে আশ্বিন,

সংসদ কর্তৃক গৃহীত নিম্নলিখিত আইনটি ১১ই অক্টোবর, ২০১০ তারিখে রাষ্ট্রপতির সম্মতি লাভ করিয়াছে এবং এতদ্বারা এই আইনটি প্রকাশ করা যাইতেছে :—

২০১০ সনের ৫৬নং আইন

পরিবেশ সংক্রান্ত অপরাধের বিচার ত্বরান্বিত করার লক্ষ্যে আদালত প্রচলিত আইনের সংশোধন ও সংহতকরণকল্পে

যেহেতু পরিবেশ সংক্রান্ত অপরাধের বিচার ত্বরান্বিত করা আনুষঙ্গিক বিষয়ে প্রচলিত আইনের সংশোধন ও সংহতকরণকল্পে বিধি



জাতীয় পরিবেশ

পরিবেশ, বন ও জলবায়ু পরিবর্তন

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

রেজিস্টার্ড নং ডি এ-১ “জাতির পিতা বঙ্গবন্ধু শেখ মুহাম্মদ জিয়াউর রহমানের উদ্যোগে :

বাংলাদেশ



অতিরিক্ত সংখ্যা
কর্তৃপক্ষ কর্তৃক প্রব

বৃহস্পতিবার, ফেব্রুয়ারি

গণপ্রজাতন্ত্রী বাংলাদেশ

রেজিস্টার্ড নং ডি এ-১ “জাতির পিতা বঙ্গবন্ধু শেখ মুহাম্মদ জিয়াউর রহমানের উদ্যোগে :

বাংলাদেশ



অতিরিক্ত
কর্তৃপক্ষ কর্তৃক

বৃহস্পতিবার

গণপ্রজাতন্ত্রী
পরিবেশ, বন ও জল
পরিবেশ

২

তারিখ: ২০ জ্যৈষ্ঠ, ১৪২৮ :

এস. আর. ও. নং ১৮৭ -আইন/২০২ (১৯৯৫ সনের ১ নং আইন) এর ধারা ২০, ধারা নিম্নরূপ বিধিমালা প্রণয়ন করিল, যথা:—

১। শিরোনাম, প্রবর্তন ও প্রয়োগ।—(১) বিধিমালা, ২০২১ নামে অভিহিত হইবে।

(২) এই বিধিমালা অবিলম্বে কার্যকর হইবে।

রেজিস্টার্ড নং ডি এ-১

বাংলাদেশ



গেজেট

অতিরিক্ত সংখ্যা
কর্তৃপক্ষ কর্তৃক প্রকাশিত

রবিবার, মার্চ ৫, ২০২৩

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
পরিবেশ, বন ও জলবায়ু পরিবর্তন মন্ত্রণালয়

প্রজ্ঞাপন

তারিখ: ১৭ ফাল্গুন, ১৪২৯ বঙ্গাব্দ/২ মার্চ, ২০২৩ খ্রিষ্টাব্দ

এস. আর. ও. নম্বর ৫৩/আইন/২০২৩।—বাংলাদেশ পরিবেশ সংরক্ষণ আইন, ১৯৯৫ (১৯৯৫ সনের ১ নং আইন) এর ধারা ২০ এ প্রদত্ত ক্ষমতাবলে সরকার, নিম্নরূপ বিধিমালা প্রণয়ন করিল, যথা :—

১। শিরোনাম ও প্রবর্তন।—(১) এই বিধিমালা পরিবেশ সংরক্ষণ বিধিমালা, ২০২৩ নামে অভিহিত হইবে।

(২) ইহা অবিলম্বে কার্যকর হইবে।

২। সংজ্ঞা।—(১) বিষয় বা প্রসঙ্গের পরিপন্থি কোনো কিছু না থাকিলে, এই বিধিমালায়—

(১) “অধিদপ্তর” অর্থ বাংলাদেশ পরিবেশ সংরক্ষণ আইন, ১৯৯৫ (১৯৯৫ সনের ১ নং আইন) এর ধারা ২ এর দফা (ক) এ সংজ্ঞায়িত অধিদপ্তর;

(২) “আইন” অর্থ বাংলাদেশ পরিবেশ সংরক্ষণ আইন, ১৯৯৫ (১৯৯৫ সনের ১ নং আইন);

(৩) “আপিল কর্তৃপক্ষ” অর্থ বিধি ২৮ এর উপ-বিধি (১) অনুযায়ী গঠিত আপিল কর্তৃপক্ষ;

(৪) “তফসিল” অর্থ এই বিধিমালার তফসিল;

(৩০০৯)

মূল্য : টাকা ৮৮.০০

Relevant Regulatory Laws/Policies/Guidelines

Types of regulations	Relevant regulatory policies	Scopes and notes
Laws/Acts	Bangladesh Environment Conservation Act 1995, amended in 2010	The Act is to provide for the conservation of the environment, improvement of environmental standards and control and mitigation of environmental pollution.
	Bangladesh Environment Court Law 2010	This Act allows the government to take necessary legal action against any parties who create environmental hazards/ damage to environmentally sensitive areas as well as human society.
	The Bangladesh Labour Act, 2006 (ACT NO. XLII OF 2006)	It covers health, safety, welfare and working conditions and environment of workers and apprenticeship.
	Electricity Act, 2018 (No. 7 of 2018 Law)	It outlines the penalty for electricity theft, which is about 3 years of jail or double the payment of electricity price and/or 50,000tk for non-commercial and industrial use, and it could be about 3 years of jail or double the payment of electricity price and/or 5,00,000tk for industrial and commercial purposes.
	Bangladesh Public-Private Partnership Act, 2015 (Act No. 18 of 2015)	An Act to provide for the legal framework for the creation of public-private partnerships by involving private sector participation along with public sector and attracting local and foreign investment upon connecting Bangladesh.
Rules	Environment Conservation Rules, 2023 (SRO No. 53)	This Rule aims to ensure sustainable development and prevent environmental degradation in Bangladesh by regulating activities that may adversely impact the environment and human health.
	Solid Waste Management Rules 2021	Specific sub-clauses have been added to the Solid Waste Management Rules 2021 to properly manage solid waste. Extended Producers Responsibility (EPR) has been included in the rules for the first time in Bangladesh.
	Hazardous Waste (e-waste) Management Rules 2021	The Rules set a goal of managing at least 50% of e-waste in 5 years and negotiating with the World Trade Organisation (WTO) since the rule required the manufacturer and importer to collect and manage e-waste.
	Hazardous Waste and Ship-Breaking Waste Management Rules 2011	Which lists the hazardous waste, including Used Lead acid batteries whole or crushed (A1 160) or any lead and lead compound.

Relevant Regulatory Laws/Policies/Guidelines

Types of regulations	Relevant regulatory policies	Scopes and notes
Guidelines	EIA Guideline for Industries	An Initial Environmental Examination (IEE) and EIA study have been made regulatory need under certain categories of projects as specified in the Environment Conservation Rule, 1997 for obtaining an Environmental Clearance Certificate.
	Lead-Acid Battery Regeneration Circulation	The circulation put conditions for relevant stakeholders, actors to follow the regulations.
Govt Order/ Circulation	The Lead Acid Battery Preparation, Regeneration, Import, and Utilization Regulations Circulation (S.R.O. No. 45-Law 2021)	The circulation put conditions for relevant stakeholders, actors to follow the regulations.
	Hazardous Waste (e-waste) Management Circulation 2021 (SRO 187, Act 2021)	The circulation put conditions for relevant stakeholders, actors to follow the regulations.
International Laws	The Basel Convention and the Rotterdam Convention	Comply with the Basel and Rotterdam requirement and to prepare a coherent national strategy and action plan for the Environmentally Sound Management (ESM) of ULAB in Bangladesh. The Basel Convention Training Manual for the preparation of National Plans for the ESM of ULAB (including licencing, assessment of H&S, medical surveillance and site assessment.
Local Government	DNCC/ DSCC/ City Councils/Municipalities etc.	The local governments' waste management practices and initiatives
Others	Integrated Energy and Power Master Plan 2023	The Integrated Energy and Power Master Plan (IEPMP) 2023 (MPEMR, 2023) developed by the Ministry of Power, Energy and Mineral Resources, which outlines 50% of electric vehicles by 2050.
	Policy Regarding Special Tariff and Benefits	The Ministry of Industry, this policy aims to transition the majority of passenger cars, buses, trucks, and 3-wheeler auto rickshaws to Electric Vehicles (EVs) by 2030.
	BRTA Draft Policy (2021) to expedite the import and domestic manufacturing of EVs	However, e-rickshaws do not fall under the e-vehicle category due to their lack of safety measures.

Relevant LAB Standards

Bangladesh Standards No	Title and Requirements	Standard's Brief
BDS 1549 (Part-1):1995	Stationery lead acid batterie (Vented types)- General requirements	Applicable to lead-acid batteries, which are designed for services in a fixed location, and which are permanently connected to the load to the DC power supply.
BDS 1549 (Part-2):1995	Test conditions and test methods	Applicable to vented types-test conditions and test methods.
BDS 206 (Part-1): 2002	Lead acid starter batteries - General requirements and methods of test (Second Revision)	Applicable to lead-acid batteries with a nominal voltage of 6 V and 12 V. It is used primarily as a power source for passenger cars and vehicles for normal and severe use.
BDS 206 (Part-2): 2002	Lead acid starter batteries – Dimensions batteries and dimension and marking of the terminal (Second Revision)	Describe the dimensions of batteries and dimensions and markings of the terminals of lead-acid batteries.
BDS 206 (Part-3):2002	Lead acid starter batteries – Dimensions of batteries for heavy commercial vehicles (Second Revision)	Applicable to lead-acid batteries for starting, lighting and ignition of agriculture machines, buses, coaches and lorries.
BDS 479:1999	Rubber and plastics containers for lead-acid storage batteries (First Revision)	Requirements and methods of test for rubber and plastic containers of single cell or monobloc construction for all types of lead-acid batteries.
BDS 1741:2005	Synthetic separators for lead-acid batteries	Covers the requirements and the methods of tests for synthetic separators used in lead-acid storage batteries.
BDS 1778:2006	Valve-regulated sealed-type lead-acid stationary batteries	Specifies requirements for valve-regulated lead-acid cells and batteries intended for use in stationary applications. The Standard specifies the main performance characteristics and specifies corresponding test methods.
BDS 1992:2021	Lead-acid traction batteries – Dimensions of cells and terminals and marking of polarity on cells	This part of IEC 60254 is applicable to lead-acid traction batteries used as power sources for electric propulsion.
BDS IEC 60254-1:2018	Lead-acid traction batteries – Part 1: General requirements and methods of test	Applicable to lead-acid traction batteries used as power sources for electric propulsion.
BDS IEC 60254-2:2018	Lead-acid traction batteries – Part 2: Dimensions of cells and terminals and marking of polarity on cells	Applicable to lead-acid traction batteries used as power sources for electric propulsion.
BDS IEC 60896-11:2016	Stationary lead-acid batteries – Part 11: Vented types – General requirements and methods of tests	Applicable to lead-acid cells and batteries which are designed for service in fixed locations and which are permanently connected to the load and to the DC power supply. Batteries operating in such applications are called “stationary batteries”.
BDS IEC 60896-21:2015	Stationary lead-acid batteries – Valve regulated types – Part 21: Methods of test	It applies to all stationary lead-acid cells and monobloc batteries of the valve-regulated type for float charge applications in a static location and is incorporated into stationary equipment.
BDS IEC 60896-22:2015	Stationary lead-acid batteries – Valve-regulated types – Part 22: Requirements	It applies to all stationary lead-acid cells and monobloc batteries of the valve-regulated type for float charge applications in a static location and is incorporated into stationary equipment or installed in battery rooms for use in telecom, UPS, utility switching, and emergency power.
BDS IEC 61430:2010	Secondary cells and batteries – Test methods for checking the performance of devices designed for reducing explosion hazards – Lead-acid starter batteries	Gives guidance on procedures for testing the effectiveness of devices which are used to reduce the hazards of an explosion, together with the protective measures to be taken.
BDS IEC TR 62060:2010	Secondary cells and batteries – Monitoring of lead acid stationary batteries — User guide	Applicable to lead-acid vented and valve-regulated batteries for use in stationary battery applications. The objectives of this technical report are: – to assist users in the selection of methods to obtain sufficient information to indicate the state of health

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The Roles of E-rickshaws in Bangladesh

2

Relevant Regulatory Policies

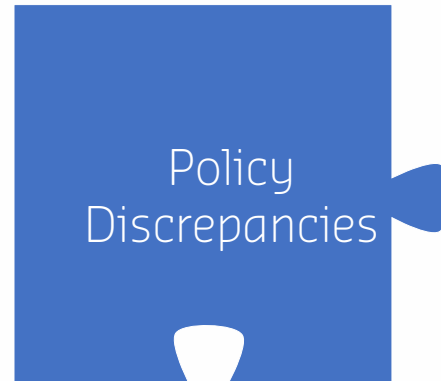
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Gaps and Recommendations

Gaps in the Regulatory Policies and Standards

Discrepancies in policies

- Not recognise e-rickshaws in the BRTA and national EV policy
- Household batteries are listed in the national hazardous e-waste policy but not ULAB from transport
- No benchmarks and standards on efficiency and performance



Oversight of the informal sector

- The role, activities and opportunities of the informal sector are widely oversight in the current policies



A lack of harmonisation and integration

- ULABs link with multiple regulatory bodies; however, there is no harmonisation and integration among themselves



A lack of monitoring policy and quality requirements

- The entire sector lacks monitoring and compliance
- No minimum quality requirements

Key Recommendations



1. Harmonisation and Integration

Foster harmonisation and integration in existing regulatory policies and quality related to ULAB management



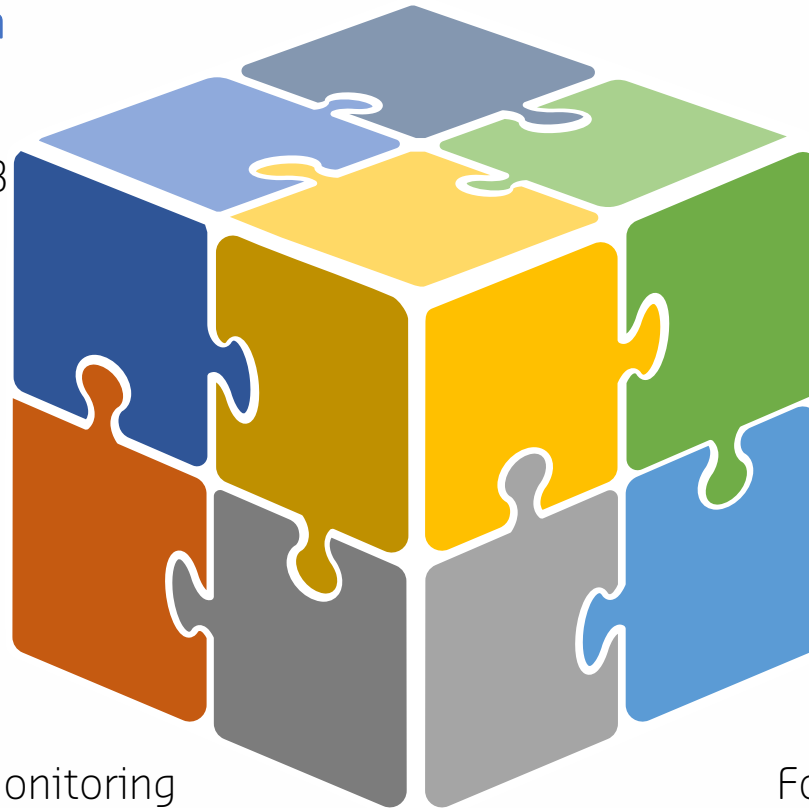
2. Recognition of e-rickshaws

Recognise e-rickshaws as part of transport solutions and thus integrate with the relevant policies (e.g. BTRA)



3. Enforcement and monitoring

Strengthen the enforcement and monitoring of the current relevant regulations, execute penalties, set examples for non-compliant entities and ensure minimum quality



4. Consistency

Consistent and clear messaging across various stakeholders and actors involved



5. Prohibit child labour

Prohibit the involvement of children labour and vulnerable women and informal workers' occupational safety hazards in the recycling of ULABs



6. Foster business opportunities

Foster business opportunities for both formal and informal ULAB recycling with appropriate support and incentives from government bodies

Thank You!

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Acknowledgement:

