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Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology

Evaluation of the Directive 2006/66/EC

Initial results of the evaluation study

No 4: New Developments

Trinomics/Oeko-Institut/E&Y

Brussels, 14 March 2018



Agenda

1. Resource efficiency (RE)
2. “New” battery types – Li-ion batteries
3. Recycling (technologies)

1. Resource efficiency

Does the Batteries Directive adequately address resource efficiency?

- Awareness of resource efficiency and critical raw materials has been growing in the last decade.
- Flagship initiatives ‘Resource-efficient Europe’ was developed some years after the adaption of the Batteries Directive.
- Antimony, cobalt (44 % of global use can be allocated to Li-ion batteries), natural graphite, indium, and some rare earth metals are critical raw materials and of high importance for battery production.
- Lithium for Li-ion batteries is a material of highest relevance with a potential future as a critical raw material.

Discussion


Points for Discussion
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Points for Discussion

Point for discussion

- Is the current objective of achieving a high level of recycling for all waste batteries enough? Does it pay enough attention to resource efficiency and critical raw materials? Are recycling efficiency targets still appropriate?

2. Li-ion, new battery types

Relevance of battery types has changed: Li-ion batteries, 2015, EU28

- About 75 000 tonnes of Li-ion batteries
- Portable Li-ion batteries already in 2015 had a share of about 17 % of the total portable batteries compared to only 4 % of lead-acid and NiCd batteries together.

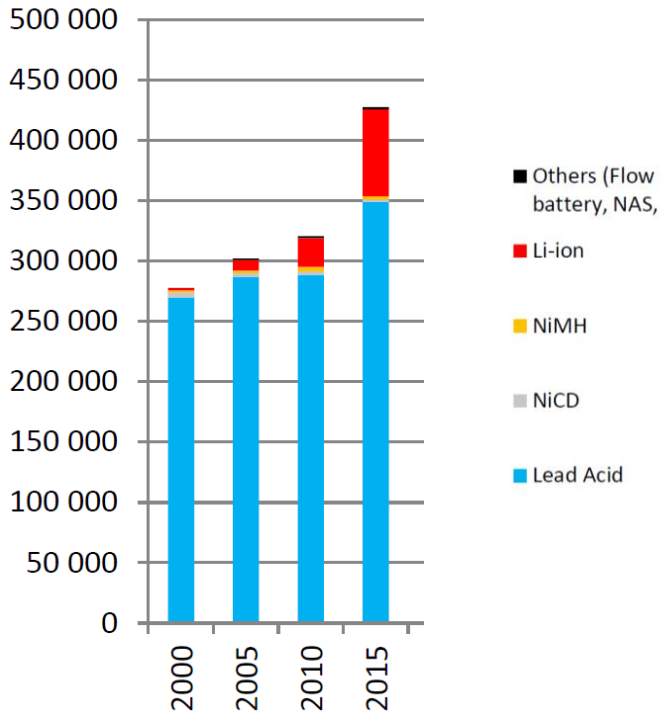
Placed on the market, tonnes	EU28
Potable batteries	**36 950**
mobile phones	4 700
portable PC	24 000
power tools	3 100
other consumer	5 150
Industrial batteries	**37 956**
E-bikes	4 142
electric vehicles (BEV, PHEV)	30 448
electrical energy storage	3 366
Total	**74 906**

Sources: (Elwert 2015), (Recharge, Avicenne 2010), Statista (2015), (EcoBatRec 2016) and own calculations; table Oeko-Institut

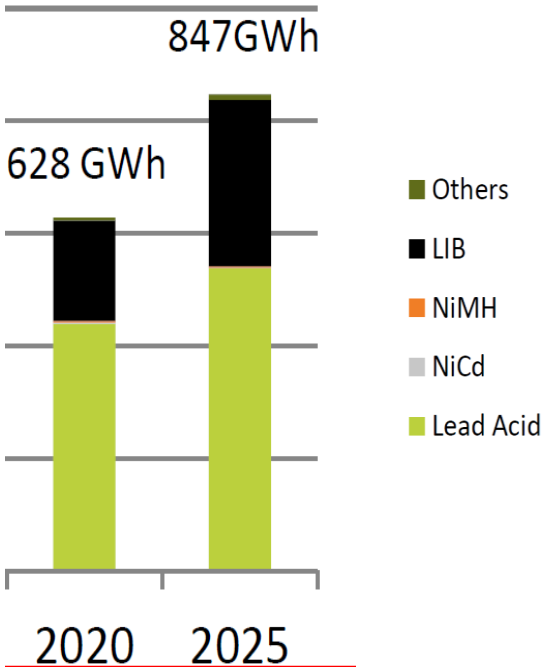
- "New" applications are e-cars, e-bikes, energy storage, robots, drones (mainly Li-ion and private households)

2. Li-ion batteries: dramatic global increase

Sales of rechargeable batteries: current situation (MWh)



Sales of rechargeable batteries: future (GWh)



Source: Pillot, C. (avicenne): The Rechargeable Battery Market and Main Trends 2016 – 2026, ICBR 2017, Lisbon September 2017.

3. Recycling (technologies)

Does the Batteries Directive adequately address recycling?

- The Directive addresses R&D for new recycling technologies.
- However, the Directive does not directly support the application of such new technologies.
- Achieving a higher recycling efficiency than the minimum requirement is not supported by the provisions of the Directive.
- Freedom to choose what to recycle in order to achieve recycling efficiency does not necessarily lead to higher resource efficiency or a better circular economy.
- No priority to high-quality recycling compared to downcycling, e.g. slags.
- Recycling efficiency is not oriented towards recovery of (critical) materials.
  →The Directive does not address what kind of materials should be saved as resource.

Discussion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Does the Batteries Directive adequately address new developments: recycling of Li-ion batteries?

- How appropriate is it to keep Li-ion batteries within the category ‘other batteries’? Does it reflect the amount and relevance of Li-ion batteries?
- Is the 50% target for the recycling efficiency of Li-ion batteries enough to ensure sufficient recovery of important battery materials, e.g. lithium and critical resources?
- If provisions for Li-ion batteries are defined, would these also incorporate targets for critical resources, e.g. rate of recycled content of cobalt?

Points for discussion

Does the Directive provide enough support to:

- new recycling technologies,
- recovery of (critical) raw materials,
- high-quality recycling?

Is focussing on end-of-life stages enough to ensure recycling or should design for recycling or other aspects also be considered?

Points for discussion

- Generally, does the Batteries Directive adequately address new developments in relation to new battery chemistries?
- The Directive does not give clear guidance on:
  - when new battery types should be addressed separately,
  - when separate reporting is required and
  - when a new / separate recycling efficiency should be applied.

  → Is this sufficient or is there a need for change?

- No criteria / threshold is defined for the relevance of new batteries etc. (e.g. amount, hazardous substances, economic relevance etc.). Do you consider this to be a shortcoming of the Directive?

Thank you for your attention!

Any further questions?

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