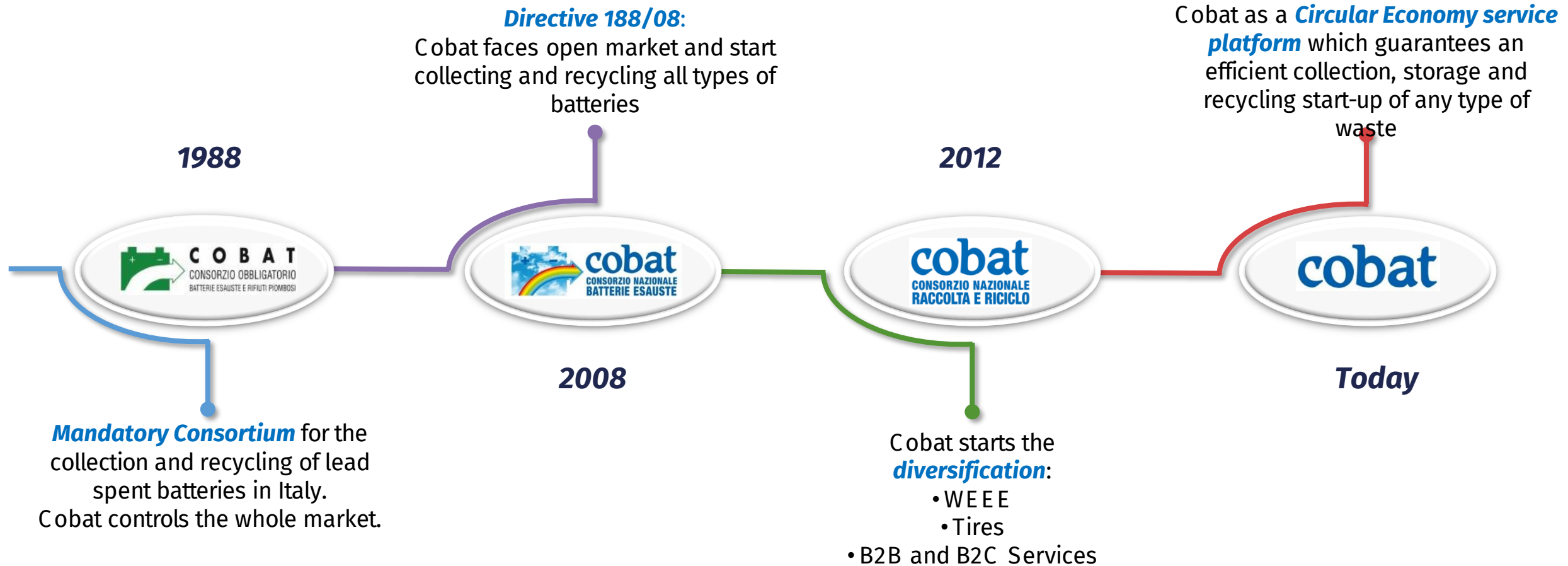




cobat

SPA Società Benefit

La gestione delle batterie a fine vita: soluzioni e nuove opportunità
Luigi De Rocchi



Cobat provides not just an efficient end-of-life product management service, but also solutions, advice, and training for companies that see sustainable development as a source of opportunity and want to play a major role in it.



Batteries



Electric and electronic equipment



Tyres

Special waste

Cobat applies its expertise to any type of waste, i.e.:

- **Airbags**
- **Composite material**
- **Flares and explosive material**

Thanks to four dedicated consortia, the Cobat Platform ensures the correct end-of-life management of the products put on the market

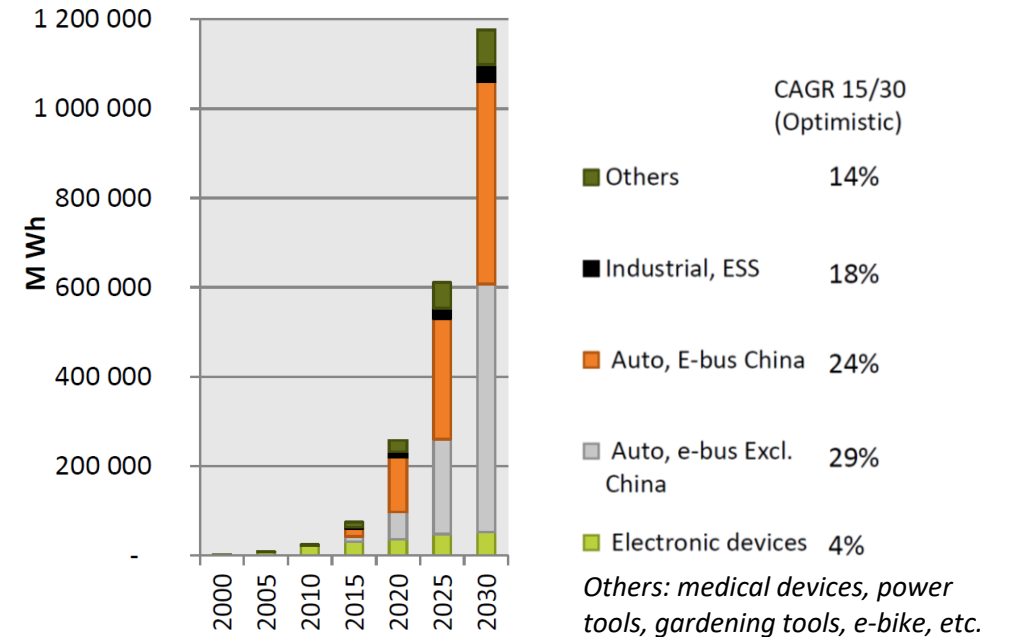


Li-ion battery market

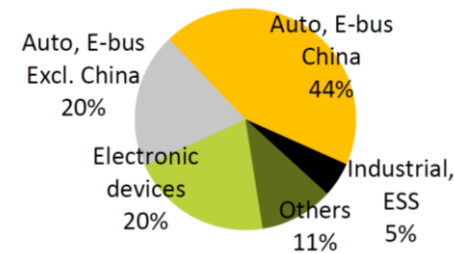
- **Increasing global demand of LIBs**
 - Lithium Ion Batteries: Highest growth and major part of the investments
 - Lead acid batteries: By far the most important market (>70% market share)
- Growing Sales of Electric Vehicles: **A Significant Opportunity for Li-ion Batteries Market**
- From 160 GWh in 2018 to >1,2 TWh in 2030
- Increasing global demand of LIB just for EV in the next 15 years will be required **65-fold the current amount of graphite, Ni and Al** and **100 times for Li, Co and Mn** (Bloomberg, 2017).
- In 2040 **between 70 and 550 Mio kg of EV wasted LIBs** (Natkunarajah et al., 2015) will have to be treated.

Li-ion battery sales: 2000-2030 (MWh Worldwide)

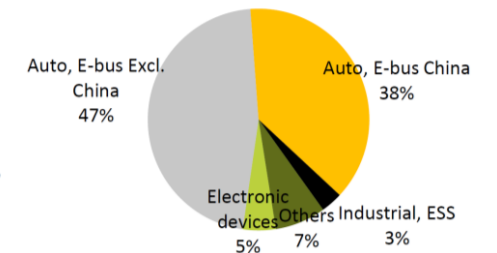
Source: AVICENNE Energy 2019



2018: >160 GWh

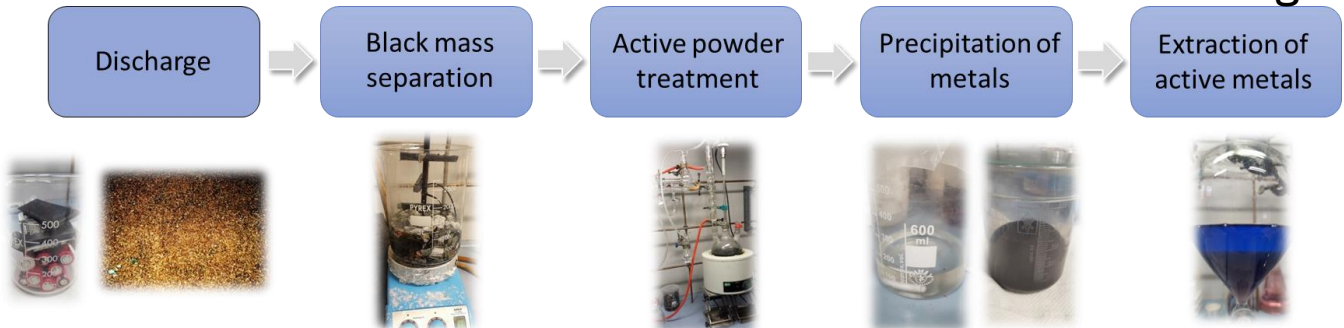


2030: 1200 GWh





Hydrometallurgical process for the treatment of the lithium batteries and recovery of the metals contained therein owned by COBAT and developed by the CNR-ICCOM of Florence (International Publication Number: WO 2019/150403 A1; ITALY Patent n. PCT / IT2019 / 050013, 2019; extension to other European countries is ongoing).



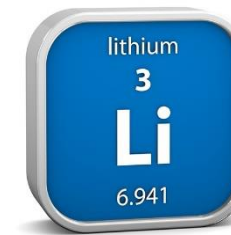
Completely cells discharge by immersion in a conductive solid material

Separating black mass from metal shells and removing active powder from metal collectors and from separating membranes by immersion of black mass in an aqueous solution of a weak organic acid.

Dissolving, by leaching, the metals from active powder by using a detachment acid solution, by adding a stronger acid.

Precipitation of the transition metals contained in the leachate as sulfides and lithium carbonate

Selective extraction of active metals



2020 CRMs vs. 2017 CRMs		
Antimony	Germanium	PGMs
Baryte	Hafnium	Phosphate rock
Beryllium	HREEs	Phosphorus
Bismuth	LREEs	Scandium
Borate	Indium	Silicon metal
Cobalt	Magnesium	Tantalum
Coking Coal	Natural Graphite	Tungsten
Fluorspar	Natural Rubber	Vanadium
Gallium	Niobium	Helium

Legend:
 Black: CRMs in 2020 and 2017
 Red: CRMs in 2020, non-CRMs in 2017
 Green: CRMs assessed in 2020 that were not assessed in 2017
 Strike: Non-CRMs in 2020 that were critical in 2017

Italian value-chain for battery second-life «Memorandum Of Understanding»

Research and development activities will be focused on the following topics:

- **storage and safe discharge** of li-ion batteries;
- **battery disassembly** through innovative semi-automated robotic technologies;
- **check of the state of health** of individual cells and/or modules;
- **re-assembly** of reusable cells and/or modules and production of new energy storage packages, for stationary applications;
- **recycling** of non reusable cells and modules.

MOU Presentation at e_mob



ANTEPRIMA E_MOB

Strategie innovative per il *second life* delle batterie automotive: prospettive e opportunità di sviluppo industriale e occupazionale

e_mob
EMOBILITYFESTIVAL

14 OTTOBRE
9.30 - 12.30

Palazzo Lombardia
/Auditorium Testori
Piazza Città di Lombardia, Milano

COMITATO PROMOTORE

Regione Lombardia

Milano
Comune di Milano

CARISDI
CONSORZIO
MILANO
INTEGRAZIONE
LEASING

a2a
ENERGIA

ENEL

CLASS

cobat

enel x

HI

National Associations



MOTUS-E is the first Italian Association to bring together *industries, transport sector, academia, consumer associations* and opinion movements, to favour the transition towards a more sustainable model of mobility.



The States General of the Green Economy are a process of strategic, *open and participatory elaboration* which involves the main stakeholders of the Italian green economy. Promoted by 66 business organizations with the patronage of the European Commission.

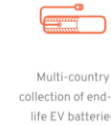


In line with the objectives of promoting a green economy, the Foundation undertakes to stimulate, *support and facilitate the change of the current production and consumption model* to achieve the objectives of the green economy and, with it, of circularity.



It is a project launched by the “Fondazione per lo Sviluppo Sostenibile” and supported by a first group of companies and organizations from different economic sectors, as a tool capable of *promoting the development of the Circular Economy in Italy*.

European Partnerships



Multi-country collection of end-of-life EV batteries



Smart and easy: single point of contact



Compliant and safe transportation and storage



Dismantling, re-use, 2nd life, recycling



By Europe's market leaders in battery collection

Reneos (www.reneos.eu) is the *European network of top national battery collection systems* providing tailor-made solutions for end-of-life EV batteries. Taking advantage of Reneos membership, Cobat can ensure a cross-regional interaction for the provision of end-of-life EV batteries for the RE-LIFE project activities.



WEEElogic

European Solutions for WEEE Compliance

WEEElogic is a *pan-European one stop compliance hub* for take back & recycling of WEEE (Waste of Electrical and Electronic Equipment), Waste batteries and Waste packaging.



Eucobat is the *European association of national collection schemes for batteries*. They assure that all waste batteries are collected and recycled in an ecological sound way, and contribute this way to a better environment.



The WEEE Forum is the *world's largest multi-national centre of competence for the management of WEEE*. It is a not-for-profit association of 40 WEEE producer responsibility organisations across the world.

Thanks for the attention!



www.cobat.it



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