Outlook for EV batteries and their environmental impact: 2025 and beyond

ZEMO LCA Webinar Series 2021
Insights into EV battery lifecycle analysis
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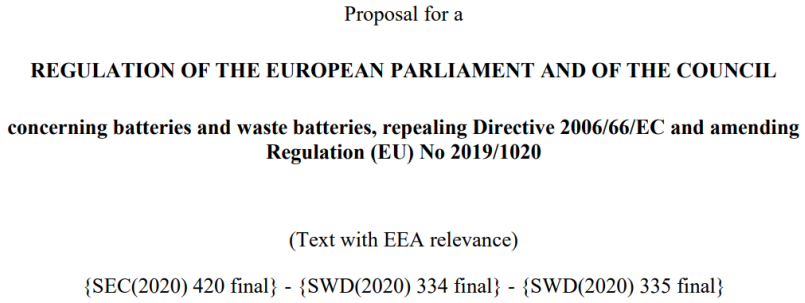
WMG
THE UNIVERSITY OF WARWICK

Why 2025?

- EU is currently updating the batteries and waste batteries regulations
- Draft regulation was released in Dec 2020
- Current stage is that Committee on the Environment, Public Health and Food Safety (ENVI) will be receiving a report in Oct 2021



Proposal for a

REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020

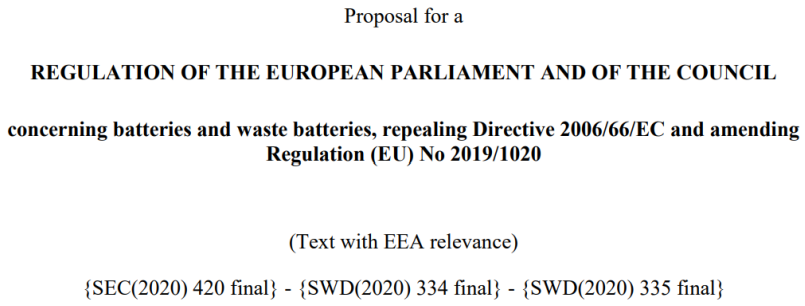
(Text with EEA relevance)

{SEC(2020) 420 final} - {SWD(2020) 334 final} - {SWD(2020) 335 final}

- https://ec.europa.eu/environment/topics/waste-and-recycling/batteries-and-accumulators_en

Why 2025?

- 13 proposed measures with up to 3 levels of ambition in each area
- Anyone who sells batteries within the EU will be required to meet these regulations
- Targets typically start from 2025



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6 – Carbon footprints

- The minimum expectation is to have a mandatory carbon footprint declaration of a battery (2025?)
- Likely to have a maximum threshold for batteries as a condition for placement onto the market (2030?)

- ***“The delegated act establishing the values of the carbon thresholds will be supported by a dedicated impact assessment.”***

What is included in an assessment?

Manufacturing

Usage

End-of-life

Biggest problem?

Manufacturing

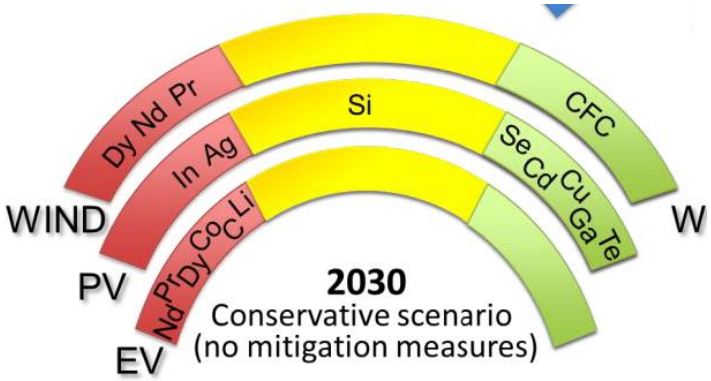
- Gaps exist in mapping of supply chain – particularly surrounding technology metals
- Location, scale & technology have huge impacts
- ***How transparent are supply chains in order to be able to make these statements?***
- *Understanding of future technologies is limited – e.g. solid state batteries*

Usage

- Zero emission at point of use
  - Driven by legislation to reduce exhaust emissions
- Electricity generation has related carbon emissions
- ***If use is included in statement – how will it be calculated?***
  - Projection?
  - Flatline based on point of sale?

End of Life

- Batteries are difficult to disassemble
  - Energy, emission & cost inefficient
- Processes are being developed
- Lack of industrially-relevant data



Assessment of potential bottlenecks along the materials supply chain for the future deployment of low-carbon energy and transport technologies in the EU, EU JRC, 2016

9 – Recycled Content

- Mandatory declaration of recycled content (2025)
- Mandatory levels of recycled content (2030 & 2035)

- ***"setting mandatory targets for recycled content for lithium, cobalt, nickel and lead in 2030 and 2035."***

- Developing a predictable framework to enable investment

12 – Provision of Information

- Printed and online information to shift towards more environmentally-sound batteries
- “Battery passport” enabling second life operators and recyclers improve efficiencies

13 – Supply Chain Due Diligence

- Addressing **social** and **environmental** risks related to raw material extraction, processing and trading
- Will be impacted by sustainable corporate governance – feedback on roadmap closed Oct 2021

Conclusions

- Understanding LCA of EV manufacturing and activities across whole supply chain seems to be inevitable
- With recycled content being mandated, more knowledge is needed in this area, specifically how it impacts on manufacturing
- Use phase predictions potentially rolled into a cradle-to-grave requirement for carbon footprint statements