



# Towards a competitive European industrial battery value chain for stationary applications and e-mobility

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A co-programmed partnership under Horizon Europe



# BATT4EU has been officially launched on June 23, 2021

- *Signing of the Memorandum of Understanding*
- *Publication of the first Horizon Europe Calls for the Batt4EU Partnership*

A co-programmed Partnership under Horizon Europe which gathers – on the public side – the European Commission, and - on the private-side – the Batteries European Partnerships Association (BEPA) bringing together all the European battery stakeholders interested to get involved in Horizon Europe.



*Calls are open to all (to BEPA members and to non-members)*



# The Batt4EU vision

*Towards a competitive European industrial battery value chain for stationary applications and e-mobility*



To establish by 2030 in Europe the best in the world innovation ecosystem for batteries



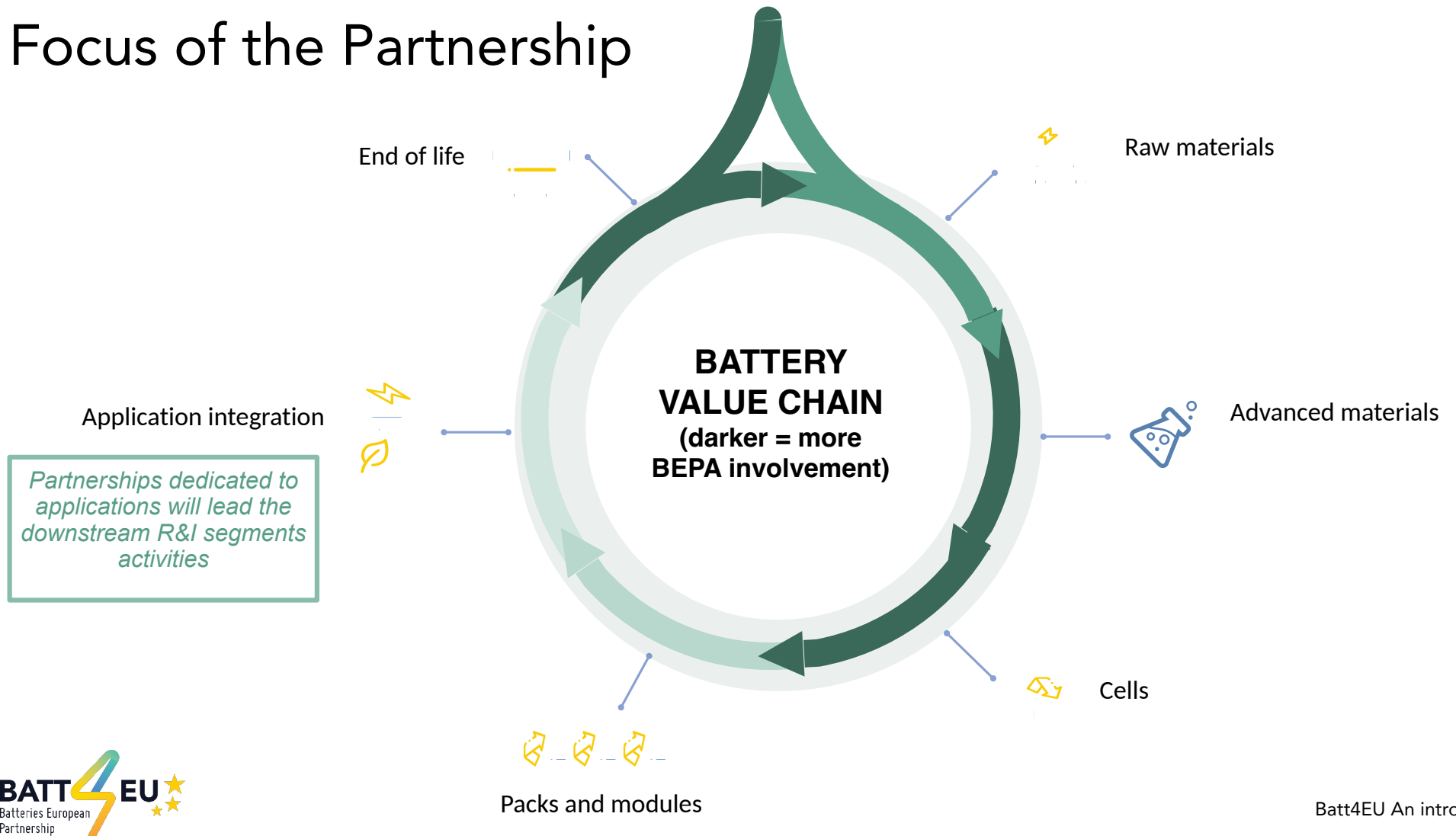
Which will boost a competitive, sustainable and circular European battery value chain



And will drive the transformation towards a carbon-neutral society



# Focus of the Partnership



# Why a partnership?

*Together we are stronger*



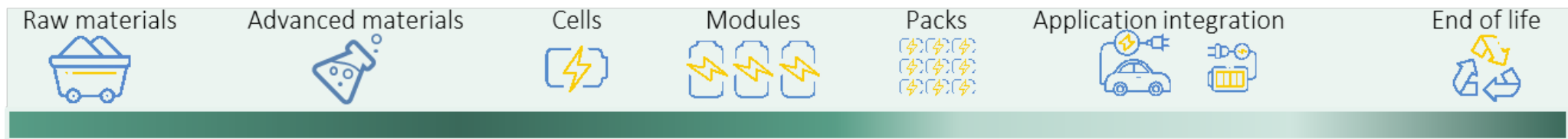
Only a partnership, i.e. a long-lasting and coordinated effort involving industry, research and the public sector, can live up to the challenge and bring predictability to the European battery value chain stakeholders.



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

# Scope of the Strategic R&I Agenda

3 focus areas to cover the segments of the value chain and 2 cross-cutting issues



**CROSS CUTTING ISSUE 1 - Safety**

**CROSS CUTTING ISSUE 2 - Sustainability**

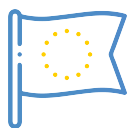
**CROSS CUTTING ISSUE 3 - Coordination**

[www.bepassociation.eu/sria](http://www.bepassociation.eu/sria)



# 2021 Batt4EU calls

## Overview



7 calls: €160 million total budget



61 proposals submitted. Funding requested: € 430 million



22 proposals under consideration, expected granted amount: € 155 million

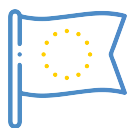


Grant agreements expected to be signed in June 2022

+ joint projects with 2ZERO (road transport partnership) on LCA

# 2022 Batt4EU calls

## Overview



10 calls opening



€133 million total budget



Calls are closing 6 September 2022 (17:00:00 Brussels time)



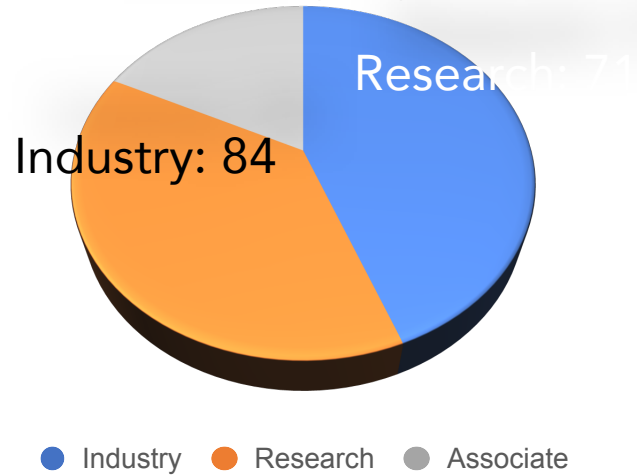
# Why join the Partnership?

*Being involved in BEPA provides the following benefits:*

- Provide recommendations for calls for proposals supported within the specific parts of the Horizon Europe Work Programmes related to batteries
- Get first hand information on the strategic R&I roadmap and prioritise of research topics
- Get access to impactful research findings generated in Europe (in Horizon Europe projects)
- Be part of a strong industrial network with a focus on innovation
- Overview and understanding of the entire value chain and the impacts of innovations in all sectors
- Understand the impact of innovations in cross cutting topics (e.g. digitalization and sustainability)
- Understand the different levels of technology readiness (what's in the pipeline!)
- Strong connections to other European Partnerships which influence the battery industry;
- Understand the requirements and conditions that will be / is created by European regulations.

# BEPA Members - Overview

## Member Category



Total BEPA members: 189

# Best way to influence? Join the BEPA Technical Working Groups

*Five Working Groups. One for each area and each cross-cutting topic*

**Working Group 1**  
Raw Materials and  
Recycling

**Working Group 2**  
Advanced Materials  
and Manufacturing

**Working Group 3**  
Battery end-uses and  
operations

**Working Group 4**  
Safety & Reliability

**Working Group 5**  
Sustainability

- Identify, prioritise and draft the Battery R&I topics for the calls of the Horizon Europe Work-Programmes
- Update the long-term Strategic Research and Innovation Agenda (SRIA)
- Craft potential joint calls with other European Partnerships
- Deliverables that will follow from the monitoring and reporting framework

# BEPA + Batteries Europe

*Streamlining the European battery community*



Making the European battery community simpler by integrating BEPA's and Batteries Europe's work flows



Establish Integrated Working Groups between BEPA and Batteries Europe in a continued process, establishing the SRIA together



Cross-cutting topics (Innovation Uptake, Standardisation, Education and skills, Sustainability, Safety...) will be re-arranged as task forces led by BE



Timing: fall 2022



# Recommendations for HE Work Programme 2023-24

## Current topics on the table

16 topics balanced over the value chain:

Raw materials	Advanced materials	Cells	Modules	Packs	Application integration	End of life
Raw materials	Advanced materials	Cell design and manufacturing	Battery end-use and operations	2nd life	Recycling	
2	4	3	3	1	1	
Cross-cutting issue: safety: primary focus of 2 topics above						
Cross-cutting issue: sustainability: 2						

# Recommendations for HE Work Programme 2023-24

*2023: Technologies for sustainable, cost-efficient and low carbon footprint downstream processing & production of battery-grade materials*



Expected EU contribution per project: 7m€ (3 projects)



Type of Action: Research and Innovation Action



TRL: 5



In few words: R&I activities with focus on improved battery metal and material production, refining and recovery while minimizing environmental impact of downstream processing



# Recommendations for HE Work Programme 2023-24

## *2023: New processes for upcoming recycling feeds*



Expected EU contribution per project: 5m€ (3 projects)



Type of Action: Research and Innovation Action



TRL: 4



In few words: Focus will be on improved and verified circularity of collected, dismantled and pre-treated battery waste feeds, aiming at the maximal recovery of input elements and components, rather than selected fractions.

# Recommendations for HE Work Programme 2023-24

*2023: Advanced materials and cells development enabling large-scale production of Gen4 solid-state batteries for mobility applications*



Expected EU contribution per project: 24m€ (3 projects)



Type of Action: Innovation Action



TRL: 6



In few words: To demonstrate, at cell level, the scale-up of solid-state advanced materials for anodes, cathodes, electrolytes and separator with performances and costs compatible for mobility markets.

# Recommendations for HE Work Programme 2023-24

## *2023: Advanced digital twins for battery cell production lines*



Expected EU contribution per project: 14m€ (2 projects)



Type of Action: Research and Innovation Action



TRL: 4-5



In few words: Developing digital twins of battery cell manufacturing routes at pilot line level that incorporate appropriate models but also their connection to real manufacturing plants

# Recommendations for HE Work Programme 2023-24

*2023: Battery management system (BMS) and battery system design for stationary energy storage systems (ESS) to improve interoperability and facilitate the integration of 2nd life batteries*



Expected EU contribution per project: 15m€ (2 projects)



Type of Action: Innovation Action



TRL: 6-7



In few words: This topic aims at developing an open and interoperable BMS and suitable battery system design for stationary ESS, enabling a better integration of 2nd life applications for used batteries.

# Recommendations for HE Work Programme 2023-24

## *2023: Hybrid electric energy storage solutions for grid support and charging infrastructure*



Expected EU contribution per project: 12m€ (2 projects)



Type of Action: Innovation Action



TRL: 7



In few words: Demonstration of hybrid energy storage technologies for long duration storage (from hours to days) and provision of multiple grid services with improved technical performances

# Recommendations for HE Work Programme 2023-24

## *2023: New Approaches to Develop Enhanced Safety Materials for Gen 3 Li-Ion Batteries for Mobility Applications*



Expected EU contribution per project: 10m€ (2 projects)



Type of Action: Research and Innovation Action



TRL: 5



In few words: Developing safer materials for high-performing Li-ion cells by targeted modification in main cell components, namely the cathode, anode, separator and electrolyte.



# Recommendations for HE Work Programme 2023-24

*2023: Creating a digital passport to track battery materials, optimize battery performance and life, validate recycling, and promote a new business model based on data sharing*



Expected EU contribution per project: 8m€ (1 project)



Type of Action: Innovation Action



TRL: 7



In few words: A downstream development and implementation of a battery pack Digital Product Passport (DPP) at minimum subset design system level addressing raw materials (at least anode and cathode critical raw materials), cells and modules.

# Recommendations for HE Work Programme 2023-24

## *2024: Advanced sustainable and safe pre-processing technologies for End-of-Life (EoL) battery recycling*



Expected EU contribution per project: 21m€ (3 projects)



Type of Action: Research and Innovation Action



TRL: 7



In few words: To develop and integrate new advanced pre-processing concepts that enable more efficient and safe technologies for recycling EoL LIBs

# Recommendations for HE Work Programme 2023-24

*2024: Sustainable high-throughput production processes for stable lithium metal anodes for next generation batteries*



Expected EU contribution per project: 8m€ (1 project)



Type of Action: Innovation Action



TRL: 6-7



In few words: To create a European production chain for Li metal anode manufacturing, in order to guarantee secure supply chains for the next generation battery producers with a focus on high performance and recyclability for Gen 4b, Gen4c or Gen5 cells.

Batt4EU An introduction

# Recommendations for HE Work Programme 2023-24

## *2024: Post-Li-ion technologies and relevant manufacturing techniques for mobility applications (Generation 5)*



Expected EU contribution per project: 15m€ (3 projects)



Type of Action: Research and Innovation Action



TRL: 4



In few words: Developing Gen. 5 technologies for mobility applications and relevant manufacturing techniques which is affecting performance, safety, costs and also their design to be fully and easily recyclable at the end of their life.

# Recommendations for HE Work Programme 2023-24

## *2024: Non-Li Sustainable Batteries with European Supply Chains for Stationary Storage*



Expected EU contribution per project: 15m€ (2 projects)



Type of Action: Innovation Action



TRL: 6-7



In few words: Advance the development of non-Li battery systems, show their potential to be manufactured at scale.

# Recommendations for HE Work Programme 2023-24

*2024: Size & weight reduction of cell and packaging of batteries system, integrating lightweight and functional materials, innovative thermal management and safe by design approach*



Expected EU contribution per project: 16m€ (2 projects)



Type of Action: Innovation Action



TRL: 6-7



In few words: Delivering a safe by design approach for batteries reduced in size and weight which will deliver the performance necessary for mobile applications.



# Recommendations for HE Work Programme 2023-24

*2024: Accelerated multi-physical and virtual testing for battery aging, reliability and safety evaluation*



Expected EU contribution per project: 15m€ (2 projects)



Type of Action: Innovation Action



TRL: 6



In few words: To reduce the development cost and time to market of battery systems by accelerated multi-physical and virtual testing

# Recommendations for HE Work Programme 2023-24

*2024: Development of technical and business solutions to optimise the circularity, resilience, and sustainability of the European battery value chain*



Expected EU contribution per project: 5m€ (1 projects)



Type of Action: Research and Innovation Action



TRL: 5



In few words: Advancing circular and sustainable design and business practices relating to advanced batteries and associated value chains, by covering at least two of the following: new business models, cross-industry tools, sustainable design.

# BEPA Workplan and Events 2022

## *Events upcoming in 2022*

More events in 2022, returning to physical meetings.

- Joint workshops with application oriented partnerships
- Battery Innovation Days in Brussels

## Events in 2022

(Partly) physical	Fully virtual
2 General Assemblies	10 meetings per Technical Working Group
2 Partnership Board meeting	1 Matchmaking event for 2022 calls
The Battery Innovation Days	6 meetings per Supporting Task Force
3 Joint Workshops with other Partnerships	
1 Workshop on Innovation Uptake	

# How to join ?

## *Who can become a member?*

Membership is open to all legal persons interested to contribute to the activities of the Partnership. With some basic conditions:

- ✓ Only organisations structurally organised to conduct or support significant research and innovation activities within the scope of the European Batteries Partnership
- ✓ Organisations need to share and support the objectives of European Batteries Partnership
- ✓ Commitment to the Strategic Research Agendas and roadmaps of one of the European Technology and Innovation Platforms (ETIPs) supporting the Batteries European Partnership
- ✓ Willing to actively contribute as partner in projects of the European Framework Programme for Research and Innovation

# How to join ?

## Apply online

- To become a member of BEPA, please fill in the application form on the BATT4EU website
- Once the application is submitted online: signed PDF-version must be sent via physical mail + email to BEPA Office ([info@bepassociation.eu](mailto:info@bepassociation.eu))
- Your application will be checked and submitted to BEPA Executive Board for approval. BEPA Office will then inform you when your application process will be finalised.

The screenshot shows the 'APPLICATION FOR MEMBERSHIP OF THE BATTERIES EUROPEAN PARTNERSHIP ASSOCIATION' form. At the top, there is a checkbox for 'Save a backup on your local computer (disable if you are using a public/shared computer)'. Below the title, a yellow box states 'Fields marked with \* are mandatory.' A disclaimer box follows, stating that the European Commission is not responsible for the content of questionnaires created using the EUSurvey service. The main heading of the form is 'APPLICATION FOR MEMBERSHIP OF BEPA AISBL - THE BATTERIES EUROPEAN PARTNERSHIP ASSOCIATION'. Below this, it says 'In order to proceed with your membership application, please complete and submit this form:'. The section 'YOUR ORGANISATION' contains two mandatory fields: 'Legal name (full name of the organisation)' with a sub-note 'As stated in the legal statute of the registration act/decreed establishing the organisation.' and 'Establishment / Registration country' with a sub-note 'Country of registration or establishment of the organisation'. Below these fields, it says 'Legal organisation's address:'.

# How to join ?

## Membership categories

### ➤ FULL MEMBERS (entitled to vote)

#### ➤ INDUSTRY

- Battery raw materials industry
- Battery advanced materials industry
- Battery manufacturing industry
- Battery manufacturing supply industry
- Automotive industry (including automotive supply industry)
- Other applications industries (stationary storage, Maritime, Aviation, Rail, industrial applications...)
- Battery recycling industry

#### ➤ RESEARCH

- Research Institutes and Universities --- non-profit-making

### ➤ ASSOCIATE MEMBERS (not entitled to vote)



Industry members (inc. for profit research)	Annual fee
<b>Large</b> (headcount>5000 and turnover >1,5bn€)	9.500,00 €
<b>Intermediate</b> (headcount 250-4999 or turnover 50ml-1,5bn €)	7.500,00 €
<b>Medium*</b> (headcount 50-249 or turnover 10-50ml €)	5.000,00 €
*SMEs (headcount 50-249 and turnover <50ml €)	2.500,00 €
<b>Small</b> (headcount<50 and turnover <10ml €)	1.500,00 €
Research members (non profit)	
<b>Large</b> (headcount>250)	4.000,00 €
<b>Small</b> (headcount<250)	2.500,00 €
Associate members (membership without voting right)	
<b>Associations, NGOs and other stakeholders</b>	1.000,00 €



# Thank you

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