White Paper on improving the Impact and Sustainability of Battery Clusters in Europe

Working DRAFT

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Contributors: Representatives from participating clusters and institutions at the Graz workshop (December 2025)

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1. Executive summary

Europe's battery research and innovation landscape has seen a significant expansion of project-level clusters across successive funding cycles. Clustering has proven its value – by enabling joint dissemination, cross-project learning, and strategic engagement with key institutional actors. Yet its current practice remains largely project-bound: clusters dissolve when funding ends, valuable networks are lost, and each new generation of projects rebuilds similar structures from scratch. This cycle of fragmentation and duplication limits the long-term impact of significant public investment in battery research and innovation.

To address this challenge, the Battery Heroes and COLLABAT clusters jointly organised a cross-cluster workshop in Graz in December 2025, bringing together representatives from five battery-related and one automotive cluster alongside key European stakeholders, including the European Commission, BEPA, LiPLANET, and Battery 2030+. The workshop confirmed a shared diagnosis and a broad commitment for change, resulting in five cross-cutting recommendations: initiate clustering early and build on existing structures; ensure continuity beyond project duration; strengthen inter-cluster cooperation; establish structured knowledge transfer mechanisms; and clarify roles and expectations across the ecosystem.

This white paper translates those recommendations into concrete proposals for action, addressed to both cluster practitioners and the key European actors best placed to enable systemic change. It calls for designated institutional focal points, a cross-institutional follow-up task force, and measurable indicators of progress - so that the momentum generated in Graz translates into lasting improvement in how Europe organises, sustains, and maximises the impact of its battery research clusters.

2. Background

On 1 December 2025, the Battery Heroes and COLLABAT clusters jointly organised a cross-cluster workshop in Graz, bringing together representatives from five battery-related and one automotive cluster, alongside key European stakeholders including the European Commission, BEPA, LiPLANET, and Battery 2030+.

The workshop created a dedicated space for exchange between ongoing Horizon Europe projects involved in project clusters and institutional actors working across the European battery ecosystem.

Clustering approaches have already been applied in earlier Framework Programmes (e.g. FP7) but have significantly expanded and become more structured under Horizon 2020 and Horizon Europe. New project consortia frequently establish their own cluster structures, often with similar objectives, formats, and activities. At the same time, existing clusters - despite having built valuable networks, trust, and knowledge - often dissolve once project funding ends. This dynamic leads to fragmentation, duplication of efforts, and the repeated rebuilding of collaboration structures, rather than enabling continuity and long-term impact.

Against this backdrop, the workshop aimed to bring together a critical mass of cluster initiatives and European stakeholders to reflect collectively on the role, added value, and future of clustering in Europe's battery landscape. The discussion focused on how to move beyond short-term, project-bound collaboration towards more sustainable, coordinated, and impactful approaches.

This white paper builds on the insights generated during the workshop.

Its ambition is to capture shared experiences, identify structural challenges, and formulate practical recommendations for strengthening the impact and sustainability of battery clusters. It addresses both present and future cluster participants and representatives of the mentioned institutions and initiatives, with the goal of contributing to a more coherent, connected, and resilient battery innovation ecosystem in Europe.

3. Definition of battery clusters

For the purpose of this white paper, “battery clusters” refer primarily to collaborative groupings of projects funded under the European Union’s Framework Programmes, in particular Horizon Europe and its predecessors (e.g. Horizon 2020, FP7, etc.).

These clusters are typically formed by consortia working on related topics - such as battery materials, cell manufacturing, recycling, or system integration - with the aim of enhancing collaboration, aligning activities, and increasing the overall impact of publicly funded research and innovation.

In practice, clustering often extends beyond project consortia and may include related European initiatives, coordination and support actions (CSAs), platforms, or networks, where these contribute to knowledge exchange and ecosystem alignment (i.e. the Battery Heroes cluster includes a permanent representative of LiPLANET).

This white paper focuses specifically on project-based clustering within the context of EU-funded research and innovation. It does not address industrial or regional clusters composed of companies, research organisations, or policy actors operating outside this framework, as these follow different structures, objectives, and governance models.

Positioned at the interface between publicly funded projects and European strategic frameworks, battery clusters play a critical role in supporting the implementation of key policy objectives. These include the Batteries European Partnership (BATT4EU) Strategic Research and Innovation Agenda (SRIA), the European Green Deal, and broader EU objectives on climate neutrality, circular economy, and strategic autonomy.

By aligning project outcomes, facilitating knowledge transfer, and fostering coordinated action across initiatives, these clusters have the potential to significantly strengthen Europe’s ability to translate research investments into tangible impact and long-term value for its battery ecosystem.

4. Why clustering?

Clustering of EU-funded battery projects has emerged as a practical and increasingly strategic approach to enhance collaboration and maximise impact during the project lifetime. The benefits of clustering can be observed at different levels of maturity:

1. Joint dissemination and communication
    - Coordinated outreach activities (events, social media, joint materials)
    - Stronger visibility of projects within the European battery ecosystem
    - More efficient use of resources for communication and stakeholder engagement
    - Joint Horizon Results Booster applications
2. Exchange of experience and best practices
    - Informal and structured knowledge exchange between projects
    - Creation of "working groups" or "sub-clusters" (e.g. on sustainability, manufacturing, digital twins, or other specific topics)
    - Sharing of methodologies, challenges, and lessons learned without compromising confidentiality
3. Cross-project learning and alignment
    - Identification of synergies and complementarities between projects
    - Avoidance of duplication of efforts
    - Better alignment of activities and results across projects addressing similar topics
4. Increased impact and visibility of results
    - Amplification of project outcomes through joint actions
    - Improved access to stakeholders, including industry and policy actors
    - Greater potential for uptake and exploitation of results
5. Strategic positioning and policy contribution
    - Joint engagement with European-level actors (e.g. European Commission, BEPA, Battery 2030+)
    - Contribution to discussions on research priorities, policies, and future funding directions
    - Development of joint positions and recommendations (e.g. white papers, policy inputs)
6. Strengthening the European battery ecosystem
    - Building trust and long-term relationships across projects and organisations
    - Creating bridges between research, innovation, and policy
    - Supporting a more coordinated and coherent European approach in a globally competitive field

5. Challenges and structural gaps in current clustering practice

The discussions during the workshop revealed a set of recurring structural challenges that limit the impact, efficiency and long-term sustainability of battery clusters across Europe. While clustering has become an established practice within Horizon Europe projects, its current implementation remains largely project-bound and fragmented.

- A central challenge is the systematic lack of continuity beyond project lifetime. Clusters often require significant time to build trust, establish working structures, and generate meaningful exchange. However, once project funding ends, these structures frequently dissolve, leading to a loss of accumulated knowledge, networks, and collaboration momentum. As a result, each new generation of projects is forced to rebuild similar structures from scratch, creating inefficiencies and reducing overall impact.
- Closely linked to this is the misalignment between project duration and clustering maturity. With typical project timelines of three to four years, clustering activities often reach full effectiveness only towards the later stages of a project, leaving limited time to translate collaboration into tangible outcomes or long-term value.
- Another key challenge is the increasing fragmentation and duplication of clustering efforts across successive funding cycles. New clusters are frequently created around a new generation of projects, often addressing similar topics without systematically building on existing structures or experiences. This leads to parallel activities, inefficient use of resources, and missed opportunities for synergy.
- The workshop also highlighted the lack of structured knowledge transfer between clusters and across funding cycles. While valuable experience and results are generated within clusters, there are currently few mechanisms to ensure their systematic handover to subsequent projects or initiatives. Knowledge exchange often depends on individual actors rather than institutionalised processes, making it inconsistent and unsustainable.
- Finally, there is limited alignment between clusters and key institutional frameworks. Interaction with European-level actors such as the European Commission, BEPA, Battery 2030+, and LiPLANET varies significantly, and roles and expectations are not always clearly defined. This limits the ability of clusters to contribute effectively to broader strategic objectives and reduces the overall coherence of the European battery ecosystem.

Taken together, these challenges reflect structural characteristics of the current clustering approach rather than isolated shortcomings, and therefore require coordinated, systemic solutions.

6. Role of key European actors in supporting battery clusters

6.1 European Commission

- The European Commission plays a central role as funder, framework setter, and neutral coordinator of EU research and innovation activities. The workshop discussions highlighted the need to move beyond a purely project-based approach towards a more ecosystem-oriented perspective.
- Current funding structures, while effective in supporting individual projects, often contribute to fragmentation by limiting continuity. There is a clear need for mechanisms that enable successful clusters to continue beyond project duration, such as umbrella actions or dedicated instruments supporting long-term collaboration.
- The Commission is also uniquely positioned to facilitate European-level coordination, encouraging collaboration across Member States and promoting a shared strategic vision. A balanced approach combining minimum requirements for clustering with flexibility in implementation was identified as a promising way forward.

6.2 BEPA

- BEPA plays a key role in aligning research and innovation activities with European industrial and strategic priorities. From the cluster perspective, BEPA is seen as an important anchor for alignment and integration, particularly through its Strategic Research and Innovation Agenda (SRIA) and working groups.
- The discussions highlighted the need to strengthen the connection between clusters and BEPA structures. While dissemination and communication activities are often the starting point for clustering, there is significant potential to go further by integrating knowledge management, education, and exploitation strategies more systematically.
- Clusters can act as multipliers of impact, increasing visibility, facilitating uptake of results, and strengthening collaboration across projects. A more structured and continuous exchange between clusters and BEPA could further enhance this role.

6.3 LiPLANET

- LiPLANET is well positioned to provide operational and structural support to battery clusters. Its cross-cutting role enables it to act as a bridge between projects, clusters, and funding cycles.
- A key contribution identified during the workshop is its potential to support cluster-level coordination and management, including the organisation of joint activities and exchange formats. In addition, LiPLANET could play a central role in facilitating knowledge transfer between clusters, particularly through structured handover mechanisms when projects or clusters come to an end.

- The discussions also highlighted the importance of developing shared infrastructures and tools, such as harmonised data approaches or central repositories, to preserve and exploit knowledge generated across clusters. By providing continuity and structure, LiPLANET can help reduce fragmentation and strengthen long-term impact.

6.4 Battery 2030+

- Battery 2030+ provides a long-term strategic framework for battery research and innovation in Europe, including roadmapping, standardisation, and coordination activities.
- From the workshop discussions, Battery 2030+ is seen as a key actor in ensuring strategic alignment and continuity across projects and clusters. However, challenges remain in linking long-term research agendas with the shorter timelines of individual projects, particularly in relation to Technology Readiness Level (TRL) progression.
- There is a strong need to further integrate clusters into the Battery 2030+ ecosystem, enabling better alignment of research activities, fostering community growth, and ensuring that knowledge generated within projects contributes to broader, long-term objectives.

7. Recommendations for strengthening impact and sustainability of battery clusters

7.1 Cross-cutting recommendations

Addressing the identified challenges requires a shift from project-based clustering towards a more systemic, ecosystem-oriented approach. The following recommendations aim to strengthen both the effectiveness and the long-term sustainability of clustering activities:

- Start clustering early and build on existing structures

  Clustering activities should be initiated at an early stage of projects and, where possible, aligned with or integrated into existing clusters rather than creating new, parallel structures. This can be actively supported by CINEA Project Officers, who are well-placed to identify and suggest fitting existing clusters to newly funded projects. Establishing this as standard practice across the battery R&I ecosystem would significantly reduce fragmentation and accelerate community building.

- Ensure continuity beyond project duration

  Dedicated mechanisms are needed to maintain successful cluster structures, networks, and outputs beyond the lifetime of individual projects. This may include dedicated funding instruments, umbrella coordination actions or the integration of clusters into longer-term initiatives.

- Strengthen inter-cluster cooperation

  Collaboration should not operate in isolation. Structural exchange between clusters should be encouraged to foster exchange, avoid duplication and leverage complementarities across different initiatives and thematic areas.

- Establish structured knowledge transfer mechanisms

  Systematic approaches are needed to capture, preserve, and transfer knowledge between clusters and across funding cycles. This could include handover documents, shared repositories, cluster exit reports or standardised knowledge management frameworks.

- Clarify roles and expectations across the ecosystem

  A clearer definition of the roles of clusters and their interaction with institutional actors would improve coordination and effectiveness. A shared understanding of responsibilities would improve coordination, reduce overlaps, and enhance strategic impact.

7.2 Recommendations for Key European Actors

7.2.1 European Commission

- Develop funding instruments that support long-term clustering and ecosystem continuity, beyond individual project lifetimes
- Introduce minimum requirements for clustering in calls, combined with flexible implementation
- Promote European-level coordination and knowledge sharing across projects and clusters
- Explore the creation of umbrella or backbone structures to provide continuity across funding cycles, for example through dedicated Coordination and Support Actions (CSAs) with sufficient scope and budget to enable long-term cluster coordination and knowledge management

7.2.2 BEPA

- Strengthen alignment between clusters and SRIA priorities and working groups
- Facilitate regular exchange between clusters and BEPA structures
- Support clusters as multipliers for dissemination, exploitation, and industry engagement
- Encourage integration of clustering outputs into strategic discussions and policy development

7.2.3 LiPLANET

- Provide structural support for cluster coordination and management
- Establish mechanisms for cluster-to-cluster knowledge transfer and handover
- Develop and maintain shared tools, standards, and repositories to support long-term knowledge preservation and exploitation
- Act as a bridge across projects, clusters, and funding cycles, ensuring continuity and reducing fragmentation

7.2.4 Battery 2030+

- Enhance integration of clusters into long-term research roadmaps and strategic agendas
- Support continuity of knowledge and community development across projects and funding cycles, particularly across different TRL levels
- Strengthen alignment between project-level activities and strategic priorities

8. Outlook and next steps

This white paper is intended as a starting point, not an endpoint. Its publication should be accompanied by concrete follow-up action to translate recommendations into practice. The following steps are proposed:

1. Identify institutional focal points. Within each of the four key institutional actors, a named contact point or responsible function should be assigned to engage with the recommendations of this paper. For the European Commission, this could involve the relevant Programme Officers or DG RTD unit leads overseeing battery-related calls. For BEPA, the appropriate working group chairs or secretariat functions. For LiPLANET, this could involve the coordination team or an equivalent function responsible for cross-cluster activities. For Battery 2030+, the leads of the strategic road mapping process. Without designated ownership, systemic recommendations risk remaining aspirational.

2. Establish a follow-up mechanism. A small cross-institutional working group or task force, drawing on participants from the Graz workshop, should be established to oversee implementation. This group should meet at defined intervals - an initial check-in within six months of publication is recommended - and report on progress against the recommendations.

3. Phase the recommendations. Not all recommendations require the same timeframe or actors. Short-term actions - such as establishing knowledge handover protocols and aligning active clusters with BEPA working groups - can be pursued within existing project structures. Medium-term actions, such as integrating minimum clustering requirements into upcoming calls, depend on the Commission's programme design cycle. Long-term structural changes, such as dedicated continuity instruments or cross-cycle cluster repositories, require more sustained institutional commitment.

4. Define indicators of progress. Concrete indicators should be agreed to track whether the recommendations are being implemented. These might include the share of active clusters with documented knowledge handover plans, the number of cross-cluster working groups active beyond project end, or the uptake of clustering requirements in new calls. Even indicative targets would give the follow-up process accountability and direction and allow monitoring of progress over time. .

The Graz workshop demonstrated that the willingness to move beyond project-bound collaboration is real and shared across the ecosystem. This white paper provides the analytical foundation and the direction forward. It will be presented at the Battery 2030+ conference and a dedicated follow-up meeting will be organized soon after (June 2026).

9. Conclusions

Europe's battery research and innovation landscape has seen an expansion of project-level clusters over successive funding cycles. While clustering has proven its value - enabling joint dissemination, cross-project learning, and strategic engagement with institutional actors - its current practice remains largely project-bound. Clusters dissolve when funding ends, valuable networks are lost, and each new generation of projects rebuilds structures from scratch. This cycle of fragmentation and duplication represents a structural inefficiency that limits the long-term impact of significant public investment in battery research.

The December 2025 Graz workshop brought together a critical mass of cluster initiatives and European stakeholders to address this challenge collectively. The discussions confirmed a shared diagnosis and a broad commitment for change.

Annex

1. List of participating clusters and initiatives
2. Participants list
3. Workshop agenda
4. Pictures and video link

1. List of participating clusters and initiatives

- Battery Heroes (organizer)
- COLLABAT (co-organizer)
- EU Ingenious
- TWINBATT
- The BMS Alliance
- E-VOLVE
- European Commission (DG RTD / CINEA)
- BEPA - Batteries European Partnership
- LiPLANET
- Battery 2030+

2. Participants list

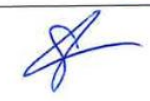
Participant List:

Battery Heroes feat. COLLABAT Workshop on Impact and Sustainability of Battery Clusters

1st December 2025 | Graz, Austria

No.	Last Name	First Name	Affiliation / Organisation	Cluster	Project(s)	Signature
1	Armengaud	Eric	Armengaud Innovate	E-VOLVE	EM-Tech, HighScape, Smartcorners	
2	Blázquez	Alberto	Cidetec		Talissman	
3	Bodoardo	Silvia	Polito	Battery Heroes / Battery2030+	GigaGreen	
4	Bruckmüller	Natalie	AIT	Battery Heroes	BatWoMan	
5	Castellana	Evelina	Lomartov	EU Ingenious	BATSS	
6	Ćustić	Medina	Virtual Vehicle	Battery Heroes	greenSPEED	
7	Duarte	Marco	Innova	COLLABAT	iBattMAN	
8	Faria	Hugo	Innova	COLLABAT	iBattMAN	
9	Fröhlich	Katja	AIT	Battery Heroes	BatWoMan, NoVOC	

Funded by the European Union

No.	Last Name	First Name	Affiliation / Organisation	Cluster	Project(s)	Signature
10	Geyer	Franz	BMW	BEPA		
11	Gracia	Lisa-Lou	CEA	EU Ingenious		
12	Hashemi	Payam	TU Braunschweig	LiPLANET / Battery Heroes		
13	Jadwiszczak	Greg	Iconiq Innovation	COLLABAT	ARISE	
14	Jezdinsky	Tomas	ICA	COLLABAT	Helios	
15	Johansson	Patrik	UU	Battery2030+	~~B2030+~~	
16	Johansson	August	SINTEF	TWINBATT	DigiBatt	
17	Jousseaume	Matthias	Zabala	The BMS Alliance	Energetic	
18	Kniewallner	Jasmin	AVL	TWINBATT	Accelbatt	
19	Leitgeb	Werner	Virtual Vehicle	COLLABAT	LIBERTY	
20	Lourenço	Emanuel	Inegi	Battery Heroes	GigaGreen	

No.	Last Name	First Name	Affiliation / Organisation	Cluster	Project(s)	Signature
21	Melzer-Venturi	Georg	EUTEMA	Battery Heroes	NoVOC	
22	Montero Carrero	Marina	EC DG RTD			
23	Rodrigues	Bruno	Avesta	TWINBATT / EU Ingenious	Fastest, Extended	
24	Schmidt	Nicole	EUTEMA	Battery Heroes	NoVOC	
25	Schwarz	Andreas	AIT	Battery Heroes	BatWoMan	
26	Thaler	Alexander	Virtual Vehicle	Battery Heroes	greenSPEED	
27	Traussnig	Thomas	AVL	TWINBATT	Accelbatt	
28	Ulbel	Elisabeth	Virtual Vehicle	Battery Heroes	greenSPEED	
29	Warren	Jeremy	APPLUS	EU Ingenious		
30	Durão	Rui	EC DG RTD			
31	Folgoerd	Mar	THI / CARISSMA		iBattMan	

3. Workshop agenda

Battery Heroes feat. COLLABAT

Battery Clusters impact & sustainability workshop

December 1, 2025
Lendhafen, Lendkai 17, 8020 Graz

Agenda

TIME	TOPIC	SPEAKER
13:30	***Walkin lunch with cluster booths***	
14:30	**Welcome, introduction & rationale of the workshop**	Nicole Schmidt, Battery Heroes
14:50	**Panel on Battery clusters in the European Battery Landscape - Opportunities and Challenges** Panel incl representatives of • EC: Marina Montero Carrero, DG Research and Innovation, C.2 Clean Energy Transitions • BEPA: Franz Geyer, BMW Group • LiPLANET: Payam Hashemi, TU Braunschweig • Battery 2030+: Silvia Bodoardo, Politecnico di Torino	Tomas Jezdinsky, COLLABAT Panel participants
15:30	***Coffee break*** *including short cluster pitches*	
16:00	**World Café on impact and sustainability of battery clusters** *breakout-groups discussing knowledge transfer, challenges, sustainability and impact of clusters*	Nicole Schmidt, Battery Heroes All
16:55	**Presentation of outcome of group work**	Group rapporteurs
17:10	**Discussions on outcome of group work**	All
17:20	**Next steps and closing**	Moderators
17:30	**End of workshop**	

4. Workshop video link

https://www.youtube.com/watch?v=YIhgipPv67g