

RESEARCH & INNOVATION FOR SUSTAINABLE BATTERIES

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Sustainability in its three dimensions (economic, social, environmental) will be a hallmark of EU battery technologies at global scale. **Research and innovation must be able to deliver concrete technical solutions** across the whole value chain to ensure the transformation of the EU into a more sustainable and competitive economy by 2050.

The new **Commission proposal on sustainability requirements for batteries in the EU** will modernise the EU legislative framework in order to fulfil three objectives:

- **strengthen the competitiveness** of the EU internal battery market,
- **increase the resilience** of the EU battery supply chain by closing the materials loop,
- **reduce the environmental and social impact** in all stages of batteries' life cycle.

THE EUROPEAN PARTNERSHIP FOR BATTERIES IN HORIZON EUROPE will, in close cooperation with the European Battery Alliance, help prepare and equip Europe to manufacture and commercialise the next-generation battery technologies by 2030. Due to start in 2021, the partnership will enable the rollout of zero-emission transport and renewable energy storage solutions, contributing to key goals of the European Green Deal.

Sustainable
processing and
secondary raw
materials

End-of-life
management,
reuse and
recycling

End uses and
applications

Manufacturing

Advanced
materials

“ This is a unique opportunity for Europe to establish a new industry and improve the way we live, making clean mobility affordable and renewable energy available at all times. European research and innovation is raising the bar for battery performance, cost efficiency, and circularity, all while being sustainable, responsible, and independent. ”

Mariya Gabriel, EU Commissioner for Innovation, Research, Culture, Education and Youth

Research and
Innovation

SELECTION OF HORIZON 2020 PROJECTS AND NETWORKS CONTRIBUTING TO SUSTAINABILITY REQUIREMENTS FOR BATTERIES IN THE EU



EUROPEAN LITHIUM-ION BATTERY CELL PILOT LINE NETWORK

LiPLANET aims to build a more competitive lithium-ion battery cell-manufacturing ecosystem and increase the production of lithium-ion cells towards industrial scale, by bringing together the most relevant European lithium-ion cell pilot lines and the main stakeholders of the battery sector.



FUTURISTIC BREAKTHROUGH RESEARCH

BATTERY 2030+, a large-scale, multi-disciplinary and cross-sectorial research initiative, will bring together all the necessary skills for developing a future European battery roadmap and initiate the first phase of inventing the sustainable batteries of the future.



GOING VIRTUAL! PROJECTS ON MODELLING AND SIMULATION

Advanced modelling and simulation tools are vital for understanding and developing battery materials and cells. **DEFACTO** and **MODALIS2** aims to reduce development time and cost for batteries used in transportation and electric vehicles. **CompBat** examines the possibility of using solid boosters to enhance battery capacity and **SONAR** will develop a framework for the simulation-based screening of electroactive materials for aqueous and non-aqueous organic redox flow batteries (RFBs).



PROJECTS ON ADVANCED LITHIUM-ION BATTERIES

Lithium-ion batteries are the most popular power sources for future transportation. Extending the driving range and enabling fast charging are key for promoting the adoption of electric vehicles. The projects; **3beLiEVe**, **COBRA**, **Hydra** and **SeNSE** all work on creating the next generation lithium-ion rechargeable batteries.



PROJECTS ON REDOX FLOW BATTERIES (RFBs) FOR CAPTURING THE SUN & WIND

RFBs are a promising technology for renewable energy storage. **MELODY** aims to develop a sustainable RFB technology that will significantly reduce electricity storage costs by 2030. **CUBER** will prove that RFB technology can be integrated into Smart Cities and residential self-consumption market segments. **HIGREEW** aims to design an efficient low-cost organic RFB system. **BALIHT** is designing new redox organic flow batteries that can work at temperatures of up to 80 °C.



PROJECTS ON PROMISING SOLID-STATE BATTERIES

ASTRABAT intends to find optimal solid-state cell materials, components and architecture that can be mass-produced to meet electric vehicle market demands. **SOLIDIFY** proposes a unique manufacturing process and solid-electrolyte material to fabricate lithium-metal solid-state batteries. **SAFELiMOVE** aims to develop a new lithium-metal battery cell technology to extend electric vehicle range, helping the transport sector to reduce greenhouse gas emissions. **SUBLIME** aims to significantly increase the use of electric vehicles by taking on the technical challenges of consumer needs.

For more information visit
https://ec.europa.eu/info/research-and-innovation/research-area/energy-research-and-innovation_en