Mapping standards for low- and zero-emission electric heavy duty vehicles EXPERT WORKSHOP
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Session C – Integration of electric vehicles in environmental standards/regulations

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Sustainability requirements for rechargeable batteries

Update of EU battery legislation in 2020

European Commission

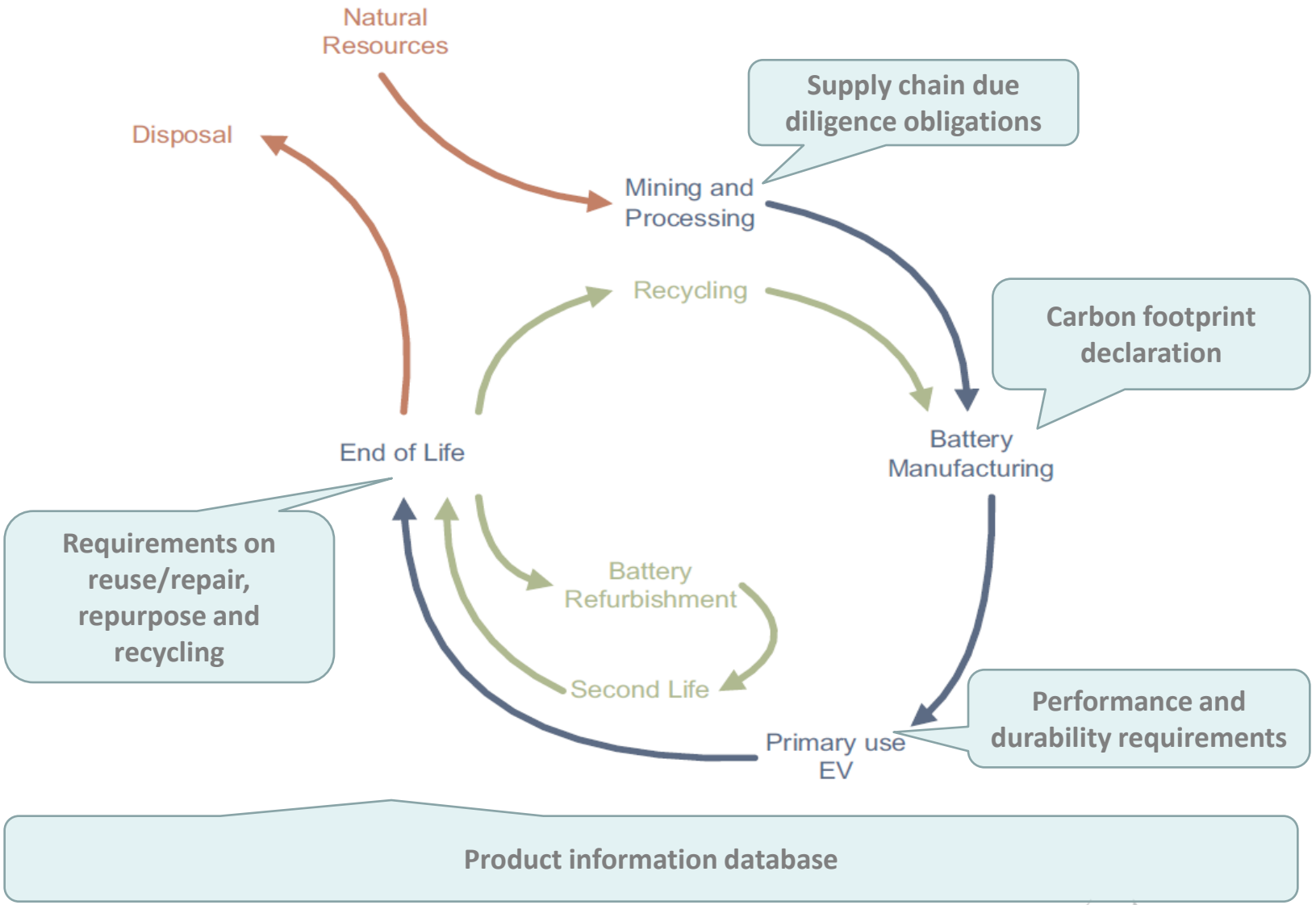
Market and political context

- **Strategic Action Plan on Batteries** of May 2018 announced the Commission would “put forward battery sustainability 'design and use' requirements for batteries to comply with when placed on the EU market”.

- **European Green Deal**: updated regulatory framework on batteries by 10/2020

- Market demand for batteries in the EU is expected to reach 400 GWh by 2025

Requirements over the batteries' lifecycle phases



Source for the graphic: Battery second life: Hype, hope or reality? A critical review of the state of the art
E. Martinez-Laserna,⁎, I. Gandiaga, E. Sarasketa-Zabala, J. Badedab,c,d, D.-I. Stroe, M. Swierczynskie, A. Goikoetxea

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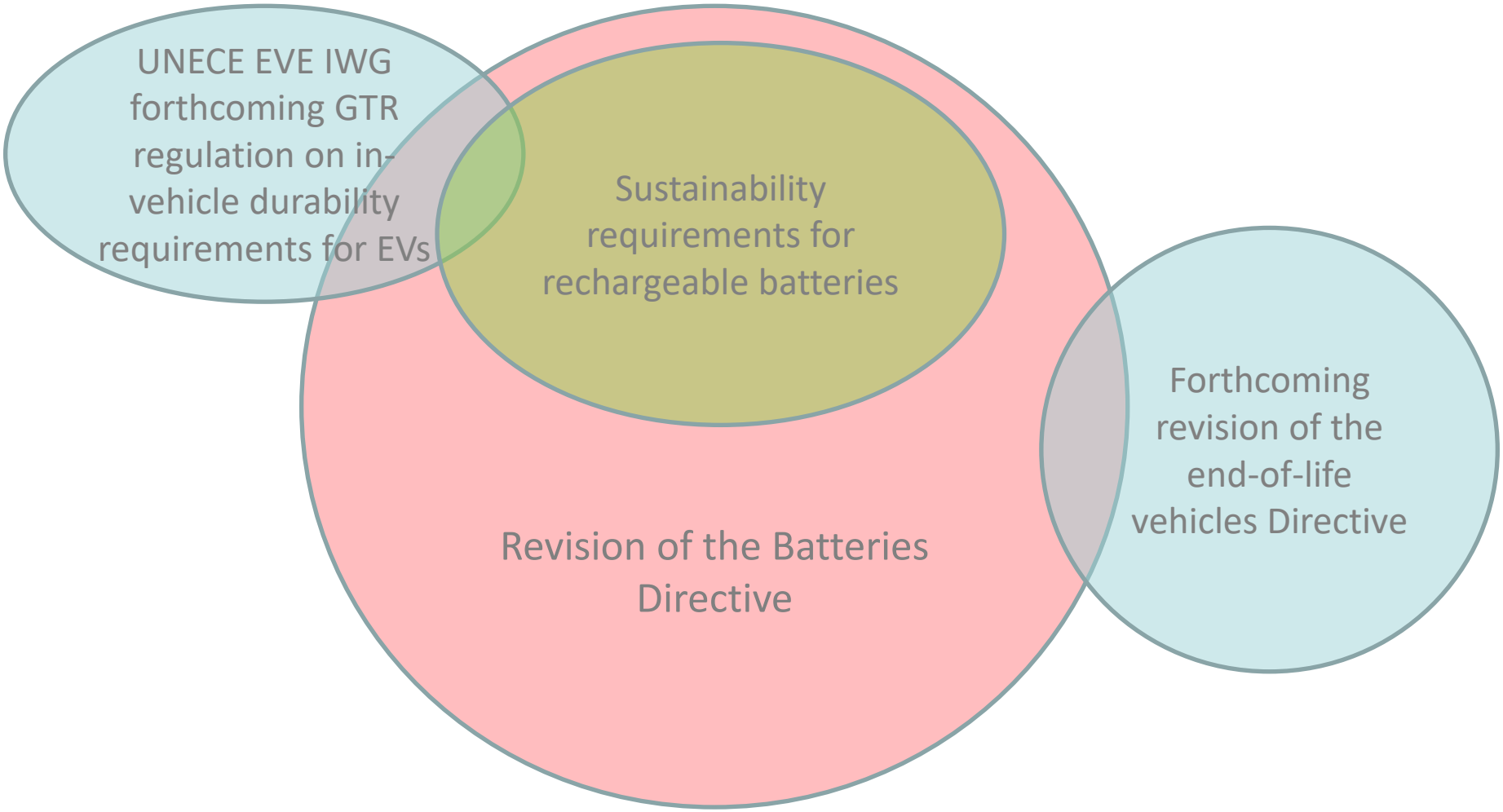
Regulatory landscape



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Supply chain due diligence obligations

- Battery manufacturing absorbs around 40% of global lithium and around 50% of cobalt production. Environmental and social standards associated to their extraction are not always satisfactory.
- The OECD Due Diligence Guidance for Responsible Business Conduct and for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas are considered good practice
- Obligations being considered:
  - Adopt and communicate a supply chain policy in line with the OECD framework
  - Identification and management of social/environmental risks in supply chains
  - Third-party audits of supply chain partners
  - Disclosure of information to Member States authorities and stakeholders

Carbon footprint declaration

- The Product Environmental Footprint Category Rules (PEFCR) for High Specific Energy Rechargeable Batteries for Mobile Applications exist since 02/2018
- The rules are based on the ISO 14040-44 standards and establish a degree of industry consensus on some Li-ion chemistries, including LCO, NMC, LiMn and LFP
- Obligation being considered:
  - Mandatory declaration of carbon footprint per battery model, per battery plant
- Issues under consideration:
  - Inclusion of other environmental impacts in the declaration
  - Availability of Category Rules for all battery chemistries in the market
  - Availability of quality secondary datasets to avoid the use of proxies
  - Prepare the grounds for a discussion on maximum carbon thresholds for batteries

Battery performance and lifetime requirements

- Batteries being placed in the EU internal market should ensure minimum performance and durability requirements. These should help maximize driving range, facilitate second life applications and reduce overall lifecycle impact.

- Performance requirements being considered:
  - Capacity fade
  - Energy round trip efficiency
  - Internal resistance increase

- Lifetime requirements being considered:
  - Maximum capacity fade (e.g. 20%) + calendar life warranty (e.g. 8 or 10 years)

- Issues under consideration:
  - Appropriateness of performance standards ISO 12405-4 for EVs and IEC 61427-2 for ESS

- For passenger vehicles (EVs, PHEVs), the EU regulatory framework is likely to refer to the ongoing UNECE EVE GTR regulation on in-vehicle durability requirements

Requirements under consideration on repair, reuse/repurpose and recycling

- Battery pack design and construction requirements:
  - Reversible assembly techniques + standardized tools
  - Modular design (e.g. standard configurations)
  - Firmware updates to the BMS for second-life applications
- Diagnostics and safety
  - Access to the BMS to facilitate diagnostics/determination of the State of Health
  - Open data diagnostics connector
  - Safety protocols for cell/modules dismantling and for reuse/repurposing
- Recyclability
  - Presence of Critical Raw Materials
  - Declaration of recycled content/minimum recycled content (e.g. 20% recycled cobalt)
  - Recyclability index
- Questions for discussion:
  - How to balance the interest of manufacturers and recyclers?
  - How to help the recycling of batteries to become cost positive?
  - Do we need to standardize protocols to estimate the SoH?
  - Do we need standards for safety as in ANSI/CAN/UL 1974?

Requirements related to the display of information

The following information shall be visibly displayed on the battery:

- Battery manufacturer’s name or trade mark
- Battery’s model identifier
- QR code linking to an battery information database
- The QR code shall be 100% black and of a size that is easily readable by a commonly available QR reader, such as those integrated in a smartphone

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Thank you

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