Recycling of end-of-life battery packs for domestic raw material supply chains and enhanced circular economy

BATRAW

8.1 Dissemination, communication, and exploitation plan including communication toolbox

Evaristo Garcia - SIG DE RAEE Y PILAS SOCIEDAD LIMITADA (RECYCLIA)

Gonzalo Torralbo- SIG DE RAEE Y PILAS SOCIEDAD LIMITADA (RECYCLIA)

Elvira Serra - ISLE UTILITIES BV

Cristopher Aucher - ACONDICIONAMIENTO TARRASENSE ASSOCIACION (LEITAT)

Daniel Martí - ACONDICIONAMIENTO TARRASENSE ASSOCIACION (LEITAT)

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Project details

PROJECT TITLE	Recycling of end-of-life battery packs for domestic raw material supply chains and enhanced circular economy
PROJECT ACRONYM	BATRAW
GRANT AGREEMENT NUMBER	101058359
INSTRUMENT	IA
CALL	HORIZON-CL4-2021-RESILIENCE-01
STARTING DATE OF THE PROJECT	1st May 2022
PROJECT DURATION	48 months

BATRAW Project

BATRAW main objective is to develop and demonstrate two innovative pilot systems for sustainable recycling and end of life management of EV batteries, domestic batteries, and battery scraps contributing to the generation of secondary streams of strategically important CRMs and battery raw materials (RMs). The first pilot will deliver innovative technologies and processes for dismantling of battery packs achieving recovery of 95% of battery pack components and separating waste streams including cells and modules by semi-automated processes for recycling. BATRAW's second pilot will scale and demonstrate efficient pre-treatment and continuous hydrometallurgical recycling of battery cells and modules including innovative steps for C-graphite, Al and Cu separation from black mass (BM) and Mn extraction, achieving a recovery of the full range of battery RMs (Co, Ni, Mn, Li, C-graphite, Al and Cu) at selectivity of 90-98%. Innovations will be scaled and demonstrated in a pilot system with recycling capacity of 1 ton lithium-ion battery (LIB) packs dismantled per shift (8 hours) and treat 300 kg BM per day. BATRAW outcomes are of strategic importance within the prospects of the exponentially growing EU battery market and reducing EU import dependency of CRMs. The project will further promote the overall sustainability and circularity of battery products and RMs by developing new procedures for battery repair and reuse, enabling faster diagnostics and conversion of EV packs into second life batteries, delivering eco-design guidelines for battery manufacturing, demonstrating blockchain platform for RMs tracking and supply chain transparency (Battery Passport) and delivering guidelines for safe transports and handling of battery waste. The project aims to maximize market uptake and impact through ambitious C&D&E plan including circular business models, innovations workshops, dissemination in EU platforms, policy briefs and other strategies to reach markets and stakeholders.

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BATRAW Consortium

PARTICIPANT NO	PARTICIPANT ORGANISATION NAME	COUNTRY
1	ACONDICIONAMIENTO TARRASENSE ASSOCIACION (LEITAT)	ES
2	INDUMETAL RECYCLING SA	ES
3	CENTRO DE EXPERIMENTACION Y SEGURIDAD VIAL MAPFRE SA	ES
4	BEEPLANET FACTORY SL	ES
5	COMANAI SL	ES
6	SIG DE RAEE Y PILAS SOCIEDAD LIMITADA	ES
7	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	FR
8	ORANO MINING	FR
9	RENAULT SAS	FR
10	MTB MANUFACTURING	FR
11	FRAUNHOFER GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG EV	DE
12	TECHNISCHE UNIVERSITAET BRAUNSCHWEIG	DE
13	ISLE UTILITIES BV	NL
14	MINESPIDER GERMANY GMBH	DE
15	FORD OTOMOTIV SANAYI ANONIM SIRKETI	TR
16	TORRECID SA	ES
17	CENTRE FOR EUROPEAN POLICY STUDIES	BE
18	POSCO	KR

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Document Details

DELIVERABLE TYPE	Other
DELIVERABLE NO	8.1
DELIVERABLE TITLE	Dissemination, communication, and exploitation plan including communication toolbox
NAME OF LEAD PARTNERS FOR THIS DELIVERABLE	RECYCLIA
VERSION	V.1
CONTRACTUAL DELIVERY DATE	31st August 2022
ACTUAL DELIVERY DATE	30th August 2022
DISSEMINATION LEVEL	PUBLIC

ABSTRACT
This deliverable is the summary of the dissemination, communication and exploitation strategy. The aim of the document is to define what kind of message, what target audiences and tools need to be used to increase the visibility of the project outcomes and what strategies need to be followed by the consortium partners to exploit the project results and increase their sustainability over time. At the end of the project, the consortium expects to update the present document with a final version adjusted to the final results and changes that may have occurred during the project development. (8.2 Report on communication and dissemination activities)

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Revision History

The following table describes the main changes done in the document since it was created:

REVISION	DATE	DESCRIPTION	AUTHOR (ORGANIZATION)
V.1	12th July 2022	First Draft	Ana Santamaria (RECYCLIA)
V.2	18th July 2022	Second draft. Internal Communication (4.5)	Adam Dicken (LEITAT)
V.3	22nd July 2022	Third draft. Exploitation Strategy (7)	Elvira Serra (ISLE)
V.4	27th July 2022	Fourth draft	Ricardo Dominguez (RECYCLIA)
V.5	28th July 2022	Fifth draft	Ana Santamaria (RECYCLIA)
V.6	2nd August 2022	Sixth Draft. Coordinator´s overall Review	Daniel Martí (LEITAT)
V.7	16th August 2022	Seventh draft	Volker Krümpel (Minespider)
V.8	25th August 2022	Final Review	Gonzalo Torralbo (RECYCLIA)

Disclaimer

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Table of content

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Acronyms and abbreviations

Al	Aluminium
BM	Black Mass (rich in Li, Ni, Mn, Co)
Co	Cobalt
CRM	Critical Raw Material
Cu	Copper
EIP	European Innovation Partnership
EV	Electric Vehicle
FTO	Freedom To Operate
IPR	Intellectual Property Rights
KPI	Key Performance Indicator
Li	Lithium
LIB	Lithium-ion battery
Mn	Manganese
Ni	Nickel
NMC	Lithium-nickel-manganese cobalt oxide
RM	Raw Material
SoH	State of health
TRL	Technological Readiness Level
TTM	Time To Market
D&C	Dissemination and Communication
OEM	Original Equipment Manufacturer
PR	Public Relations

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1. Executive Summary

BATRAW´s project aims to develop and implement a circular economy approach in order to demonstrate two pilot plants to support the output of secondary streams of strategically key CRMs and battery RMs by sustainable recycling and end of life management of EV batteries, domestic batteries, and battery scraps. BATRAW partners cover the value chain from battery pack collection to repair, second life, waste valorisation, and RM recovery, and advanced material production. The project's core work is focused on the recovery of RMs from battery waste following an urban mining concept.

One pilot will deliver technologies and procedures for dismantling of battery packs achieving recovery of 95% of battery pack components and separating waste streams including cells and modules by innovative semi-automated processes for recycling.

The other BATRAW's pilot will scale and demonstrate efficient pre-treatment and continuous hydrometallurgical recycling of battery cells and modules including innovative steps for C-graphite, Al and Cu separation from BM and Mn extraction, achieving a recovery of the full range of battery RMs (Co, Ni, Mn, Li, C-graphite, Al and Cu) at selectivity of 90-98%.

New outcomes will be scaled and demonstrated in a pilot system with recycling capacity of 1 ton lithium-ion battery (LIB) packs dismantled per shift (8 hours) and treat 300 kg BM per day.

Pilots will be strategically located in the south of France and north of Spain at 587 km distance enabling business synergies between the two pilot-hosting companies.

BATRAW outcomes are of strategic importance within the prospects of the exponentially growing EU battery market and reducing EU import dependency of CRMs. The project will further promote the overall sustainability and circularity of battery products and RMs by developing new procedures for battery repair and reuse, enabling faster diagnostics and conversion of EV packs into second life batteries, delivering eco-design guidelines for battery manufacturing, demonstrating blockchain platform for RMs tracking and supply chain transparency (Battery Passport) and delivering guidelines for safe transports and handling of battery waste.

The project aims to maximize market uptake and impact through ambitious C&D&E plan including circular business models, innovations workshops, dissemination in EU platforms, policy briefs and other strategies to reach markets and stakeholders.

1.1 Document´s Scope

This document aims to present BATRAW's dissemination and communication strategy, as well as the exploitation strategy that will be applied throughout the project.

This document has a double objective; on the one hand, to fulfil BATRAW's objectives in terms of Dissemination and Communication among target audiences and stakeholders.

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On the other hand, to ensure the Sustainability and Exploitation of the project results that will generate a positive impact on the consortium partners, stakeholders and society, both during and after the project.

1.2 Document´s main sections

Accordingly, the paper is divided into two parts:

A. Dissemination and Communication (D&C): The first part is the point-by-point explanation of the dissemination and communication strategy, including the objectives, methodology of activities, tools, events, etc. that will be used to create a community of interest around the project and promote sustainable recycling and end-of-life management of batteries and battery waste, contributing to the generation of strategic product streams.

In this sense, the D&C strategy will aim to raise awareness of BATRAW results at local/national/European and international level through specific activities and tools tailored to each specific target audience. D&C activities will be supported by the whole consortium, with each partner playing a key role in the implementation of the strategy. Each partner will be considered as an ambassador for the dissemination and communication of the BATRAW project.

B. Exploitation: This BATRAW Initial Dissemination and Exploitation Plan has been prepared to facilitate the next steps in the management of the exploitation after the first semester of the project. It defines the necessary strategy that will lead to a successful market introduction of the technologies and knowledge developed in the project.

1.3 Related Documents

D8.1 will be updated every time it is needed to include changes and evolutions that might be emerged from the project implementation.

On Month 48, as an evolution of the D8.1, there will be a Deliverable (D8.2), with the title of “Report on communication and dissemination activities”, with a preliminary version on Month 24. On Month 48, there will be another Deliverable, (D8.3) Exploitation roadmap and Business Strategy Plan.

Correlation between WP8 and the rest of WPs is necessary to ensure an effective implementation of the D&C strategy and activities. In this sense, Recyclia will work closely with the partners in order to gather the main achievements and define the correct messages and channels to be used. For D&C purposes, Recyclia will ask to partner, on a regular basis, to send information and details about:

- Outstanding achievements or results.
- Participation in events related to the project.
- Articles and peer reviewed or journals.
- Any relevant fact worth taking into consideration.

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2. Dissemination and Communication Strategy

2.1 Objective

The WP8 Impact, Dissemination and Exploitation, the D&C strategy and activities aim at:

- Generate a community of interest around BATRAW´s goals.
- Spread the project achievements facilitated by the funding of the EU.
- Raise public awareness and ensure maximum visibility of the project key facts, objectives, activities, and findings.
- Increasing project awareness and acknowledgement at local/national/European and international level.
- Promote the impact and sustainability of R&D results.
- Announce and promote BATRAW´s events, contributing to upgrade its attendance and engagement potential.

Recyclia is the partner in charge of creating and distributing D&C contents being supported by the rest of partners.

BATRAW project will develop and demonstrate two innovative pilot systems for sustainable recycling and end of life management of EV batteries, domestic batteries, and battery scraps contributing to the generation of secondary streams of strategically important CRMs and battery RMs.

The first pilot will deliver innovative technologies and processes for dismantling of battery packs achieving recovery of 95% of battery pack components and separating waste streams including cells and modules by semi-automated processes for recycling.

Taking into account the objective of the project, a multi-channel and multi-target approach has been structured to provide the D&C strategy with a combination of different tools for multiple audiences. This approach will enable the establishment of content and activities specifically designed for each category of stakeholders, while ensuring the effectiveness of BATRAW's D&C strategy and the achievement of its objectives.

Finally, the objectives will be reached by:

- Demonstrate the benefits of BATRAW and its impact on the European circular economy and battery recycling industry making it more efficient and eco-friendlier.
- Demonstrate the benefit of BATRAW and its impact on society, increasing the uptake of circular economy and sustainable recycling.
- Increasing the impact and sustainability of results gathered and promoting R&D activities linked to the project.
- As no results will be available at the beginning of the project, during the first months the strategy focus will be put on raising awareness towards the project among the different stakeholders to create a wide base of audiences, therefore in the future, as soon as the results are available, D&C activities will have a much deeper impact.

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2.2 Dissemination and communication target

The D&C activities target at different audiences which have different levels of interest and power over the project. The work plan for D&C of BATRAW´s results is designed to include all the stakeholders, taking into account that the audience BATRAW aims at reaching goes from the most technical and experienced community working on the ecosystem, to the general public.

The audiences have been primarily segmented in internal and external:

- **Internal**: members of the consortium. Presentation of how the internal communication will flow within the consortium regarding the WP8 tasks, what each partner will be expected to do throughout the project's lifecycle, the way to report on dissemination activities, etc.
- **External**: BATRAW consortium has segmented the audience according to pursued objectives. Regarding the project objectives, the audience segmentation has turned into the one shown in Table 1.

2.2.1. Identify Stakeholders and audiences

Finding the target audience seeks to identify which stakeholders need to be engaged, to achieve the highest impact for the project in a strategic and effective manner. By assessing this information, the consortium partners get a clearer vision on how the interests of those stakeholders should be addressed in the project D&C plan and relevant activities.

Identifying the target audience is essential to establish the most effective and efficient D&C strategy. The following stakeholders and audiences' groups have been detected:

1. Policy makers, national and international from industry, energy and environment.
2. European and global battery manufactures as well as relevant suppliers of battery components with significant presence or interest in the battery recycling.
3. European and global battery and battery components recyclers as well as off-takers of recycling output
4. OEM engaged in the automotive sector.
5. R&D managers, circular economy, environment and other support staff, working in the sector at local/national/European and international level.
6. Academics and students in the fields of circular economy, recycling, environment, or any other academic field related to BATRAW project works at local/national/European and international level
7. Local/national/European and international ONGs and associations working on environmental issues.
8. General public specifically European citizens, mass media, consumers, urban planners.
9. Other related EU funded projects, European and global initiatives.
10. People of the companies involved in BATRAW.

Table 1 provides a first version of the stakeholders list that will be addressed through project duration. This list will be updated every time a new stakeholder is detected.

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Type	Stakeholders Name
Policy makers national and international from industry, energy and environment	European Commission
	European Environment Agency (EEA)
	International Energy Agency
	European Automobile Manufacturers Association (ACEA)
	European Federation for transport and environment (T&E)
	European Parliament
	The European Economic and social committee and the committee of the regions
European and global battery manufactures as well as relevant suppliers of battery components with significant presence or interest in the circular economy	AEPIBAL
	ACEA
	EUCAR
	RECHARGE
	ANFAC
	Samsung SDI
	SK Innovation
	LG Chem
	Northvolt
	CATL
	Panasonic
	BYD
	LG Chem
	AESC
	Verkor
	ACC
OEM engaged in the automotive sector	Continental
	VW
	Stellantis
	Renault
	Bosch
	Denso
	Magna
	Johnson
	Bridgestone
	Hyundai Mobis
	Michelin
	Aisin
	ACE Group
	Delphi
	ZF Friedrichshafen AG
	Faurecia
European and global battery and battery components recyclers as well as off-takers of recycling output	
R&D managers, circular economy, environment and other support staff, working in the sector at local/national/European and international level.	
Academics and students in the fields of circular economy, recycling, environment, or any other academic field related to BATRAW project works at local/national/European and international level	
Local/national/European and international ONGs and associations working on environmental issues.	The European Green Cars Initiative, included in the European Economic Recovery Plan
	Green eMotion Project
	ERTICO - ITS Europe
	The European Energy Research Alliance (EERA)
	ICM AG (international leader in circular economy congress organization, specialising in vehicle, electronics and battery recycling as well as e-mobility)
	International Partnership for Energy Efficiency Cooperation (IPEEC)
	The European innovation partnership on smart cities and communities (EIP-SCC)

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	European Environmental Bureau
	Climate Action Network Europe
	EarthFirst!
	World Business Council for Sustainable Development
	Friends of Earth (FOE)
	Environmental Defense Fund
General public specifically European citizens, mass media, consumers, urban planners.	
Other related EU funded projects, European and global initiatives. BATRAW partner involved	RAWMINA (H2020) – Integrated innovative pilot system for CRM recovery from mines wastes in a circular economy context. Processes for RM recovery through separation and leaching will be used in BATRAW. (LEITAT)
	VOLTIO (Regional project) – Industrial treatment and recovery of battery wastes. Knowhow on producing high purity metal concentrates from battery wastes will be used in BATRAW. (IND)
	RCAR – To improve vehicle damage resistance, repairability, security, and safety. Knowhow used in BATRAW. (CESVI)
	STARDUST (H2020/SCC1) – Industrial stationary 2nd life batteries from 30kWh to 200kWh in different applications. Outcome will be used as input for BATRAW. (BEE)
	GERA (National project) – Design of second life batteries for stationary applications. The methodology for LMO Ion-Li batteries characterization developed will be used in BATRAW project. (BEE)
	LithoRec II (BMU/16EM1024) – Pilot plant for mechanical battery materials separation, development/construction of prototype for semi-automated disassembly of battery modules using humanrobot collaboration robots. These serve as the basis for the BATRAW implications. (TUB)
	ALBATROS (H2020/LC-BAT-10) – Li-ion battery pack automatised disassembly. Knowhow used in BATRAW. (LEITAT)
	UEX2 (ADEME_National Project) – Li-ion battery recycling through hydrometallurgy and pyrometallurgy. (CEA)
	RECyBAT (regional project), RECYVABAT (National recovery plan) – Full hydrometallurgical recycling process for recovery of strategic material and remanufacturing of batteries from EV batteries. Knowhow used in BATRAW. (ORANO, MTB, CEA)
	AutoBatRec2020 (H2020) – Recycling-friendly battery concepts for semi-automatic processes, manual dismantling of battery packs. Defined concepts possibly used in BATRAW. (CEA, IWKS)
	MINESPIDER (H2020/946437) – Blockchain based raw material traceability platform implementation. Used in BATRAW to collect/share data along battery recycling supply chains via Battery/Product Passports/QR codes. (MINE)
	COMPAUTO (national AVI) – Research, design of production process and development of components for the automotive sector (novel processes for LMNO, NMC synthesis). Basis for the BATRAW validations. (TOR)
	Circular economy and industrial decarbonisation (European Climate Foundation) – Analysis of government action to deliver circularity and primary material demand reductions. Outcome will be used as input for BATRAW. (CEPS)
	CIRC4Life (H2020) – Analysis of regulatory barriers and incentives to implementation of circular business models, including electronics. Knowhow used in BATRAW
	CoFBAT (H2020/87512) Advanced material solutions for safer and long-lasting high-capacity cobalt free batteries for stationary storage applications. (TORRECID)
	Free4Lib (H2020/101069890) Feasible recovery of critical raw materials through a new circular

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	Ecosystem fora li-ion battery cross-value chain in Europe

Table 1. Stakeholders´list

The Audience matrix/grid reflects the position of the audience towards their scientific level and their relation to the project, whether they are familiar or unfamiliar with BATRAW´s sector, procedures and objectives. This tool helps visually define the message with which BATRAW should address the different audiences.

The result of applying the matrix (Figure 1) shows that, among the target audience of the project, the Battery Industry and end users, also companies and environmental NGOs, that are the expert crowd to whom easily address our messages. Attention should be drawn to the fact that the project should encourage intra-specialist communication as well as inter-specialist communication.

On the contrary, the public and policy makers are not expected to have specialist knowledge or command a specialist vocabulary. For this reason, attention has to be paid to the level of knowledge of the people you are communicating with and their ability to understand specialised language and terminology.

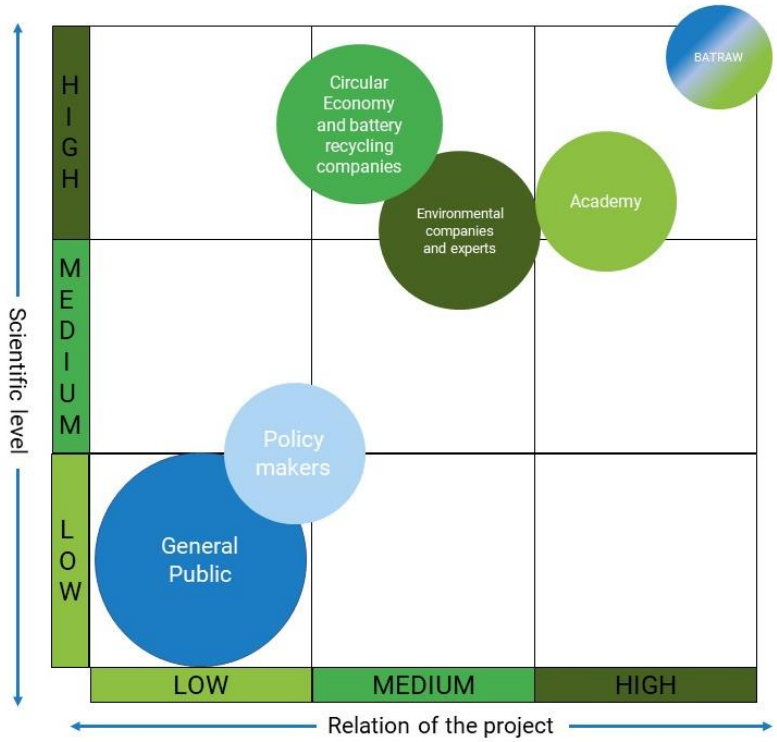

Figure 1. Audience Matrix/Grid

Stakeholders' map/power-interest grid (Figure 1), which classifies the stakeholders according to their power and their interest in the BATRAW project, helps to clearly see how important is to address and how to address the different stakeholders. The position allocated to a stakeholder on the grid shows the actions needed to take with them:

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- **High power, highly interested people (Manage Closely)**: These are the stakeholders with the biggest impact on the project success, hence it is essential to manage their expectations, and make the greatest efforts to satisfy and influence them. Stakeholders included in this category are circular economy, battery recycling actors and environment experts, also end users and the BATRAW´s consortium members.
- **High power, less interested people (Keep Satisfied):** Policy makers are placed in between two categories: manage closely and keep satisfied which means that it is needed to keep them satisfied, but not in the same seep ways as the previous group.
- **Low power, highly interested people (Keep Informed):** adequately inform these targets as they are important targets for the future of the project. In this category are found academy and the scientific community and environmental ecosystem companies.
- **Low power, less interested people (Monitor):** monitor these group, but communication efforts should not be focus on them. This category includes the public.

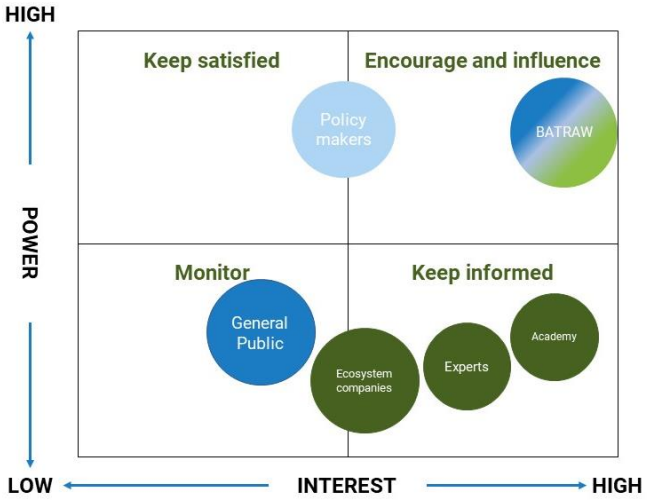

Figure 2. Stakeholders power interest grid

To target the above listed stakeholders, the strategy that will be adopted will follow two different paths:

- **Dissemination**: aims at delivering and making available technical project results to the target audience who can make use of them, generally a more experienced audience such as technicians and professionals, academics, investors, policy makers etc…, this target audience will be addressed by using specific channels (online repository of results, peer-reviewed journals, etc.) and activities (scientific publications or presentation in scientific conferences, etc...

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- **Communication**: aims at increasing the public visibility of project benefits addressing a more general audience (mass media and society) using more accessible channels (TV, radio, generalist website, etc.) and activities (mass media campaign, promotional material, etc.).

2.3 Key Messages

Key messages and content will be defined and customized according to several criteria, geographical location, knowledge and interest in the subject of the project.

3. Management of dissemination and communication activities

LEITAT together with Recyclia will watch for the good performance in the D&C activities and will ask for details when any partner conducts a D&C activity.

3.1 Roles and responsibilities

WP8 leader Recyclia, will work closely with LEITAT, project coordinator, and the rest of partners. Consortium will take care of the implementation of the D&C strategy.

At this point, each partner has defined an internal contact person for the D&C activities. Considering the variety of partners' interests, the global D&C will be managed by LEITAT and Recyclia by using channels and tools, previously agreed by partners. An ad-hoc project body has been set, the D&C board is formed by LEITAT and Recyclia.

Specifically, Recyclia will oversee the project visual identity (logo, images and graphic elements, document templates, etc.), the production of project video, the design, implementation and maintenance of web and social media. Also, will be in charge of the design and printing of project leaflets to be distributed among partners for their use in fairs, events, congress and so on.

While the D&C board will be coordinating and supervising all activities implemented towards target audiences (Figure 3), also it will be the main contact point with the rest of WP leaders for transferring contents and results into valuable D&C activities to main stakeholders, and on the other hand it will be continuously informing and involving partners into all on-going D&C activities. Although Recyclia and LEITAT are responsible for this task, partners must be committed in promoting project findings among their networks and communities.

Moreover, the D&C board will also coordinate public communication through the website and social media. In this sense, press releases, articles, interviews, etc. will be distributed through online and offline channels at local/national/European and international level.

In particular, the D&C board will oversee monitoring and measuring the impact and result of D&C activities, this impact will be reflected in the Deliverable 8.2 due on month 48.

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A set of Key Performance Indicators (KPIs) will be defined to assess the state of D&C not only regarding the overall project but also considering each partner performance.

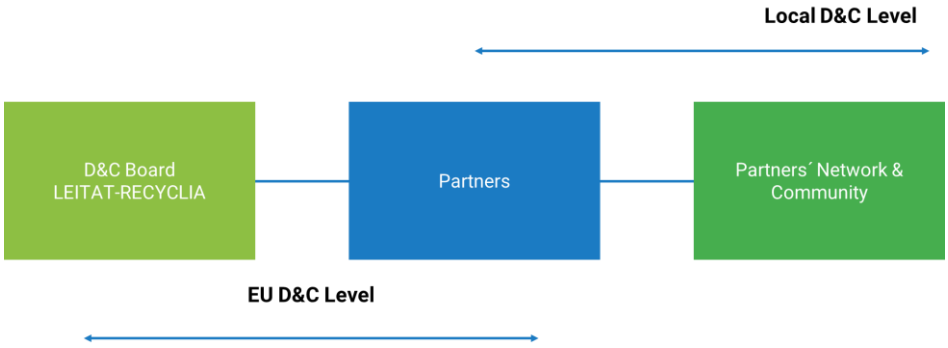

Figure 3 Partners roles and responsibilities

3.2 Dissemination and communication tools

Partners will be using different tools and channels according to BATRAW targets in order to achieve D&C objectives and disseminate the results. The D&C strategy will be implemented using a wide range of offline and online channels and tools. The use of one or another will depend on the messages distributed and the dissemination objective that we need to achieve.

First, a visual identity has been developed to contribute to the perception of the project and its uniform impression. This identity includes elements that will represent the project in a distinct and consistent way (logos, colours, fonts, templates, photos, etc.). These elements will be used both for off-line and online communication. Here there is a list of the tools that will be used to ensure a proper implementation of the D&C strategy.

1. Off-line
    1. Leaflets
    2. Brochures
    3. Roll-up
    4. Events
2. On-line
    1. Website
    2. Social Media
    3. Newsletter
    4. Publications
    5. Videos

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4. Dissemination and Communication strategy implementation

4.1 Action Plan

The table below presents the D&C strategy. The scheduling of these activities is closely aligned with the project deliverables.

These time frames should be regarded as indicative:

- Newsletters will be sent every six months (May and November), press releases at least once a year (February).
- Website and social media will be regularly updated.
- Other activities, such as publications or events attendance, will be continuously promoted.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022						Start	1st PR	D8.1	Social Media	Comm material	1st NL	VIDEO
2023		2nd PR			2nd NL						3rd NL	
2024		3rd PR			4th NL			D 8.2 (previous)			5th NL	
2025		4th PR			6th NL						7th NL	
2026		5th PR			8th NL	Final event	Final video	D8.2				

Table 2 Timeline of the main dissemination and communication activities

4.2 BATRAW´s identity

To create a strong identity, it is of utter importance to have a logo and a "brand book" which will serve as a consultation document for all the partners when producing D&C materials, both on-line and off-line.

All publication (on-line and off-line) related to BATRAW must include the project´s logo. The visual identity references will be used for publication and materials according to table below (Table 3):

Nº	Name	Logo/Citation text
1	BATRAW Logo	
2	EU Flag [1]	
3	Acknowledgement of EU Funding [2]	This project has received funding from the European Union´s Horizon Europe research and innovation programme under grants agreement No 101058359
4	Acknowledgement of BATRAW project for	The result presented in this paper is part of BATRAW project (www.batraw.eu). This project has received funding from the European Union's Horizon Europe research and

	dissemination-scientific publications	innovation programme under grant agreement Nº 101058359.
5	Acknowledgement of BATRAW project for communication-media contacts	The consortium leads by Acondicionamiento Tarrasense Asociación (Leitat) (Spain), also includes BeePlanet Factory (Spain), Centre for European Policy Studies (Belgium), Centro De Experimentación y Seguridad Vial Mapfre (Spain), Comanai (Spain), Commissariat a l energie atomique et aux energies alternatives (CEA) (France), Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung ev (Germany), Ford Otomotiv Sanayi (Turkey), Fundación Ecopilas (Spain), Indumetal Recycling (Spain), Isle Utilities (The Netherlands), Minespider Germany GMBH (Germany), MTB Manufacturing (France), Orano Mining (France), Posco (South Korea) Recyclia (Spain), Renault (France), Technische Universitaet Braunschweig (Germany) and Torrecid (Spain).
6	Acknowledgement of BATRAW project for communication- technical journals & publications	The information reflects only the author's view and the Commission is not responsible for any use that may be made of the information it contains.

Table 3 BATRAW Identity

[1] According to EU guide for using the EU flag http://publications.europa.eu/code/en/en-5000100.htm

[2] According to AMGA for H2020 Art. 29.4 & 38.1.2

4.2.1. BATRAW Logo

Three different options were presented, each representing different concepts. These are given below:

#	Logo proposal	Explanations
Option 1	 *Figure 4 Logo Option 1*	The first option (Figure 4) represents the power of electricity and batteries, with a circle that referenced the recycling circle.

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Option 2	 *Figure 5 Logo Option 2*	The second option (Figure 5) projected the structure of a battery, with a solid typography in which the A was connected to de W, reflecting the connection of BAT and RAW.
Option 3	 *Figure 6 Logo Option 3*	The third option (Figure 6) reflects a combination of a leaf and the "b" of "BATRAW", in green colours that convey serenity and are conductive to environmental themes.

The three options were presented to the members of the consortium and, were put to vote. The most voted option was the first, thus becoming the official logo of the project.

The chosen logo (Figure 4) stands out for the simplicity of its lines. Elements that were considered arbitrary and did not contribute to the conceptual idea were eliminated. The concept "less is more" led the team to the choice of a very essential design, with simple lines but a well-thought design, based on the name of the project, to which the arrows have been added, also very minimalist, evoking the recycling cycle and the circular economy.

The chosen logo, or basic element of the corporate identity of the European BATRAW project, shows the power of electricity, of electric current and, of course, is a direct reference to the batteries of an electric vehicle, in direct relation to the purpose of this initiative.

4.2.2 BATRAW Typography

The corporate typeface is the ROBOTO family. It is a very contemporary typeface, on a recently created font that stands out for its fluidity. It is also a very powerful font that imposes itself to the eye, despite its apparent simplicity.

This will be the typography used for the documents, whether internal or external, that will be shared by all the members of the project.

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4.2.3 Security and Reducibility area

To ensure the optimum application and perception of the logo-symbol in all sizes and formats, a security area has been determined to establish a minimum distance from the texts and graphic elements equivalent to the symbol of the logo itself.

The minimum size at which the logo may be reproduced is 20 mm wide.

4.2.4 BATRAW Colours

The pantones chosen are:

- PANTONE 7694, with the following version for four-color process: Cyan 96 / Magenta 76 / Yellow 34 / Black 28.
- And PANTONE 368 with the corresponding four-color version: Cyan 53 / Magenta 0 /Yellow 87 / Black 0.

The Pantone Colour BRIDGE guide is a multifunctional tool for printers, graphic designers and web developers. It is ideal for determining the appearance of solid colours when reproduced in four-colour process (CMYK), i.e., a much smaller colour space. It offers a value reference in RGB and HTML format to specify the desired effect when visualized in digital media, so important today, without losing any quality when used on websites, blogs, digital media and social networks.

Blue or cyan is the dominant colour. As a primary colour it is also a timeless colour, so designers and marketers use it at any time of the year and for any advertising campaign.

Blue represents serenity, fidelity and constancy; it is a colour used to convince people to trust, to believe and to be transparent.

Each shade of blue can be associated with different impressions. Dark blues are stronger and more reliable, and at the same time can represent elegance, stability, depth, trust, freedom, patience, loyalty and honesty.

This colour also symbolizes durability over time.

Some brands that use this colour are: Dell, HP, Oral-B, and Oreo, among many others.

Green (blue with a greater contribution of yellow, 87 percent in this case), is the colour of life, hope and of course green energy, the environment and sustainability. In this case and given its significant volume, it is an almost lime green, very cheerful, almost neon with all the renovation, modernity and dynamism that this colour represents.

The bet on green, commands, to inevitably respond to the prevailing social ideology of "think green", "play green", "green is life", "for a greener world", among others.

This colour is the driving force behind the various environmental campaigns and is applied to the main Green Marketing strategies.

Although it is the most relaxing colour for the human eye, in the chosen tonality, it implies freshness, health and life. This colour inspires nature and hope, concepts closely linked

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to the objective of recovering raw materials or substances to the natural state they had before being processed, which is the aim of this project.

Some of the European brands that use it are, Animal Planet, Monster, etc.

4.3 Off-line

The off-line D&C material of the project consists of all material that will be developed during the implementation of the project such as leaflets, brochures and roll-up. Participation in events makes also part of the offline dissemination strategy.

4.3.1 Leaflet and brochures

While the project will mainly use electronic/on-line means of communication due to the objective of the project itself, off-the-shelf leaflets and brochures will be designed as support material for events, in which BATRAW representatives are attending.

The design of these will follow the guidance given in the brand book.

The digital version of the project brochure will be available for download at the project's website instead of printing an undetermined number of copies. This will be printed just in case it is needed, as one of BATRAW´s cornerstones are respecting the environment.

4.3.2 Roll up

Roll-ups are intended to fulfil the same D&C requirements as the leaflets and brochures

The roll-ups will be place in conferences or meetings where BATRAW is presented, to help draw attendees' attention and spawn interest on the project.

The digital version of the project roll-up will be available for download at the website.

4.3.3 Events

D&C involves the whole consortium, bringing together the expertise of the different partners and the knowledge they have of their own fields and markets; thus, the event list has been feed with every partner's contribution.

Members of the consortium will attend different conferences, workshops, seminars in order to disseminate to the broad targets the achievements of BATRAW.

Project partners will be encouraged to present their achievements in related conferences, workshops, summits, meetings and exhibitions.

The table below (Table 4) collects a list of potential events. This list will be updated during the project any time that a new event is detected.

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Event Name	Place	Year	Month	Date	Link
Urban Mobility days	Brussels	2022	Sept	9	https://www.eumd.org/en/
Battery Recycling ICBR 2022	Salzburg, Austria	2022	Sept	2022	https://events.icm.ch/event/0ed92807-fd1d-452a-8d20-d24ba90095aa/summary
Innotrans 2020	Berlin, Germany	2022	Sept	22-25	https://www.itf-oecd.org/innotrans-2020
EU Sustainable Energy Week	Brussels	2022	Sept	26 to 30	https://www.eusew.eu/
European Research and Innovation Days 2022	Brussels	2022	Sept	28 to 29	https://ec.europa.eu/research-and-innovation/en/events/upcoming-events/research-innovation-days
Sustainability in Automotive Production	Germany	2022	Sept	29 to 30	https://www.automotive-circle.com/en/conferences/sustainability
International Battery Association Conference	Bled, Slovenia	2022	Oct	02 to 07	https://www.international-battery-association.org/
Battery Technology Show	Coventry, UK	2022	Oct	11	https://www.thebatteryshow.com/en/home.html
The International Mobility Summit 2022	Copenhagen	2022	Oct	12 to 13	https://www.electronomous.com/the-international-mobility-summit/
EV Summit 2020	SAÏD BUSINESS SCHOOL, UNIVERSITY OF OXFORD	2022	Oct	18 to 19	https://www.evsummit.biz/
Batteries Event	Lyon, France	2022	Oct	18 to 21	https://batteriesevent.com/
Battery Practice Forum	Wurzburg, Germany	2022	Oct	19	https://www.futurebattery.eu/
Future Battery Forum	Berlin, Germany	2022	Nov	03 to 04	https://www.futurebattery.eu/
International Battery Production Conference	Brunswich, Germany	2022	Nov	7 to 9	https://battery-production-conference.de/
TRA 2020	Helsinki	2022	Nov	14 to 17	https://traconference.eu/
Precious Metals Summit	Zurich, Switzerland	2022	Nov	14 to 15	https://www.precioussummit.com/
Electronica Automotive Conference (eAC)	Germany	2022	Nov	15 to 18	https://electronica.de/conferences/electronica-conferences/automotive/index.html
International Conference on Future Transportation	Paris, France	2023	Feb	6-7	https://waset.org/future-transportation-conference-in-february-2023-in-paris
Hannover Messe	Germany	2023	April	17 to 21	https://www.hannovermesse.de/home
Batery tech expo	Towcester, UK	2023	April	19 to 20	https://www.batterytechexpo.co.uk/
Battery conference	Aachen, Germany	2023	April	26 to 28	https://battery-power.eu/en/
Nordic EV summit	Norway	2023	May	4 to 6	https://nordicevs.no/

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Trans logistic	München	2023	May	9 to 12	https://www.transportlogistic.de/index-2.html
Battery show	Germany	2023	May	23 to 25	https://www.evtechexpo.eu/
ELECTRIC & HYBRID VEHICLE TECHNOLOGY EXPO EUROPE	Stuttgart, Germany	2023	May	23 to 25	https://www.evtechexpo.eu/en/Home.html
The battery show	Stuttgart, Germany	2023	May	23 to 25	https://www.thebatteryshow.eu/en/Home.html
Advanced Automotive Battery Conference Europe	Mainz, Germany	2023	June	13 to 15	https://www.advancedautobat.com/europe
Power2Drive Europe	Munich, Germany	2023	June	13 to 16	https://www.powertodrive.de/en/home
Battery cells and systems expo	Birmingham, UK	2023	June	28 to 29	https://batterysystemsexpo.com/
Battery Experts Forum 2023	Frankfurt, Germany	2023	July	Not available yet	https://www.battery-experts-forum.com/index.php/en/
European Lead Battery Conference and Exhibition	Milan, Italy	2024	Sept	16 to 19	https://16elbc.ila-lead.org/

Table 4 Proposed events

4.3.4 Final conference

Recyclia will organize an open technical workshop to present preliminary achievements, and a final conference towards the end of the project, jointly with other projects funded under the same topic, to bring together recognised scientists and experts as well as other interested and relevant stakeholders within the field.

4.4 On-line

The online D&C material of the project consists mainly of the project's website, the newsletter and the social media accounts that have been created for this purpose.

Online channels, such as a project website and social media, are essential to ensure that a project reaches a wide audience and disseminates its results to the right target stakeholders and the general public.

These tools allow us to provide regular updates and be present in the discussions.

4.4.1 Website

The main digital mean of communication nowadays is the internet; therefore, the BATRAW´s website constitutes the cornerstone of the On-line D&C strategy.

Main objectives to achieve:

- The content is in a clear, understandable language

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- Coordinator and all partners' information is included
- Illustrations, designs, photos, videos, brochures and a downloadable informative poster will be available
- Information regarding forthcoming events and conferences
- Web address is registered to search engines
- Social network profiles included

The website has been created at the beginning of the project and it has been active and open to access from month 3 of the project's lifespan. The design has followed the "brand book" (attached as Annex 1 to the present document) which stablishes the good practices manual to unify criteria used by every member of the consortium when implementing any activity/action that may be used in the D&C strategy of BATRAW.

The BATRAW´s project website is: *www.batraw.eu*

The necessary tools will be used to make the follow up of the KPI that will be stablished.

The main requirements the website should meet:

- User friendly- to keep the user's interest.
- Simple- avoid people getting lost with a lot of menus and buttons and thus losing interest.
- Brand- by following the designs and colours of the brand book a sense of brand representing the consortium is to be created.
- Dissemination- Keep stakeholders informed and updated.
- Communication- serve as dissemination channel for the widest audience possible.
- Information- provide general and specialised media with first-hand materials.
- Contact- Whoever wants to get in touch with the consortium for whatever reason, they can get in contact through the available means appearing on the website.

The website also, will offer the opportunity to access the project´s social media.

4.4.1.1 Partners websites

At the same time every partner will contribute to the D&C tasks by publishing news and relevant achievements within the project through their own websites:

Acondicionamiento Tarrasense Asociación (Leitat)	www.leitat.org
BeePlanet Factory	www.beeplanetfactory.com
Centre for European Policy Studies	www.ceps.eu
Centro De Experimentación y Seguridad Vial Mapfre	www.cesvimap.com
Comanai	www.comanai.com
Commissariat a l energie atomique et aux energies alternatives	www.cea.fr/english

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Fraunhofer gesellschaft zur forderung der angewandten forschung ev	www.fraunhofer.de
Ford Otomotiv Sanayi	www.fordotosan.com.tr
Recyclia	www.recyclia.es
Indumetal Recycling	www.indumetal.com
Isle Utilities	www.isleutilities.com
Minespider Germany GMBH	www.minespider.com
MTB Manufacturing	www.mtb.fr
Orano Mining	www.orano.group/en
Posco	www.posco.com/
Recyclia	www.recyclia.es
Renault	www.renault.com
Technische Universitaet Braunschweig	www.tu-braunschweig.de/iwf
Torrecid	http://www.torrecid.com/

Table 5 Partner´s web

Most of the partners have already include some information about the project on their websites or social media.

4.4.2 Social Media

The social media channels that suit best the purpose of the D&C strategy, are:

- Twitter
- LinkedIn
- Development of other social media profiles will be addressed in the future such as Instagram, etc

It is possible that in the future other social networks are opened (Instagram, ResearchGate, etc).

The BATRAW profiles will be created to spread news and increase awareness over the project, especially for the public in general and at the same time, to draw the attention of academics and specialised media.

The social media will be exploited in the first place for disseminating the own research. This will include reports, deliverables, articles, surveys, events and other activities.

It is important to make sure to disseminate consistently and continuously over time. Moreover, since it is a highly complex and technical subject the most important terms and characteristics will be explained in clear, simple and accessible language. At this first stage statistics and key figures, linked to the European Union goals and legislation, will be used to communicate the objectives of the project.

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4.4.2.1 Twitter

Twitter is one of the most important tools for science dissemination and will be used for a big scale bidirectional communication, with all the audience present on this social media, but focusing on a technical audience from the research and innovation area.

BATRAW´s Twitter account will be updated with news and project advances, as well as with relevant news within the battery recycling and circular economy ecosystem. This social media will be crucial on Events, Conferences or Workshops to broadcast BATRAW´s role on these scenarios and attract followers through real time information.

- **Objective**: Increase awareness of the Project and its progress / create a network / Increase public awareness on battery recycling/circular economy
- **Audiences**: Public, scientific community.
- **Message**: Information about Congress & Workshops, report on achievements, share documents, articles & reviews.
- **Type of content**: Infographics, videos, links, news, documents.
- **Content producers:** All the members in the consortium, stakeholders, leaders, scientist…

To brand building, increase outreach and capitalise on existing trends with the right audience the following hashtags have been identified:

Brand	Content
#BATRAWProject	#Battery
#HorizonEurope	#BatteryRecycling
#HE	#CleanEurope
#Innovation	#CircularEconomy
#GreenDeal	#GreenEurope

Table 6 Hashtags for publications

4.4.2.2. LinkedIn

Considering the large scientific, academic and professional community gathered on LinkedIn, a LinkedIn page will be created for the BATRAW project, with interests in topics such as battery recycling, circular economy, environment, green Europe, etc.

- **Objective**: Disseminate the progress of the project among the scientific community and professional stakeholders / attract knowledge and generate awareness.
- **Audiences**: Scientific community, professionals from related areas.
- **Message**: Achievements reached along the project to help end users understand the state of the technology and keep updated on the advances of technology. Content related from stakeholders.
- **Type of content**: Infographics, pictures, videos, links, news, documents.
- **Content producers**: All the members in the consortium, stakeholders, leaders, scientist…

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4.4.3. Newsletter

To increase the impact of the project there will be a newsletter containing the main news and information about the project.

In this sense, the newsletter will be issued every six months (from M6) to present the results of the projects, success stories, news from the partners, upcoming events, events where project consortium members assist, etc.

4.4.4. Press release and Publications

Press releases will be produced as relevant pieces of news. The project's objectives and expected results will be presented through press releases as well as the final results. Press releases will especially target local and European specialised media.

Partners will also be asked to distribute the press releases to relevant media within their own regions/countries and channels. Partners will work both at joint and individual levels to submit scientific papers, articles and other publications. The project consortium will work tightly with Public Relations departments at each partner's institution to generate multilingual press releases and communication via other media.

A first press release, released in June 2022 has been already distributed and is being published trough media (Figure 7). The full press release is attached in Annex

EUROPEAN COMMISSION FINANCES A 10 MILLION EURO PROJECT TO CREATE A NEW PROCESS FOR RECOVERING CRITICAL RAW MATERIALS FROM ELECTRIC VEHICLE BATTERIES

- Funded through the Horizon Europe Programme and due to the strategic importance of the European Union reducing its dependence on critical raw material imports, the BATRAW project will help guarantee a stable supply chain to support the expected growth in the electric mobility market.
- Two pilot tests will be developed to recover the cobalt, nickel, manganese, lithium, graphite, aluminium, and copper contained in these batteries.

Brussels, 30 June 2022 – The European Commission finances with more than 10 million euros a project to develop new technological processes for the recovery of critical raw materials contained in electric vehicle batteries, through the Horizon Europe programme. A consortium of 18 partners from seven countries will develop this project, known as BATRAW, which is of strategic importance for the EU in reducing its dependence on imports of these critical raw materials, as well as being able to guarantee a stable supply chain in view of the expected growth of the electric mobility market in Europe in the coming years.

Figure 7 Press release published (first lines)

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4.4.4.1. Scientific Publication

Project results and advancements will also be shown through scientific publications targeted to peer-review professional journals.

- Research & Reviews: Journal of Engineering and Technology
- Horizon Magazine
- ResearchGate
- Journal of Power Sources Elsevier Journal

4.4.4.2. Professional Publication

Project results and advancements will also be shown through professional publications targeted to individuals and companies who work in related fields and has an interest in the field in which the project is developed.

4.4.4.3. General interest Publications

Project results and advancements will also be shown through publications targeted to individuals and companies who work or simply have some interest in the fields developed in BATRAW.

- EC Success Stories
- Green European Journal
- Euractiv
- News Agencies

4.4.5. Videos

As part of the D&C strategy, interview format videos will be carried out to partners. Questions regarding their tasks, development status, and expected or achieved results in an easy-to-understand way will be asked and replied to partners.

These videos will be uploaded to the internet on the project's website or other platforms that may be convenient such as YouTube.

4.4.5.1. Final video

Production and publication of a project video (at the end of the project) designed by Recyclia was agreed as the key method for effective dissemination of the project results.

The BATRAW project video will be designed to be attractive and contain all the relevant information, in a compact format.

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The project video will be distributed along different available channels such as the project website and social media channels. Other video channels such as YouTube and Vimeo will be evaluated.

4.5 Internal communication

Proper internal communication and data storage is essential to the success and effective management of any project. To that end, a dedicated and secure **Microsoft SharePoint** site will be used as the data repository for the relevant internal project communication and collaborative work on documents. Only project partners will have access to this secure site which allows for features such as the simultaneous editing of documents, calendar, and tasks assignments. These features will allow for better document versioning and a smoother overall internal collaboration.

Microsoft Teams will also be used, which will act as a frontend to the **SharePoint** site. Within Microsoft Teams, each WP will have a dedicated channel which will have chat features for quick, informal communications and a dedicated file area. Remote meetings can be held on this platform, on the WP channels which will allow all partners to have access to a free, common method of long-distance communication. These meetings can be recorded, which will greatly improve the accuracy of meeting minutes and reduce the number of miscommunications.

From the perspective of coordination, the Microsoft Teams will be used to track project progress; to exchange documents; to collect financial data; to collaboratively prepare and review reports as well as other documents and to have the functions of a project handbook describing the project plan, contact lists, reporting templates and project guidelines/best practices.

For official communications involving external organisations or persons, other suitable channels can be used, such as email, conference calls or other forms of communication. All information circulated will be treated as consortium confidential unless stated otherwise. It is the responsibility of each partner to provide for adequate confidentiality and keep their contact list details up to date.

5. Impact assessment

To assess the impact caused through the implementation of the D&C strategy, quantitative data will be gathered and compared to a certain benchmark stablished.

The KPIs' that will proof the accomplishment of the strategy will be shown in the following table:

TOOL/CHANNEl	KPI
Website	100 unique visitors a month
Twitter	>300 followers + >50 interactions/post
LinkedIn	>100 followers and + >50 post
Newsletters	>100 subscribers
Publications	>5 papers + >5 articles in media

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Events	>5 talks at an event

Table 7 C&D KPIs

To measure the level of interest in the project and the distribution rate of material, the project uses the following methods:

- **Website**: BATRAW monitors traffic on the website via Google Analytics and on social media it uses the statistical tools made available from the sites. Partners will report back the number of visits and reactions reached by the BATRAW contents they shared through their own channels.
- **Newsletters**: The newsletter has been created using the email marketing platform MailChimp that offers statistical tools for viewership and subscription. Partners will distribute the newsletter to own contacts and report back on the distribution number. Number of newsletters issued during the project.
- **Flyer/brochure**: Number of copies of project flyer/leaflet distributed. To this end partners will report on the number of flyers and information material distributed.
- **Events**: Number of participants that attended the event sorted according to the different target audiences of the project.
- **Articles in scientific journals and conference presentations**: Number of submitted and published peer reviewed and scientific articles. Number of citations. Number of academic presentations. Number of publications in conference
- **Press coverage**: The press coverage will be monitored throughout the project duration. Partners will report back on local press coverage to indicate the effect of communication and dissemination and measure the relation between the messages. Number of published articles in magazines or the general press and number of press releases realised vs amount of news in press

To assess the quality of communication and dissemination, the project uses the following methods:

- **Statistical increase**: The good performance of the indicators will be measured by the continued growth of the follower base and visits.
- **Interaction achieved through publications**: To measure the impact of the communication actions on the target audiences the number of interactions and contacts achieved will be analysed. Number of interviews.
- **Feedback**: Evaluation forms will be distributed after each event/workshop organized to get qualitative feedback on the activities. Feedback from events and new contacts and networking opportunities established will registered by partners.

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6. Development of the D&C activities during the project

The partners have access through the repository to different working tools to be used along the project implementation. These tools are as follows:

- Template for PPT presentations
- Template for reports, meetings sheets and reporting documents.

6.1 Reporting

To have a correct follow-up of the different activities carried out by the project partners accurate register must be done, there will be available, in the SharePoint, templates to report this information and then report it to keep records and assess the impact of the different activities.

Partner's responsibilities are:

- Duly communicate activities and tools being used for D&C purposes.
- Duly report the activities and the relevant information (for instance: size of exposed audience) to facilitate their assessment.
- All partners should save evidence of the activities conducted.

7. Exploitation Strategy

7.1 Overview

7.1.1. Key Terms

Key Term	Description
Exploitation	The utilisation of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities.
Intellectual property (IP)	The key assets in a project (project input & outputs) such as: (i) Technical IP**:** process, products, manufacturing apparatus; (ii) Written materials (copyright): software, reports, drawing, guides, music, videos, artwork; (iii) Designs (design rights): Functional designs, aesthetic designs; (iv) Know-how (confidentiality, contracts): best way to implement, individual skills, knowledge; (v) Secrets (trade secret or confidentiality): Algorithms, recipes, methods, anything which cannot be reverse engineered
Intellectual property rights (IPR)	Legal tools to support commercial exploitation. They are commonly divided into two categories: (i)

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	Industrial Property Rights (e.g. patents, trademarks, industrial designs, geographical indications) and (ii) Copyright and Related rights (e.g. rights of the authors).
Background	Any data, know-how or information whatever its form or nature, tangible or intangible, including any rights such as intellectual property rights, which is: held by participants prior to their accession to the action; needed for carrying out the action or for exploiting the results of the action; and identified by the participants.
Results	Any tangible or intangible output of the action, such as data, knowledge and information whatever their form or nature, whether or not they can be protected, as well as any attached rights, including intellectual property rights (IPR)
Exploitable result	Any output from the project that can be used in further activities, other than those covered by the project, such as in other research activities; in developing, creating and marketing a product, process or service; in standardisation activities.

Table 8 Key terms

7.1.2. Exploitation

The **Exploitation plan** sets out the strategy that will be implemented during the project to support partners with the exploitation and market uptake of their innovative technologies and solutions. The Exploitation plan will be supervised and coordinated by the **Innovation and Exploitation Manager**. All **Intellectual Property (IP)** generated within the project will be tracked to ensure the protection of the knowledge and the innovation guaranteeing a strong exploitation positioning. The exploitation strategy will ensure project results are exploited to their maximum potential through business strategies and stakeholder engagement. The main objectives of the Exploitation strategy of the BATRAW project are shown in Figure 8.

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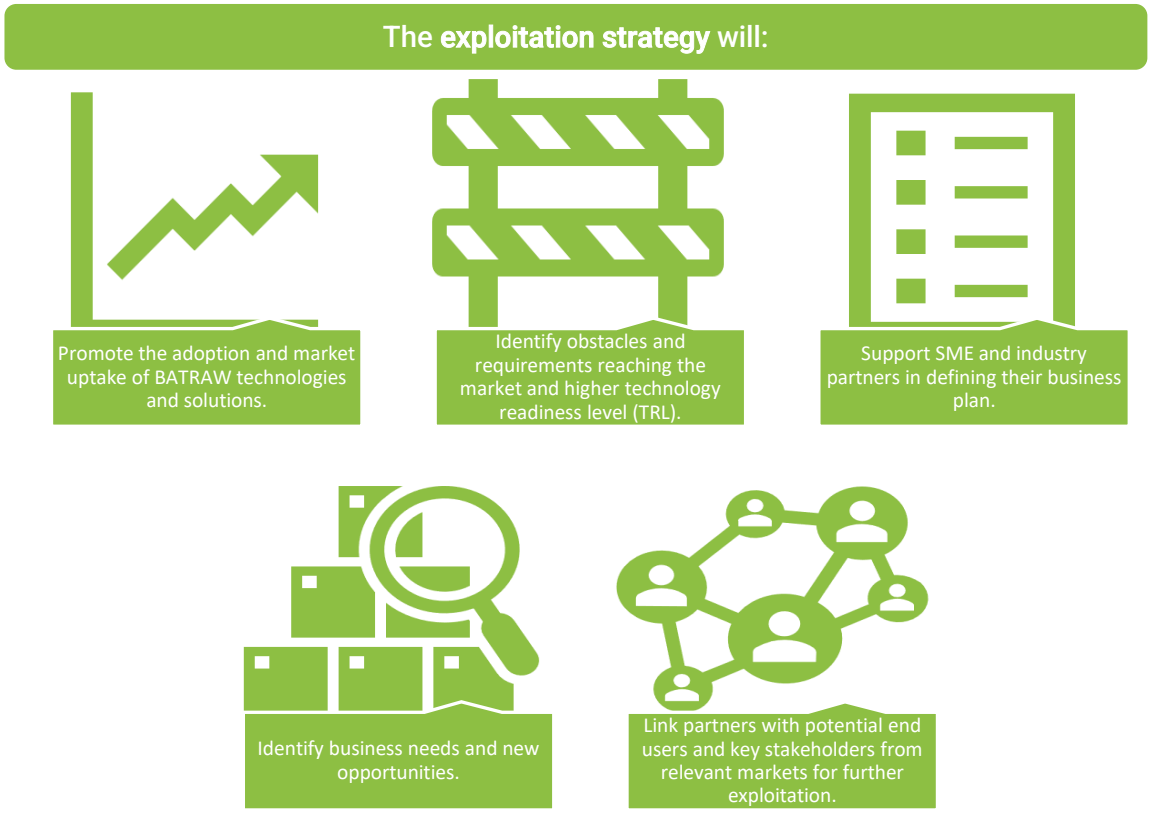

Figure 8. Main objectives of the BATRAW's Exploitation Strategy Plan

7.1.3. Exploitation tasks, deliverables and milestones

The key tasks, deliverables and milestones related to exploitation activities were set up at proposal stage as part of the work to be carried out in **WP8. Communication, dissemination and exploitation**. These feed into the overall innovation management and exploitation activities and strategies. Each task, deliverable and milestone have their own number and will be used interchangeably as reference in this report.

7.1.3.1. Tasks

Number	Title	Month
T8.1	Communication, dissemination and exploitation plan	M1-M4
T8.3	Innovation management & exploitation activities	M1-M48

Table 9 Task

7.1.3.2. Deliverables

Number	Title	Month
D8.1	Dissemination, communication, and exploitation plan including communication toolbox	M4

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D8.3	Exploitation roadmap and business strategy plan- preliminary	M18
	Exploitation roadmap and business strategy plan- final	M48

Table 10 Deliverables

7.1.3.3. Milestones

Number	Title	Month
M8.1	Market and competitive analysis launched	M6
M8.2	Exploitation phase started	M18

Table 11 Milestones

7.1.4. Process

The overall **Innovation and Exploitation management process** can be split into **three main phases**. The **initial phase** will focus on the planning activities for the exploitation strategy, the **second phase** will focus on the implementation and monitoring of the strategy, and the **final stage** will be the execution of the preliminary exploitation of the BATRAW's innovative technologies and solutions. Innovation management is a continuous activity, tracking all IP and identifying the need for protecting it as the project develops. The different phases included within the BATRAW's Innovation and Exploitation management are shown in Figure 9.

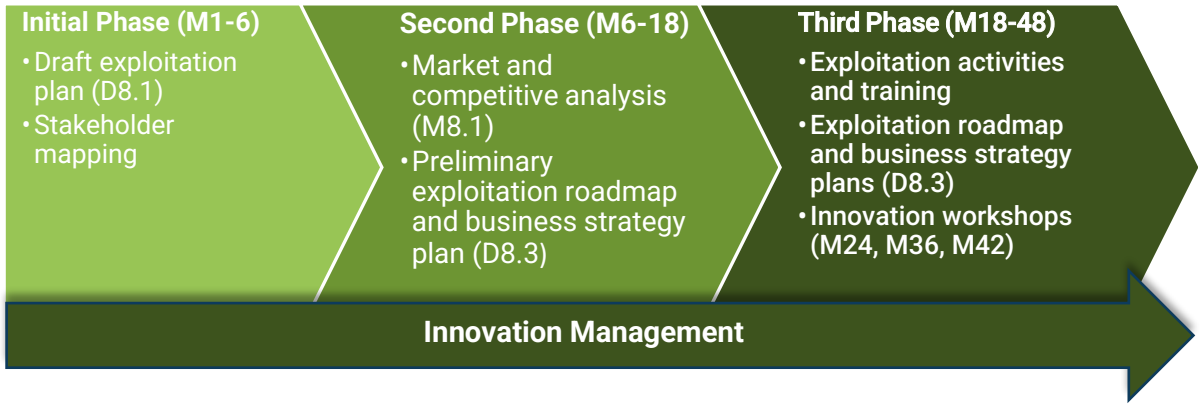

Figure 9. Structure of BATRAW's Innovation and Exploitation process with an overview of the three phases included within it.

7.2 IP Management

The **IP Management** is a key part within the **Exploitation Strategy of the BATRAW's project results** that will be implemented within the project to ensure that the impact of the project results is maximised. IP Management is linked to the BATRAW exploitation and business strategy since an effective exploitation

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depends on the protection of the results, however it is not always mandatory to protect the results.

The main objective of the IP Management is to ensure that the innovation activities and IP in the BATRAW project are addressed in a proper and systematic manner. To do it, the process to manage the IP has been structured into three main activities to ensure that the new knowledge generated, and related IP is managed efficiently (Figure 10).

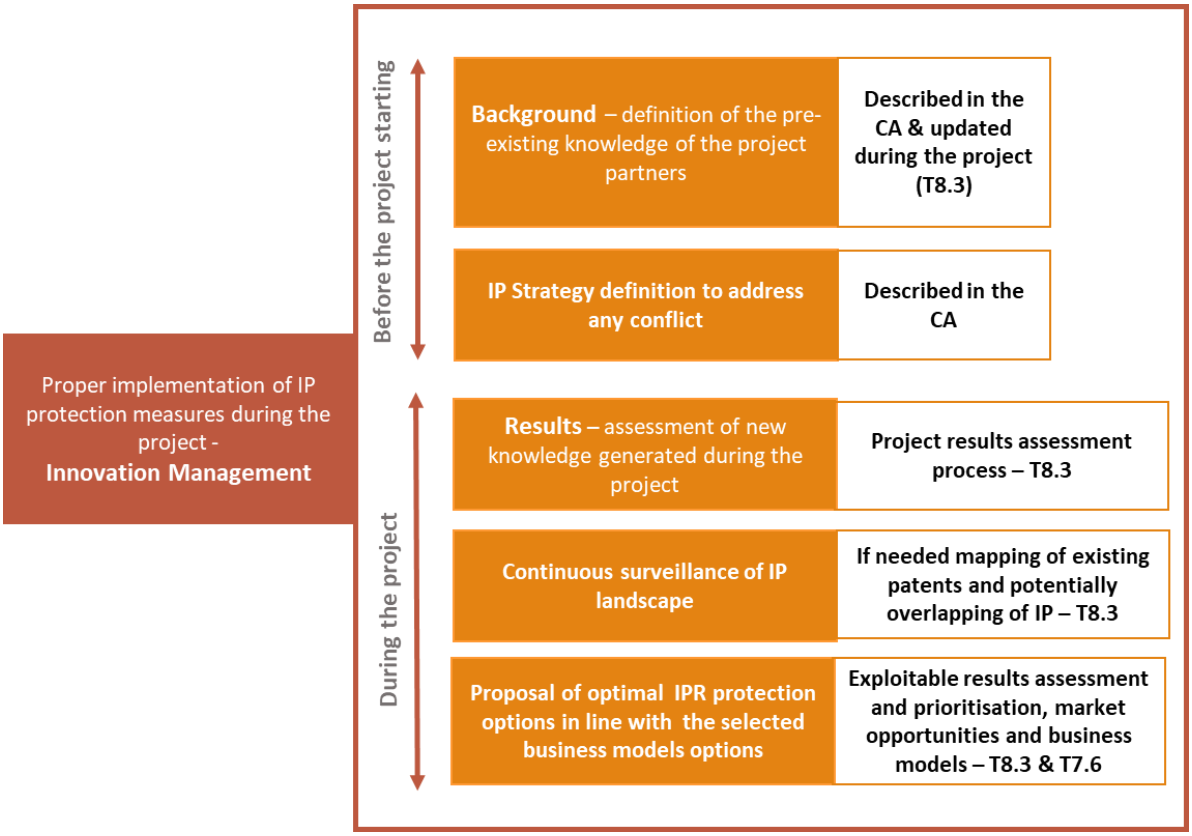

Figure 10. Overview of the main steps for the management of the IP within the BATRAW project

- **Definition of pre-existing knowledge of the project partners – Background**: The BATRAW Consortium Agreement (CA), includes the pre-existing knowledge (Background) identified by each partner at the time of the signature of the CA and the Access Rights for implementation and exploitation of the Background .Modifications on the background identified in the CA can be done during the project, either adding further background or withdraw any background previously identified by any of the Consortium partners. The methodology to assess the BATRAW Project Results (section 3.2) will be used to capture any pre-existing knowledge owned by the partners that was not identified and included as Background in the CA.
- **Assessment of the new knowledge generated during the project – Results:** The methodology to identify and assess any tangible or intangible output generated within the BATRAW project is explained with more detail in section 3.2.

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- **IP surveillance and optimal IP protection that includes**: The choice of the most suitable form of IP protection (e.g., patent, copyright), as well as the duration and geographical coverage depends on the project results in question, but also the business strategy for their exploitation and legitimate interest of BATRAW project´s partners (Figure 11). Thus, it is important to assess the possibility of IP protection once the project results are generated. To do it, several steps will be undertaken in the project:
    - IPR surveillance that will include: (i) mapping of existing patents and potential overlapping IPR, (ii) continuous surveillance of IP landscape and strategy definition to address any possible conflicts.
    - IPR Protection that will include: (i) proposal of optimal IPR protection options in link with the selected business models options and, (ii) proper implementation of IPR protection measures during the project.

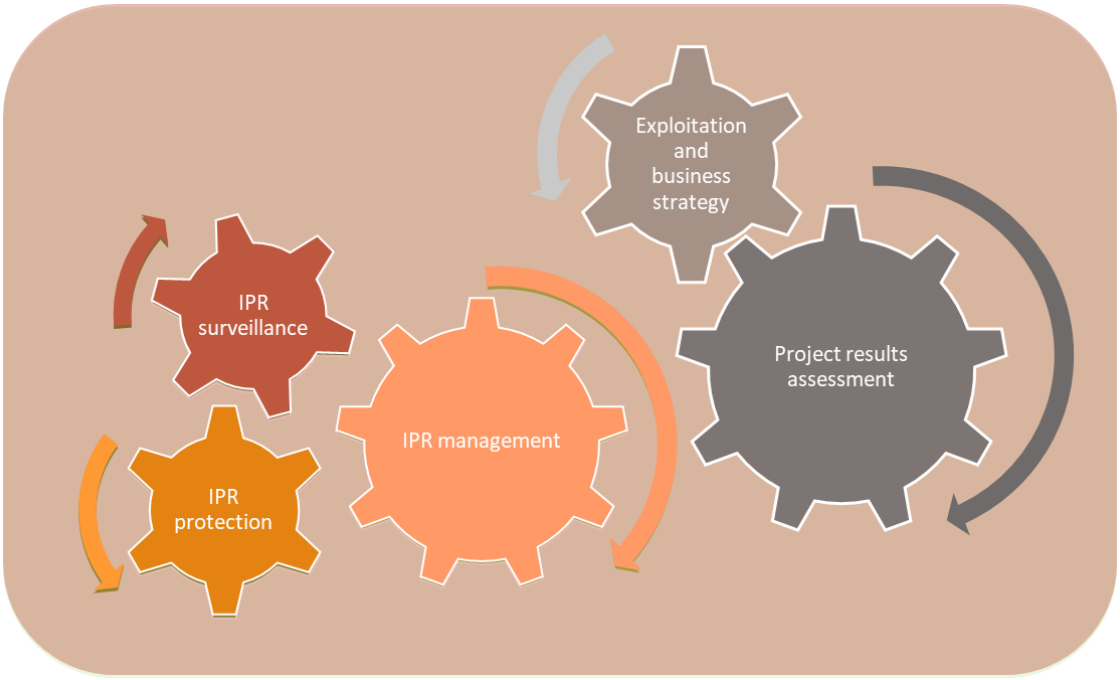

Figure 11. Interlink between IP Management and the Exploitation plan and business strategy of the BATRAW project

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7.3 Exploitation Activities

7.3.1. Main Activities

The following section and below 12 set out the exploitation activities to be carried out in T8.3.

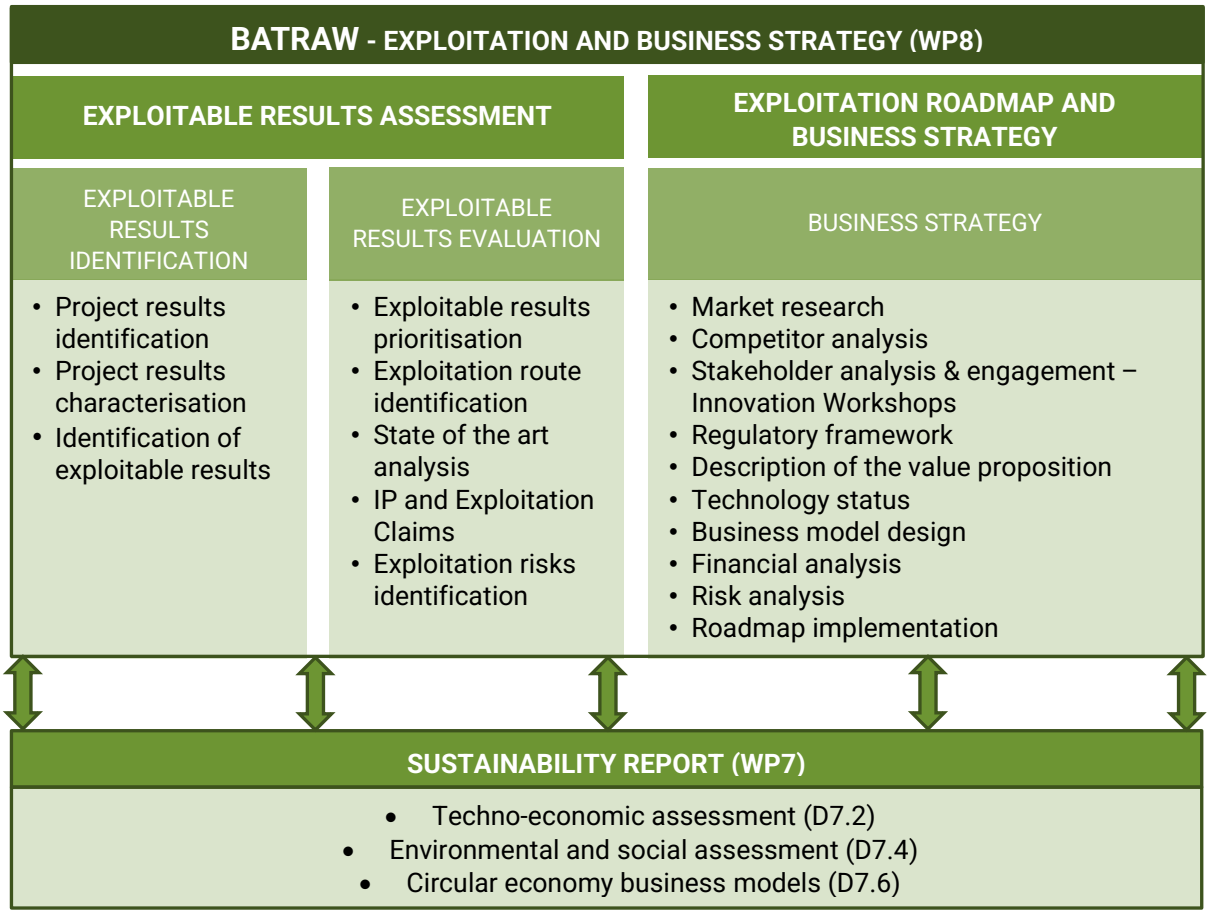

Figure 12. Overview of the Exploitation and Business strategy designed for the BATRAW project

These will be split into two main sub-tasks, the exploitable results assessment, and the exploitation roadmap and business strategy. The exploitable results will be identified and evaluated in the early stages of the exploitable results assessment process, highlighted **in Section 7.3.2 of this Exploitation plan**. The exploitation roadmap and business strategy will develop the best case for exploitation of each project result through market research and competitor analysis— and will be closely linked to the work that will be carried out in **WP7. Sustainability Assessment**. To further boost exploitation, innovation and training workshops will be implemented, bringing partners together with key stakeholders.

7.3.2. Exploitable results assessment

The Exploitable Results assessment process will provide a clear overview of the exploitation potential and proposed exploitation routes for each result in the BATRAW

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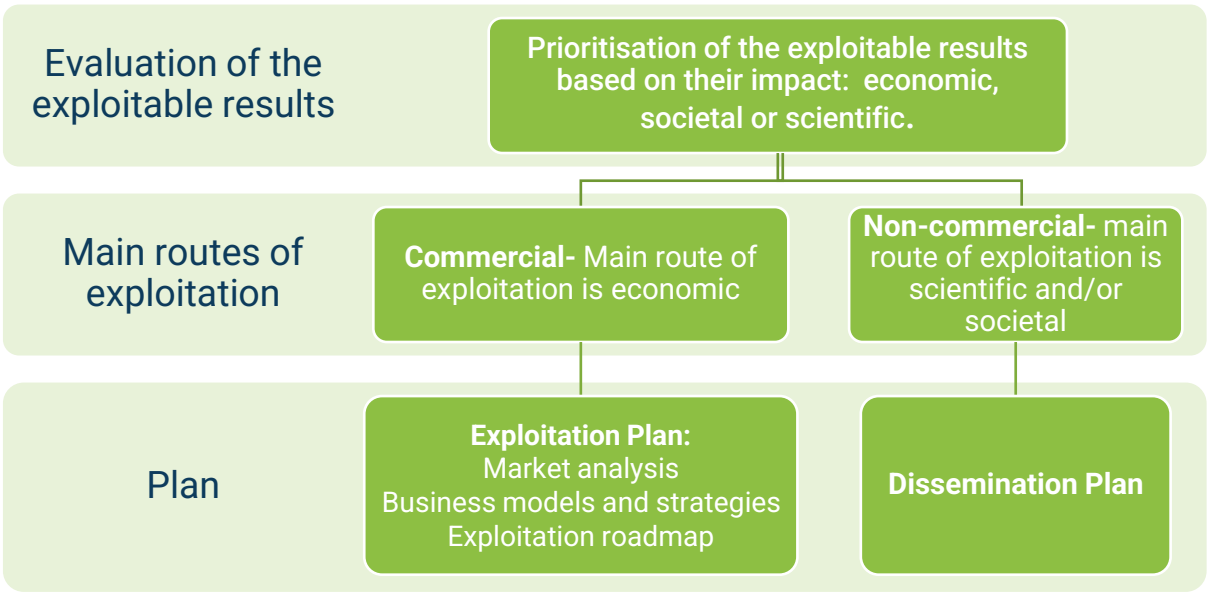
project. All exploitable results will be identified with the partner responsible, described, assessed for required protection, and the best routes for exploitation will be prioritised.

This information will inform the exploitation strategy for each project result, enabling maximum impact in the market, society, and/or the scientific community. Commercial results with economic impact are primarily considered for exploitation, and non-



commercial results with societal and scientific impact are primarily considered in the dissemination plan (Figure 13)

Figure 13. BATRAW's exploitable results assessment process

The assessment of the exploitable results is a continuous process, allowing for exploitation routes to be refined, and to account for new results identified throughout the project. A finalised list of exploitable results will be presented at the end of the project (M48), and the follow up of exploitation activities will continue.

7.3.3. Expected results and exploitation routes

A preliminary list of expected exploitable results for the BATRAW has been identified at proposal stage with the relevant partner, the expected exploitation route, the potential first adopting stakeholders, and the expected time to market (TTM).

The different exploitation routes dependent upon the impact of each result are highlighted in Table 12. The TTM and the exploitation strategies vary among the different BATRAW results identified. Most of the exploitable results are expected to be in the market 1 year after the project timeline, whereas some have an expected TTM of 2-3 years. Some results are expected to predominantly have an economic impact, such as the reduced maintenance costs achieved in WP2 through the disassembly and EV repair that will be exploited commercially. Whereas the material selective separation

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technology in WP4, with a greater scientific impact, will be exploited through new research projects.

WP	Expected Results	Partner	IP	Exploitation strategy	First adopted stakeholders	TTM
WP2	New system packaging and transportation	REC	Internal know-how	Establishing REC as collection point for EV batteries	OEM/TIER1, recycling industry	<1
	Disassembly and EV repair	CESVI	Tech. transfer	Cheaper repairs and maintenance for EV. Training for automobile workshops and scrapping plants	OEM/TIER1/Scrapping plants/Insurance companies/owners	<1
	SoH estimation tool	BEE	Industry secret	Procedure, methodology and tool will be considered as an innovation		<1
WP3	Battery pack and module disassembly technology	LEITAT, TUB	Internal know-how	New research projects or direct tender with local and EU industry	OEM/TIER1, transport sector	<1
		BEE		Gaining reliability and reducing costs		<1
		COMA		Generate new customers from the field		<1
WP4	Chemical deactivation	CEA	Patent, tech transfer	Royalties or direct tech transfer of the invention ensuring FTO for final user	Recycling, chemical, hydrometallurgical industries	<1
		MTB		Use of knowledge in the portfolio to generate new customers from the field		<1
		ORANO		Direct use in the recycling plant and potential tech transfer ensuring the FTO		<1
	Deactivation of domestic batteries	IND	Trade secret/ patent	Direct use in the recycling plant and potential tech transfer ensuring the FTO	Recycling sector	1
	Material selective separation	IWKS	Internal know-how	New research projects or direct tender with industry	OEM/TIER1	<1
WP5	BM leaching and RM recovery	CEA	Protected	Royalties/direct tech transfer of the invention ensuring the FTO for final user	Recycling, chemical, hydrometallurgical, mining industries	2
		LEITAT		Shared patent/royalties/direct tech transfer of the invention ensuring FTO for final user		2
		ORANO		Direct use in the recycling plant and potential tech transfer ensuring FTO		<3
WP6	LMNO	TOR	Internal know how, design rights	Development activities on recycled materials with the aim to sell product	Battery manufacturers	1-3
	NMC9½½	POSCO		Development activities on recycled materials with the aim to sell product		<1
WP7	Blockchain implementation	MINE		Implementing tools and services to suppliers and other stakeholders in the EV battery industry, training, and getting new paid subscriptions	All previous suppliers up and down the supply chain	<1

Table 12. List of expected exploitable results for the BATRAW project

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7.3.4. Market and competitor analysis

The outputs of the exploitable results assessment feeds into the market and competitor analysis, providing a better understanding of the nature of the results; their owners, the level of exploitability, and potential exploitation routes, including IP and any protection required before their exploitation. The Key Exploitable Results (KER) identified through the exploitable results evaluation, and expected exploitable results provided at proposal stage will be the basis for the market and competitor analysis.

The market and competitor analysis aims to obtain a detailed overview of the market landscape for the BATRAW technologies and solutions. A market entry assessment will identify routes to market, the target market size, potential competitors, and a comparison between competitor and BATRAW technologies.

The market and competitor analysis will inform and support the development of the exploitation roadmap and business strategies, which will be included within the D8.3—and will be closely linked to the circular economy business models (D7.6) developed in WP7.

7.3.5. Stakeholder engagement

Two main exploitation activities – Innovation Workshops (IW) and Training - will be developed to engage with key stakeholders in order to increase the impact of the innovative technologies and solutions developed with the BATRAW project.

- **Innovation workshops** (IW) will be held in M24, M36 and M42 to provide a platform for partners to present their technologies to key stakeholders. Project partners will be trained to deliver innovation pitches of their ideas and technologies to accelerate market uptake of their solutions. The innovation workshops will feedback to the market assessments, providing a stakeholder and end-user perspective—opportunities in the market, drivers and barriers, and the willingness to adopt BATRAW's technologies and solutions. The feedback from the IW will be used to refine technology development, and the subsequent roadmaps and business models for commercialisation (Figure 14).
- **Training activities** will also be organized to speed up the market uptake of BATRAW solutions. Collaboration with other selected projects under this cross-cutting call and other relevant projects supporting the EIP on Raw Materials and key stakeholders (e.g., end-users) identified in Task 8.2 will be sought for the delivery of the training sessions.

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Figure 14 Overview of the structure of the Innovation Workshop (IW)

7.3.6. Design of exploitation roadmaps and business strategies

The exploitation roadmaps and business strategies (D8.3) will be informed by the market and competitor analysis, stakeholder engagement, techno-economic assessments (D7.2), social and environmental assessments (D7.3), and will be closely linked to the circular economy business models developed in D7.6. The D8.3 will integrate the outcomes of the different exploitation activities and task to provide a preliminary report in M18, and a final report in M48.

The exploitation roadmap and business strategies will assist partners in exploitation, outlining the key actions required to achieve commercialization and the available support services at international, European, national, and local level during and after the project is completed.

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8. Annexes

Annex 1 Brand Book

Annex 2 First Press Release

8.1 Annex 1 Brand book

MANUAL DE USO

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2

EL LOGOTIPO

El logo evidencia la fuerza de la electricidad, la corriente eléctrica
Sugiere la pila o batería del vehículo eléctrico
Con sencillez de líneas, pero un diseño muy cuidado
Las flechas simbolizan el ciclo del reciclaje

3

ÁREA DE SEGURIDAD Y REDUCTIBILIDAD

Para asegurar la óptima aplicación y percepción del logosímbolo en todos los soportes y formatos, se ha determinado un área de seguridad que establece una distancia mínima respecto a los textos y elementos gráficos equivalentes al símbolo del propio logotipo.

El tamaño mínimo al que el logotipo puede ser reproducido es a 20 mm de ancho.

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PAPELERÍA CORPORATIVA

4

TIPOGRAFÍAS

La tipografía corporativa es la familia ROBOTO, será la tipografía utilizada para el uso de documentos, ya sean internos o externos.

ROBOTO LIGHT

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COLORES CORPORATIVOS

6

PANTONE 7694
C 96 / M 76 / Y 34 / B 28

PANTONE 368
C 53 / M 0 /Y 87 / B 0

PLANTILLAS PPT

7

Presentacion ppt

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8.2 Annex 2 First newsletter

EUROPEAN COMMISSION FINANCES A 10 MILLION EURO PROJECT TO CREATE A NEW PROCESS FOR RECOVERING CRITICAL RAW MATERIALS FROM ELECTRIC VEHICLE BATTERIES

- Funded through the Horizon Europe Programme and due to the strategic importance of the European Union reducing its dependence on critical raw material imports, the BATRAW project will help guarantee a stable supply chain to support the expected growth in the electric mobility market.
- Two pilot tests will be developed to recover the cobalt, nickel, manganese, lithium, graphite, aluminium, and copper contained in these batteries.

Brussels, 30 June 2022 – The European Commission finances with more than 10 million euros a project to develop new technological processes for the recovery of critical raw materials contained in electric vehicle batteries, through the **Horizon Europe programme**. A consortium of 18 partners from seven countries will develop this project, known as BATRAW, which is of strategic importance for the EU in reducing its dependence on imports of these critical raw materials, as well as being able to guarantee a stable supply chain in view of the expected growth of the **electric mobility market** in Europe in the coming years.

The **4-year** project is aligned with the objectives of the proposed EU Regulation on **batteries and waste batteries**. This regulation, now under discussion, would require all batteries placed on the EU market, including those for electric and hybrid vehicles to be managed in a sustainable manner at the end of their useful life and serve as a source of secondary raw materials for sectors such as the automotive and renewable energy and low-carbon technologies.

The BATRAW project includes **two pilot tests** with **electric vehicle batteries**, but these can be extended, depending on the results, to other types of batteries, including domestic batteries, to recover all the metals and materials contained in them, i.e. cobalt, nickel, manganese, lithium, graphite, aluminium, and copper. Key information captured during the project will be made accessible to all stakeholders via a digital battery passport, stored on the Minespider blockchain.

The first pilot will take place at Pamplona (Spain) and hosted by BeePlanet. It will apply **semi-automated processes** to the handling of these batteries to **separate up to 95% of their components**, including cells and modules suitable for reuse. The second pilot will be implemented at **Bessines sur Gartempe (France) at the Orano facility**. It will implement a mechanical pre-treatment and hydrometallurgical technology to improve the separation of the materials contained in the so-called black mass (a substance composed of non-ferrous metals resulting from the shredding of the batteries), to separate between 90%-98% of the graphite, aluminium, and copper.

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The project, which kicked off on 1st May with the first consortium meeting, includes a first phase focused on the development of eco-design guidelines that favour the repair and dismantling of batteries, as well as best practices for the safe handling and transport of these wastes. The project will also create a prototype battery from the recovered raw materials and a digital battery passport to capture and communicate key information throughout the battery life-cycle, including the sourcing, processing, (re-)use and recycling of components. In a final phase, the partners will analyse the feasibility of a business plan for the EU-wide exploitation of these new battery dismantling and recycling processes. Policy recommendations based on the project's results to feed ongoing regulatory developments will also be produced.

A word from the coordination team of BATRAW: "We're excited to help guide such an important project that helps tackle this societal challenge. The macrotrend of increased battery use, particularly in the mobility sector represents a huge challenge in the push to create a more circular Europe. The EU has a great opportunity to become a global leader in battery dismantling and recycling".

The consortium lead by Acondicionamiento Tarrasense Asociación **(Leitat)** (Spain), also includes BeePlanet Factory (Spain), Centre for European Policy Studies (Belgium), Centro De Experimentación y Seguridad Vial Mapfre (Spain), Comanai (Spain), Commissariat a l energie atomique et aux energies alternatives **(CEA)** (France), Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V. (Germany), Ford Otomotiv Sanayi (Turkey), Indumetal Recycling (Spain), Isle Utilities (The Netherlands),Minespider (Germany), MTB Manufacturing (France), Orano (France), POSCO Holdings (South Korea) Recyclia (Spain), Renault (France), Technische Universitaet Braunschweig (Germany) and Torrecid (Spain).

The BATRAW project (grant agreement 101058359) has a **total budget of 13,212,811 million euros of which 10,236,986 euros are financed by the European Commission** in the **Horizon Europe framework programme,** the EU's **main funding programme for research and innovation for 2021-2027.**

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