

The smart specialization initiative on advanced materials for batteries

Network of research & testing centers on advanced materials for batteries

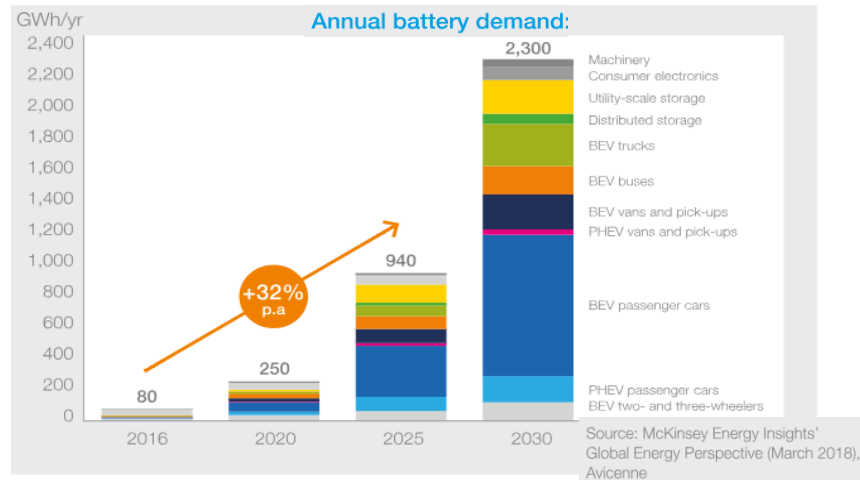
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Batteries are strategic for Europe

Battery demand to multiply tenfold between 2020 and 2030

- ✓ Key for Europe to move fast in the global race to create a competitive and sustainable battery manufacturing industry in Europe
- ✓ From 2025 onwards Europe could capture a **batteries market** of **up to 250 b€/y**, served by at least 10 to 20 Gigafactories (battery cells mass production facilities)²
- ✓ In October 2017, the European Commission launched the '**European Battery Alliance**' cooperation platform with key industrial stakeholders, interested Member States and the European Investment Bank.



Strategic Action Plan issued in May 2018, combining targeted measures at EU level including in raw materials (primary and secondary), research and innovation, financing/investment, standardization/regulatory, trade and skills development, in order to make Europe a global leader in sustainable battery production and use in the context of the circular economy



A long term battery initiatives in Europe

TRL 1

TRL 2

TRL 3

TRL 4

TRL 5

TRL 6

TRL 7

TRL 8

TRL 9

Scope

Long-term research

Short-to-medium term research

Industrialization

Actors

The European Battery Community



European Institute of Innovation & Technology

...



Roadmap

A long-term research roadmap
(FETPROACT-04-2019 CSA)

SET-Plan

Industrial roadmaps



Batteries production value chain

*Interregional Partnership for Smart Specialisation on
ADVANCED MATERIALS FOR BATTERIES FOR ELECTRO-MOBILITY AND STATIONARY ENERGY STORAGE
 launched in October 2018 – 22 regions involved*



The EU has a lot of competences in the battery value chain: fundamental battery research, materials technology, pack assembly, ... and recycling.

The missing link is battery cell production;

Pilot and demonstration projects for improved mass production of battery cells based on next generations Li-ion technologies need support.



Advanced materials for batteries partnership

Our mission

- faster scale up of advanced materials to prototype production (battery cells) by using sustainable and competitive technologies;
- to shorten time needed for validation of new advanced materials, cell manufacturing, new technologies;

Vision

- integration of existing regional capacities and identification of deficit capacities;

Rationale

- Identification of key missing elements and support of regional, national and EU initiatives on batteries.



Advanced materials for batteries partnership

First priorities identified by regions



Sustainable materials production

Improved battery technologies (focus on Gen3b and Gen4a, b)

Sustainable access and recycling process (from raw materials to advanced materials and back to components)

Manufacturing and testing – today's capacities are under critical (validation and deployment of advanced materials)

Collaboration – cross-regional and between academia and industry (industry-driven projects)

Standardisation of components to facilitate recycling process



Draft pilots based on priorities

Innovative cell manufacturing

- Lead by **Bavaria**
- Advanced materials processing
- Cell components, machinery & production lines
- Generation 3b (advanced Li-ion)
- Generation 4 (all solid state batteries with ceramic, polymer or composite electrolyte)

Liquid based batteries

- Lead by **Basque country / Valencia**
- Flow batteries (water and organic solvent based)
- Advanced Pb-acid batteries (heavy duty batteries)

Recycling

- Lead by **Bavaria**
- Existing Li-ion batteries (non classified, different chemistries)

Sustainable raw materials

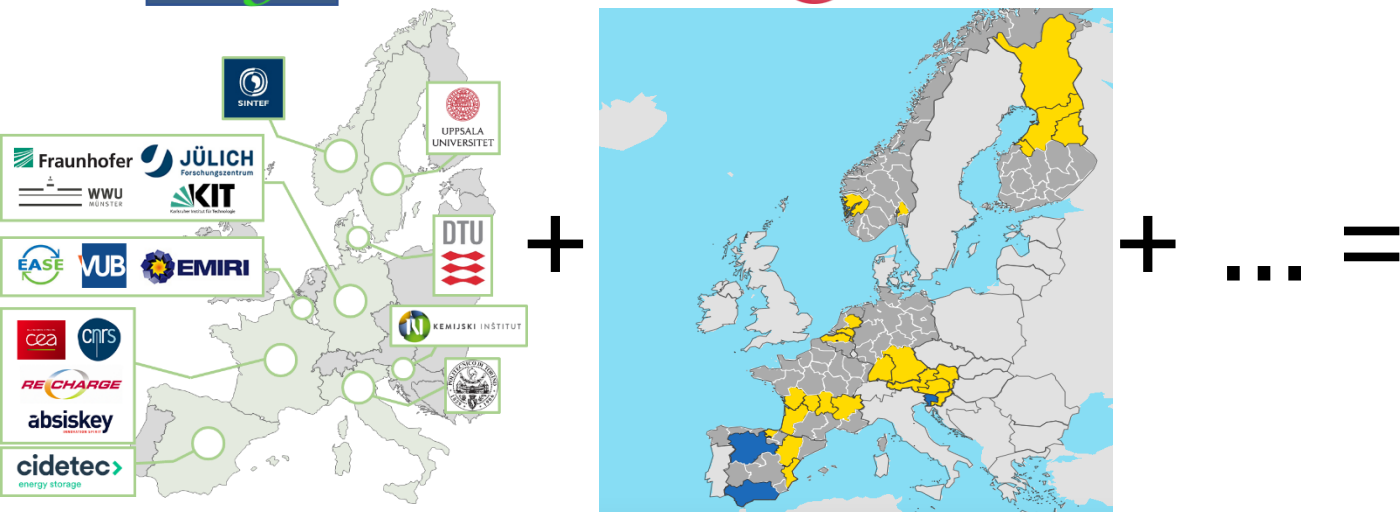
- Lead by **Castilla y León**
- Materials extraction
- Advances materials processing

Network of research & testing centers

- Lead by **Slovenia**
- Validation facilities for new advanced materials
- Acceleration centers for advanced materials deployment
- Benchmarking centers



Conclusions



Thank you for your attention