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RE-FIT project

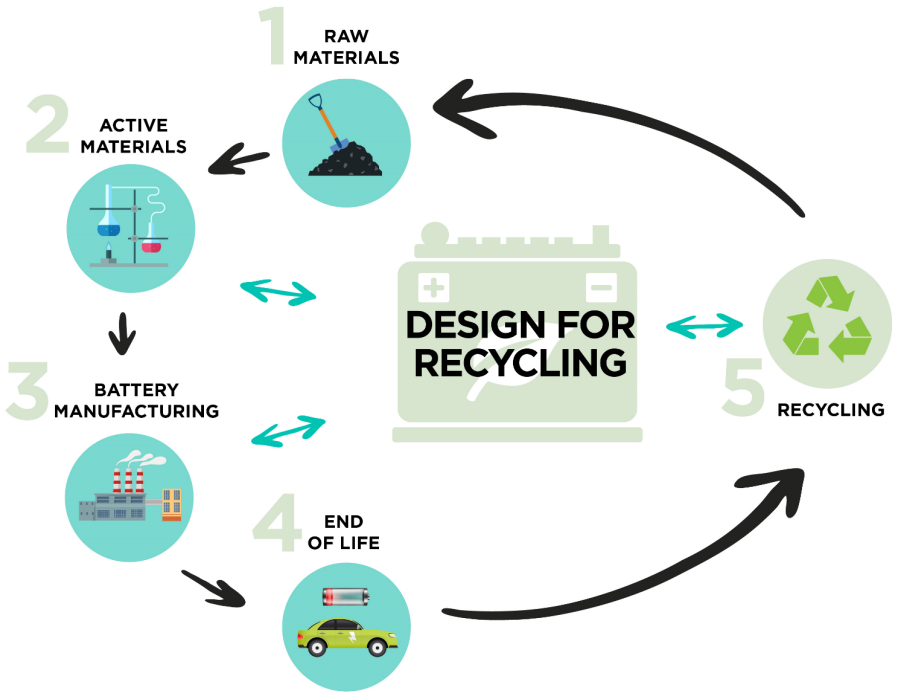
Waste batteries collection model, and general overview of the legal framework

INTRODUCTION

OBJECTIVES

Comprehensive analysis of the current and potential batteries value chain in Lebanon conducted. Study of the legal framework

- Objective: to get a precise picture of the value chain of waste batteries in Lebanon.
- This baseline assessment can be used to identify the best options for battery waste management in Lebanon and pave the way to the development of a national plan for the management of battery waste.
- It includes a diagnosis of current practices and a legal study.



DIAGNOSIS OF CURRENT PRACTICES

SCOPE

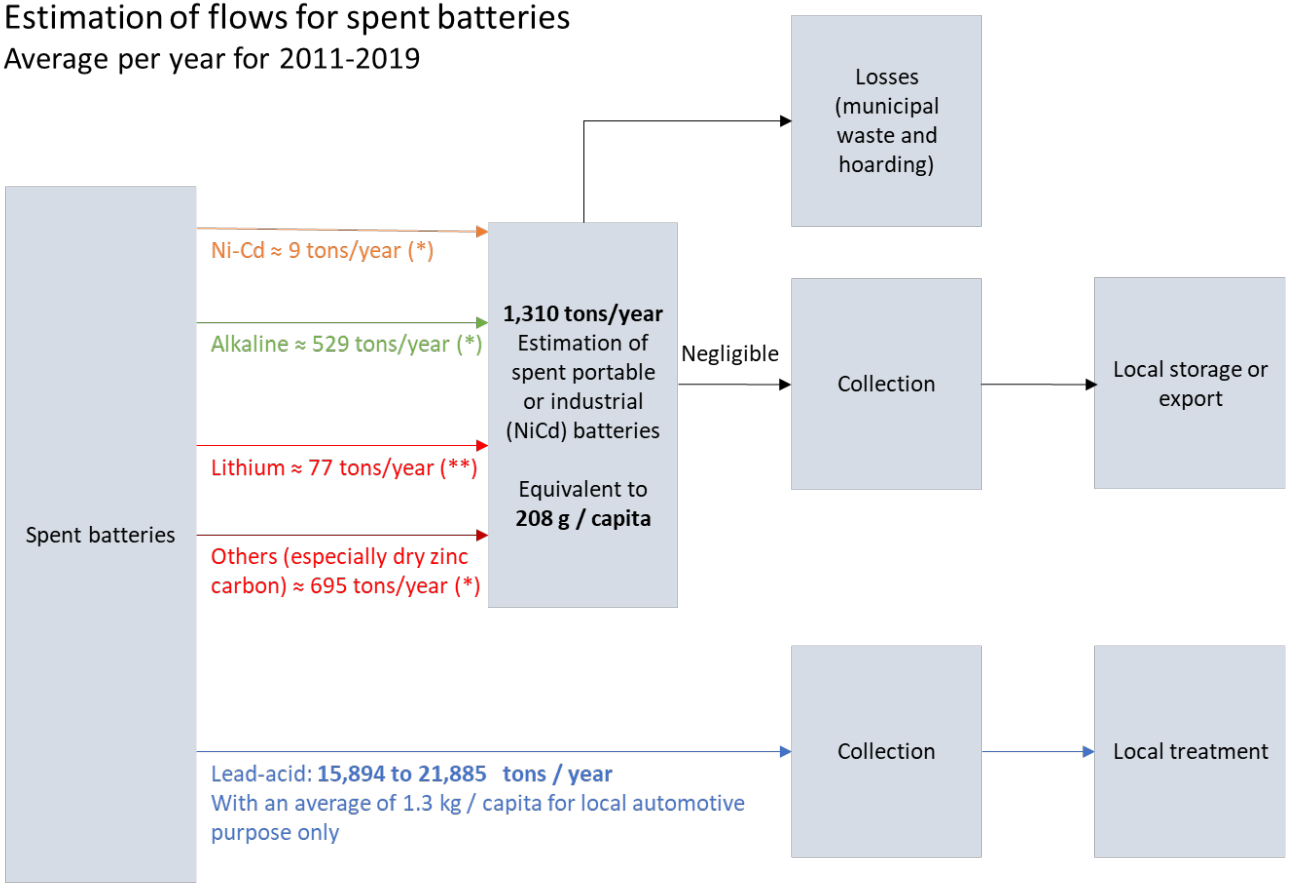
Classification	Most likely uses	
lead batteries	• Automotive • Energy storage (PV installation) • Power back up systems (UPS) • Back-up power supply (genset)	
Ni Cd batteries	• Rechargeable batteries, used in electronic appliances that need portable batteries	
mercury containing batteries	• Those are flat battery usually called button cell battery. They are used in electronic appliances that need portable batteries	
alkaline batteries	• Electronic appliances that need portable batteries	
other batteries and accumulators	Essentially Lithium batteries: • Portable: phone, laptops… • Industrial: energy storage and EV.	

The baseline assessment covers all type of batteries: hazardous and non hazardous waste.

DIAGNOSIS OF CURRENT PRACTICES

MAPPING OF WASTE PRODUCTION

Estimation of flows for spent batteries
Average per year for 2011-2019



(*) imported data, considered to give an estimation of replacement batteries. This is an overestimation, as imported batteries are also used in new devices that were supplied without battery
(**) estimation of used batteries for mobile and laptop as well as importation data for primary lithium cells and batteries. Other applications for rechargeable lithium batteries are not taken into account, as considered to be limited and difficult to assess.

15,894 to 21,885 tons of used lead-acid batteries would be collected every year. The waste batteries for all other kind of batteries is estimated to 1,310 tons/year.

DIAGNOSIS OF CURRENT PRACTICES

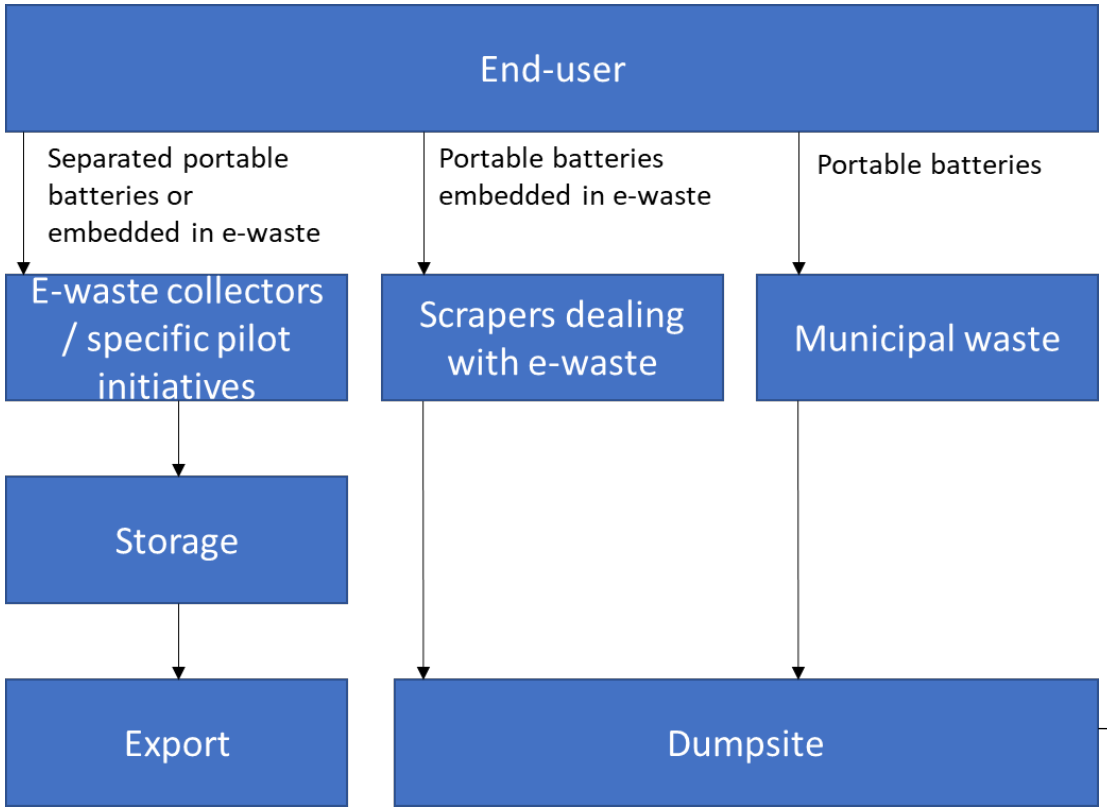
VALUE OF LEAD LOCALLY RECYCLED

	Quantity of lead locally recycled * (tons/year)	Value of locally recycled lead (Million USD)
Estimation based on data collected from the industry	**9,536**	**8.4 – 12.4**
Estimation based on commercial balance for lead	**13,131**	**11.5 - 17**

Lead locally recycled is valorized on the international lead market, and can be valued from 8.4 to 17 Million USD depending on the quantity of lead locally produced and the fluctuations of lead market.

* Locally recycled lead comes essentially from recycling used lead-acid batteries

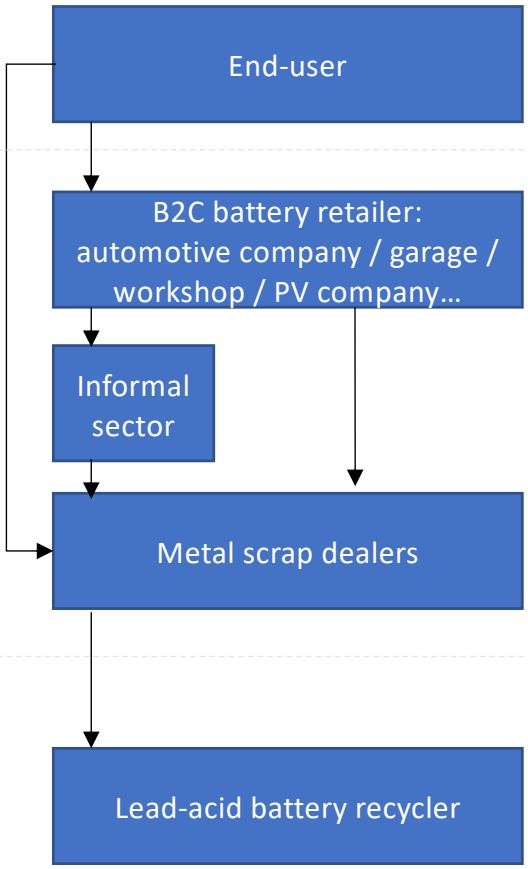
Involved stakeholders



Release of toxic chemicals and heavy metals into the soils, high risk of water and air pollution.

DIAGNOSIS OF CURRENT PRACTICES

ULAB CURRENT PRACTICES



Involved stakeholders	Activities	Environmental standards	Compliance with Decree 5606
End-user	Usually exchanging ULAB with new one or selling directly to scrap dealers		End-user not defined Identity of the waste generator unclear, and related requirements not applied
B2C battery retailer: automotive company / garage / workshop / PV company…	Intermediate storage Potential draining	⚠ •No draining at collection points ⚠ •Storing in proper places at collection point	Uncertain as the identity of the waste generator is not clear Requirements for waste generation, storage and transportation are not applied
Informal sector	Collection / Transportation	? •Collectors must not sell the batteries to unlicensed lead smelters	
Metal scrap dealers	Collection or drop-off Draining batteries Storage Transportation		
Lead-acid battery recycler	Treatment	⚠ •Electrolyte sent to effluent treatment plant ? •Best available techniques to be used in terms of the protection of health and the environment	

Current practices for the collection and treatment of used lead-acid batteries are not compliant with the international environmental standards. This leads to high risks for the environment and public health.

⚠ Local practice not compliant

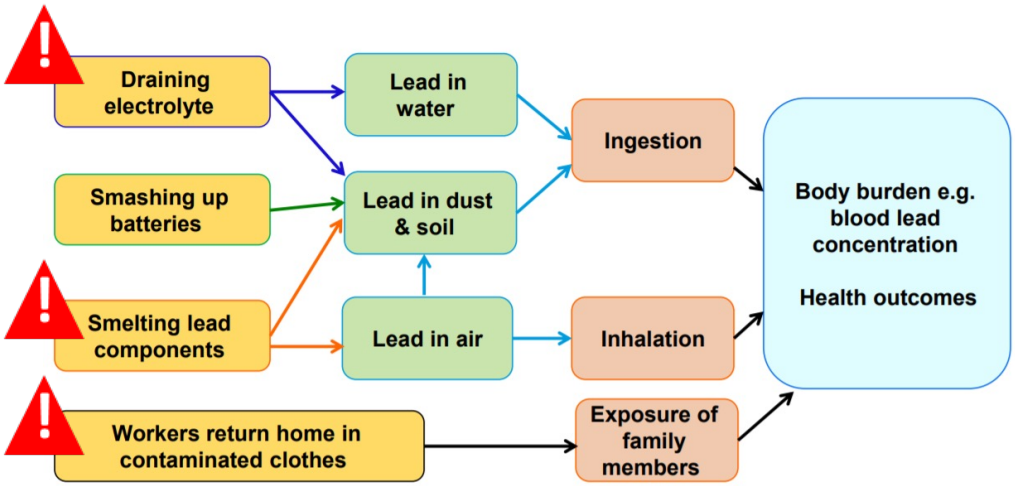
? Compliance uncertain

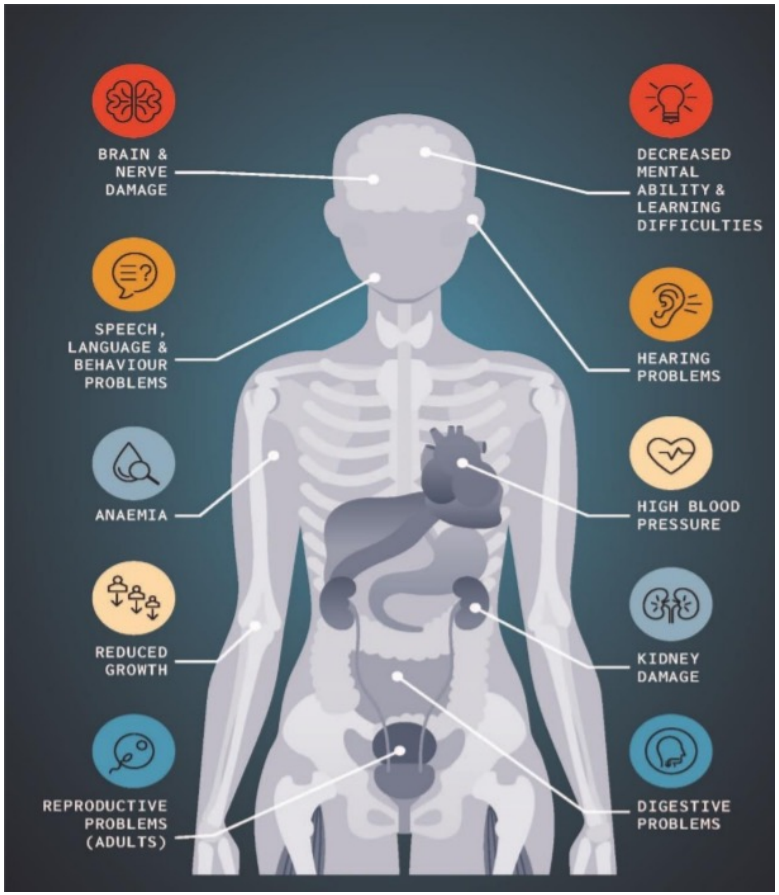
DIAGNOSIS OF CURRENT PRACTICES

RISKS

Multiple sources and pathways of exposure to lead from ULAB recycling

World Health Organization





The impacts on health and environment of current management practices are being studied by AUB. The results are expected by December 2022.

LEGAL STUDY

MAIN GAPS IDENTIFIED IN THE LEGISLATION

Classification

Classification: Hazardous Waste / Non Hazardous Waste

- Hazardous waste batteries: lead-acid, cadmium, mercury
- Uncertainty about the alkaline batteries that contained zinc, classified as hazardous compound in Decree 5606, whereas alkaline batteries are considered non hazardous waste as per law 80/2018
- Non-hazardous waste batteries: all remaining, including lithium

Responsibilities

Placement of batteries on the market

- No mention of the maximum quantity of hazardous compounds allowed to be placed on the market
- No responsibility for the management of waste batteries, whereas it is the "producer" (the one that places battery on the market) that is responsible for management of waste batteries in the European legislation

Identity of the waste generator

- As per Decree 5606, any end-user can be considered a waste generator
- The waste generator is obliged as per Decree 5606 to declare the waste generation and to be officially registered. He must follows the requirements for storage and packaging of waste.
- It is not clear who should be considered as a waste generator and so the requirements are not applied

Management

Collection, Storage, and Transport

- The collector is not identified in Decree 5606, contrary to the carrier of waste and storage facility, but should be the link between end-user and treatment place, and cover both activities of carrier and storage
- No technical standards given for the carrier / storage as all packaging requirements lie on the waste generator

Treatment and Final Disposal

- No targets set for recycling of batteries
- No specification for the treatment techniques / treatment facility requirements

Some clarifications about the Lebanese legislation are needed as some uncertainties remain given that the current legal framework is not applied neither appropriately applicable.

GENERAL CONCLUSION

arcenciel collection model

Please refer to the ULAB collection training

GENERAL CONCLUSION

RECOMMENDATIONS

Legislative framework

- Amend the current legislative framework
- Make a deeper focus on environmentally sound management of waste batteries at all stages and regulate the drainage of batteries
- Enforce the already existing laws to control battery management and recycling
- Add obligations related to visibility and information to end-users
- Institutionalize and organize the collection and treatment value chain with clear roles and responsibilities including, when needed, economic incentives in order to give long-term viability (especially for portable battery collection which is not viable like ULAB management)

Capacity building

- Capacity building is necessary to improve the whole chain of battery management (institutional, collection, transport, storage, treatment)
- Improve general knowledge and awareness
- Participation of consumers who should be informed (risks, recyclable, procedures for returning the batteries to retailers, location of collection centers…)

Improvement of informal value chain

- Make operations environmentally sound and economically efficient
- Design a national battery waste management plan to be implemented as a consultative and multi-stakeholder process
- Include gradually the existing operators in an organized and regulated collection and treatment scheme:
  - Be licensed to collect and temporarily store ULAB
  - Environmentally unsound destinations should be prohibited
  - Smelters should be licensed and adopt best available techniques
  - Control of emissions around the facilities

GENERAL CONCLUSION

Recommendations for Municipalities

Municipalities	**Adopt a waste management plan** **Organize the collection of batteries** **Awareness and collaborations with organizations (Good practices, solar systems)**

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