Candidate European Partnership under Horizon Europe

BATTERIES | Towards a competitive European industrial battery value chain for stationary applications and e-mobility
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Towards a competitive European industrial battery value chain for stationary and mobile applications

Global goals

• To put Europe on a firm path towards leadership in this key industry, supporting jobs and growth in a circular economy

• To enable the decarbonisation of the European energy system

• Solutions for clean mobility (electrification of the transport sector)

• Solutions for flexibility of the power sector (storage of intermittent renewable energy sources)

• to ensure an improved environment and quality of life for EU citizens
The Batteries Partnership’s vision

To establish by 2030 in Europe the best in the world innovation ecosystem to boost a competitive, sustainable and circular European battery value chain and to drive the transformation towards a carbon-neutral society

- Only a partnership, i.e. a long-lasting and coordinated effort involving industry, research and the public sector, can live up to the challenge and bring predictability to the European battery value chain stakeholders.

By pooling Europe’s resources and knowledge, partnerships have demonstrated their efficiency for accelerating the development, industrialisation and deployment of strategic technologies that underpin growth and jobs in key sectors of the European economy
Towards a competitive European industrial battery value chain for stationary applications and e-mobility

<table>
<thead>
<tr>
<th>General objectives</th>
<th>Specific objectives</th>
<th>Technical objectives (2030 targets vs 2019 values, in line with SET Plan)</th>
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<tbody>
<tr>
<td>1. Contribute to make Europe the 1st climate-neutral continent by 2050</td>
<td>1. Provide the European Industry with differentiating technologies, supporting the development of an innovative, competitive and sustainable battery manufacturing industry in Europe</td>
<td>1. Increase energy density +60%</td>
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<td>2. Enable the European leadership in the battery industry across the value chain, creating economic growth and jobs in a circular economy</td>
<td>2. Develop sustainable and affordable battery solutions for clean mobility</td>
<td>2. Increase power density and charging rate (charging time &lt; 20’)</td>
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<td>3. Contribute to achieve a zero-pollution ambition for a toxic-free environment</td>
<td>3. Enable a cost-effective integration of renewable energy sources in the power grid</td>
<td>3. Improve cycle lifetime &gt; 2x</td>
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5. Ensure battery safety(1) automotive 4 / aviation and waterborne 2

6. Implement BAT in manufacturing and recycling operations (plants 4.0 or 5.0)

7. Improve sustainability and circularity

(1) EUCAR cell safety level
A clear intervention logic, identifying the key challenges to be tackled by the detailed targets for each specific objective

Provide the European Industry with differentiating technologies

Battery solutions for clean mobility

Cost-effective integration of renewable electricity

<table>
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<tr>
<th>Specific Objectives</th>
<th>Faced challenges</th>
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<tr>
<td>Competitiveness</td>
<td>Raw material processing technologies</td>
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<td>Advanced materials</td>
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<td></td>
<td>Cell design</td>
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<td>Manufacturing processes</td>
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<td>Recycling technologies</td>
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<td>Sustainability</td>
<td>Application specific, smart and safe battery solutions for all transport modes (road, air, water, rail)</td>
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<td>Industrial Upscaling</td>
<td>Flexible, scalable, smart and affordable solutions for stationary applications</td>
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<td>Uptake (market, regulatory, policy)</td>
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Scope of the Partnership

• While R&I has to be conducted on all parts of the value chain, advanced materials development and battery cell design & manufacturing are seen as the key activities for which a well-structured coordination will allow Europe to develop the most differentiating technologies.

• The Partnership should therefore allocate a substantial part of its resources on these segments of the value chain, along with circular economy aspects:
  ➢ Active material and related components (battery-grade raw materials, cathodes, anodes, binders, electrolytes (particularly solid-state future electrolytes), the processes and equipment to manufacture them, and novel methods for accelerated discovery and engineering of materials and interfaces)
  ➢ Other materials (separators, casing, mechanical components,..)
  ➢ Cell assembly technologies: the transition to solid state creates the opportunity to invest in new technologies to compete worldwide, but it requires advanced technology for manufacturing: specialised equipment for new manufacturing technologies...
  ➢ Re-use, recycling, secondary raw materials from recycling

• Regarding applications, the Partnership will mainly focus on batteries for decarbonised transport and stationary energy storage.
Interactions and synergistic effects with other Partnership

Applications sectors with a dedicated Partnership
- 2Zero
- Clean Aviation
- Zero-emission waterborne transport
- Transforming Europe’s rail system

The dedicated partnership takes the lead on the downstream R&I segment activities specific to this sector

2Zero Partnership as an example

- 2Zero will be responsible for R&I activities dealing with the integration in the vehicle, charging infrastructures, etc.
- Topics related to battery modules, battery packs and battery management system will be addressed as interface in both partnerships. The responsibility will be allocated to main research focus (i.e. either upstream (material, cell or battery manufacturing innovations) or downstream (vehicle integration, ...)

Monday, 06 July 2020
Interactions and synergistic effects with other Partnerships

Enabling / complementary Partnerships

• Key Digital Technologies
  - Sensors, electronic components, BMS,…

• Made in Europe
  - Cells, Modules, Packs Manufacturing / dismantling

• Carbon Neutral and Circular Industry
  - Materials manufacturing and recycling, Circularity

• Clean Hydrogen
  - Hybrid solutions,…

• Clean Energy Transition
  - Grid flexibility, other Set Plan actions

• EIT InnoEnergy
  - Lab-to_market acceleration
    Technology transfer
    Market uptake
    Skills

• EIT Manufacturing

• EIT Raw materials
The Partnership on Batteries in the European R&I landscape

**PARTNERSHIP ON BATTERIES**

- Identify the high priority topics to be implemented in its R&I work programmes
- Support and oversee the portfolio of funded projects
- Reinforce networks between industry, RTOs, universities and other organisations
- Attract engagement of more stakeholders in collaborative R&I activities and demo-projects
- Encourage a robust lab-to-market process and innovation and technology transfer

**Other Partnerships**
- Battery downstream & complementary WP under Horizon Europe

**Coordination / Collaborations**
- (facilitated by ETIP Batteries Europe)

**Inputs to define R&I calls (SRIA / Technology Roadmaps ...)**

**Feedback for SRIA / roadmaps update**

**Other R&I activities**
- (under Horizon Europe, IPCEIs, S3 interregional Partnership, national and bilateral instruments,...)

**Horizon Europe Pillar 3**
- and other market uptake instruments

**INNOVATION FUND**

**Skills development**

**Other strategic bodies...**

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The European R&I landscape for batteries

Other legislative & funding initiatives at EU and national level
EU = Strategic Action Plan on Batteries

Supportive framework

Implementation of a joint R&I programme

Capture a new market worth 250B€/year

European battery cell manufacturing -> Gigafactories

Battery Partnership

Battery downstream & complementary partnerships

Other HEu R&I activities

MS led Important Projects of Common European Interest
=> R&I & and first commercial deployment

Interregional partnership on advanced battery materials (ERDF/Smart specialisation)

National and bilateral R&I activities

Long term strategy & Coordination

A network of research institutions and industry
Long-term technology roadmaps
Coordination of European R&I projects implementing the roadmap

BIP

Batteries R&I strategies and short to medium term technology roadmaps
Coordination of battery initiatives
Drive forward SET-Plan action on batteries

European Battery Alliance

Member States, EU-led initiatives,

Other legislative & funding initiatives at EU and national level
EU = Strategic Action Plan on Batteries

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Next steps

June - July

- Embarking event with all stakeholders (26.06.2020)
- Prioritise call topics for 2021-2022 Work Programme

By end September

- Elaboration and submission, in an consultation process open to all the battery stakeholders and Member States, of a draft of the Strategic Research and Innovation Agenda (SRIA) of the Partnership

Q3-4 2020

- Negotiation of the commitments from partners and setting up the private-side association (AISBL), to be ready to sign the contractual arrangement
The Shadow Group

- Gathering **Industry and Research actors** legitimately representing the different segments of the battery value chain

- A **temporary Group** - to "fill the gap" until the private-side AISBL of the Battery partnership is up and running

- Representatives already **well engaged in EU R&I policy initiatives**

- Preference to companies and institutions who will quite certainly **become an active member in the to-be-created Partnership private-side AISBL**

- **Supported** by the core group representative associations
The Batteries Partnership’s vision

To establish by 2030 in Europe the best in the world innovation ecosystem to boost a competitive, sustainable and circular European battery value chain and to drive the transformation towards a carbon-neutral society

The Partnership on batteries will provide key advantages:

• Long-lasting and continuous industrial support and commitment for a common R&I vision in the field of batteries
• R&I action portfolio management, including the establishment of a “feedback loop” between the outputs of the funded R&I projects and the inputs of the R&I programme, together with additional activities supporting market take-up, to maximise the impact of R&I
• Leveraging technical and financial resources from both the public and private sectors
• Aligning R&I policy with industrial, environmental and education & training policies

Why joining?

• To contribute to the writing of the Partnership SRIA for Horizon Europe
• To provide concrete inputs for the WP 2021-22 calls description - September 2020
• To shape and participate to the Association governance via the elected positions

To express your interest to join the to-be-created private-side association,
Please fill in the form available here (non-binding letter of intent)
You will also receive an individual invitation to join the association
Meet the core team

Philippe JACQUES
Managing Director

Claude CHANSON
General Manager

Stefan DEIX
Director

Patrick CLERENS
Secretary General

Strongly supported by

Michael LIPPERT
Chairman of Gov. Board

Edel SHERIDAN
Sub-program leader

Simon PERRAUD
Deputy-coordinator
Thank you!

The Batteries Partnership Core team

with the support of