

D1.5

RRI First report and Progress Report

CIRCE

12/2025



Project Information

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DURATION OF THE PROJECT	December 2024 – November 2028
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TOPIC	HORIZON-CL5-2024-D4-01-03
WEBSITE	www.jouliaproject.eu https://jouliaproject.eu/
COORDINATOR	CIRCE – Technology Center
PROJECT OVERVIEW	The JOULIA project is focused on transforming energy-intensive industries by replacing traditional fossil fuel-based heating methods with advanced electric technologies. These industries rely on high-heat processes, which are critical for manufacturing products like rubber, ceramics, and plastics. By focusing on specific, high-heat applications, JOULIA seeks to showcase the potential of electrification to decarbonise operations, enhance efficiency, and drive sustainable industrial transformation.

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This deliverable builds on an internal RRI template originally developed within the Horizon Europe project eLITHE (Grant Agreement No 101138325). The generic structure and methodology have been adapted and updated to reflect the specific objectives and conditions of the JOULIA Grant Agreement (Grant Agreement No 101192555), in line with EU recommendations.

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Abbreviations

CA	Consortium Agreement
DEC	Dissemination, Exploitation and Communication
DMP	Data Management Plan
DOI	Digital Object Identifier
EC	European Commission
EU	European Union
FAIR	Findable, Accessible, Interoperable, Reusable
GA	Grant Agreement
GDPR	General Data Protection Regulation
HE	Horizon Europe
KPI	Key Performance Indicator
LCA	Life Cycle Assessment
MoRRI	Monitoring of Responsible Research and Innovation
RRI	Responsible Research and Innovation
RTO	Research and Technology Organisation
SC	Steering Committee
SME	Small and Medium-sized Enterprise

WP

Work Package

Table 1: Abbreviations

Executive Summary

This document is the deliverable “D1.5 – RRI First Report and Progress Report” of the Horizon project JOULIA (project reference: 101192555), developed in the framework of Task 1.4 “Innovation management and Responsible Research and Innovation”. The objective of D1.5 is to guide the consortium in RRI practices to be followed along the project implementation, following the RRI’s 6 policies agenda: 1) Ethics, 2) Public Engagement, 3) Open Access, 4) Gender Equality, 5) Governance, and 6) Science Education.

The practices adhere to the European Commission’s framework of ‘Responsible Research and Innovation’. This cross-cutting approach in Horizon Europe projects aims to proactively assess and address the potential societal impacts and expectations associated with project initiatives, promoting research and innovation that is both inclusive and sustainable.

During M1–M12, the JOULIA consortium implemented concrete RRI-related activities, including stakeholder mapping, interviews with industry actors, health & safety assessments, governance consolidation, and dissemination actions. The first Steering Committee (Genoa, September 2025) further reinforced co-creation and cross-WP integration.

To promote the Monitoring of the Evolution and Benefits of RRI (MoRRI) in the JOULIA project, a series of RRI indicators per the 6 RRI’s policies is provided. The indicators will be monitored during the project development and reported through progress reports. In particular, this document will be updated in December 2028 (M48) with the development of D1.9 RRI Progress Report.

The intended audience of the present document is each individual participant of the Project Consortium and, being a public deliverable, this one will be accessible from the project’s website.

The delivery of this RRI report is done in accordance to the description in the Grant Agreement Annex 1 Part A with no time deviation and no content deviation from the original planning.

1. Introduction

Responsible Research and Innovation (RRI) embodies a proactive perspective in R&D projects, foreseeing and evaluating potential consequences and societal aspirations concerning research and innovation efforts. Its overarching goal is to cultivate the creation of inclusive and sustainable research and innovative practices.

In general terms, RRI implies, in the EC's words, that all societal actors (researchers, citizens, policymakers, businesses, third-sector organizations, etc.) work together during the whole research and innovation process, in order to better align both the process and its outcomes with the values, needs and expectations of society.

The RRI approach is thus a cross-cutting concept in the Horizon Europe projects, that must implement actions to engage all actors (from individual researchers and innovators to institutions and governments) in research and innovation, enabling easier access to scientific results, to take up gender and ethics in the research and innovation content and process, and to promote formal and informal science education.

The present document, the first version of the report on RRI applied in the JOULIA project, seeks at guiding the consortium in RRI practices to be followed along the project implementation, following the RRI's 6 policies agenda: 1) Ethics, 2) Gender Equality, 3) Governance, d) Open Access, e) Public Engagement, and f) Science Education.

To ensure that the RRI is being correctly addressed during the whole execution of JOULIA, "MoRRI – Monitoring the evolution and benefits of RRI" indicator will be considered to monitor the project development and reported through progress reports.

1.1 Contribution from partners

Partner	Contribution
1. CIRCE	Coordinator. Deliverable writing, creation of methodology

All partners

Review of RRI in the project

Table 2: Contribution table

2. General guidelines for RRI practices

As per the [RRI Toolkit](#), RRI consists of:

- a) Involving society in science and innovation ‘very upstream’ in the process of R&I to align its outcomes with the values of society.
- b) A wide umbrella connecting different aspects of the relationship between R&I and society: public engagement, open access, gender equality, science education, ethics, and governance.
- c) A cross-cutting issue in Horizon Europe, the EU Programme for Research and Innovation 2021-2027.

RRI guides the different agents in the research & innovation practices (in this context, the project partners participating in the JOULIA initiative) in anticipating the implications of their work, including citizens and stakeholders upstream, and reflecting and responding on society’s values and concerns. In this way, co-design and co-responsibility for the outcomes of the research and innovation must be facilitated, increasing societal uptake and acceptability of research and innovation.

Sometimes, the two angles of ‘responsible research’ and ‘innovation’ may oppose, since ‘responsible research’ may focus on social and economic concerns; and ‘innovation’ on technical and commercial goals. RRI brings these together without aiming to restrict commercial activity. The objective is to ‘add value’ by making sure that ethical considerations that build community and societal norms are taken into account.

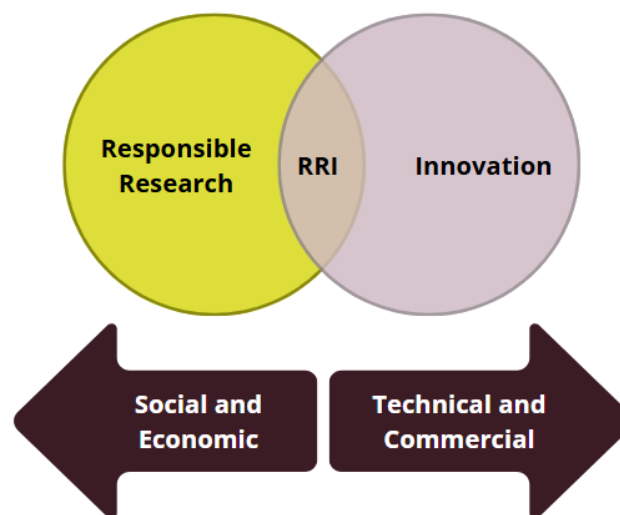


Figure 1: Bringing together Responsible Research and Innovation (source: [GREAT project](#))

2.1 Actors involved in RRI

RRI entails engaging all actors (from individual researchers and innovators to institutions and governments) through inclusive, participatory methodologies in all stages of R&I processes and in all levels of R&I governance (from agenda setting, to design, implementation, and evaluation).

Table 3: List of non-public technical deliverables

				
Policy Makers	Research Community	Education Community	Business & Industry	Civil Society Organisations
From funders to policy officers, research centre directors and representatives of learned societies, whether at a European, national, or local scale.	Researchers, innovators, research managers, public affairs and communication officers, and all those who support the diversity of the R&I system	Teachers, students, science museums' staff, families and all those concerned with education at all levels	From contractors and SMEs to large transnational companies with strong R&I activity	From individuals to organisations, NGOs and the media, civil society is crucial to shape the R&I our society needs

JOULIA will consider RRI to involve society in innovation and to align the project outcomes with the expected values. This document presents the different axes from RRI which are considered within the JOULIA framework. The JOULIA consortium by itself is based on several different institutions, such as research centres or large companies, aiming to collect diverse sensitivities.

2.2 RRI Outcomes

Adopting RRI is meant to achieve the following outcomes:

- **Learning Outcomes:** RRI leads to empowered, responsible actors across the R&I systems (researchers, policymakers, businesses and innovators, CSOs, educators). Structures and organisations should create opportunities for and provide support to actors to be responsible, ensuring that RRI becomes — and remains — a solid and continuous reality.
- **R&I Outcomes:** RRI practices strive for ethically acceptable, sustainable, and socially desirable outcomes. Solutions are found in opening up science through continuous, meaningful

deliberation to incorporate societal voices in R&I, which leads to relevant applications of science.

- **Solutions to Societal Challenges:** Horizon Europe programme lies under three Pillars, one of which is 'Global Challenges and European Industrial Competitiveness'. In order to support European policy, the EC requires R&I endeavours to contribute to finding solutions for these challenges: 1) Health, 2) Culture, Creativity and Inclusive Society, 3) Civil Security for Society, **4) Digital, Industry and Space**, 5) Climate, Energy and Mobility, 6) Food, Bioeconomy, Natural Resources, Agriculture and Environment.

2.3 Process dimensions

To achieve these outcomes, implementing a more RRI requires that processes are:

Table 4. Process dimensions in RRI

	Diverse and Inclusive: involve early a wide range of actors and the public in R&I practice, deliberation, and decision-making to yield more useful and higher-quality knowledge. This strengthens democracy and broadens sources of expertise, disciplines and perspectives.
	Anticipative and Reflective: envision impacts and reflect on the underlying assumptions, values, and purposes to better understand how R&I shapes the future. This yields valuable insights and increases our capacity to act on what we know.
	Open and transparent: communicate in a balanced, meaningful way methods, results, conclusions, and implications to enable public scrutiny and dialogue. This benefits the visibility and understanding of R&I.
	Responsive and adaptive to change: be able to modify modes of thought and behaviour, overarching organizational structures, in response to changing circumstances, knowledge, and perspectives. This aligns action with the needs expressed by stakeholders and publics.

2.4 The Six Policies Agenda

The EC provided the six policies agenda to provide more concrete normative orientations, as shown in **¡Error! No se encuentra el origen de la referencia..** These thematic elements are:

2.4.1 Public Engagement

Public Engagement in RRI focuses on enhancing and widening participation across all stages of R&I, fostering new partnerships, and ensuring a transdisciplinary approach. It aims to advance collaborative decision-making, shared responsibility, citizen science, and open innovation.

2.4.2 Gender Equality

Gender equality is a matter of common concern, being crucial to invest in equal opportunities for men and women in R&I. It promotes teams that perform better and attract top-level players. One of the three main objectives of Horizon Europe's gender equality strategy is to foster gender balance in R&I teams, closing the gap in women's participation. Ensuring gender balance in R&I teams is vital to producing high-quality outcomes that benefit everybody.

The gender perspective is going to be studied along the lifetime of the project from two different perspectives.

- i. The technologies developed must aim to the extent possible to consider the gender dimension and to avoid any potential discrimination.
- ii. JOULIA partners will, to the extent possible, work towards gender-balanced teams.

Gender data for the project will be gathered on several occasions, following the different project's reporting periods.

Women's representativity in JOULIA is 19% (after the registered names in the JOULIA contact list). This ratio is acceptable but still insufficient in a project that mainly involves engineers. In any case, this value will be updated after the first Periodic Report, where all partners have to provide data about gender participation.

2.4.3 Governance

To reach futures that are both acceptable and desirable, governance arrangements have to (1) be robust and sufficiently adaptable to the unpredictable development of research and innovation; (2) be familiar enough to align with existing practices in research and innovation; (3) share responsibility and accountability among a large variety of actors and provide instruments to foster this shared responsibility.

The governance bodies of the project such as the Project Coordinator, Steering Committee, General Assembly, Work Package Leaders, and Task Leaders have been defined in the KoM of the project. All together will work for the correct execution of the project and also for the implementation of the RRI.

2.4.4 Science Education

Focuses on (1) enhancing the current education process to better equip citizens with the necessary knowledge and skills so they can participate in research and innovation debates; and (2) increasing the number of researchers (promote scientific vocations).

The integration of RRI principles in teaching and learning activities supports multidisciplinary and stronger student engagement as well as student acquisition of critical thinking and collaborative learning skills.

2.4.5 Open Access

This pillar addresses issues of accessibility to and ownership of scientific information. Free and earlier access to scientific work might improve the quality of scientific research and facilitate fast innovation, constructive collaborations among peers and productive dialogue with civil society.

For the purpose of this deliverable, it is worth mentioning that the policy of Open Access has been treated within the deliverable **Data Management Plan (D1.2)**, resulting in the preparation of several guidelines to ensure the adherence to the FAIR principles (Findability, Accessibility, Interoperability, and Reuse of digital assets). In any case, the number of OA publications will be taken into account as a KPI as well as the importance of providing results to the project via open publishable research.

2.4.6 Ethics

Research integrity must be guided by standards, guidelines and protocols as well as open to external scrutiny. The core ethical endeavour is to achieve its integration across the entire R&I process in all project phases. Integrating ethics into the project requires continuous orientation, reflection and deliberation on the decisions, actions and values at stake.

Reflection is an important factor when it comes to Ethics, as it comes down to thinking “doing better” in every aspect of the project, being a philosophical attitude. Thinking about ethical issues makes one aware of opportunities to think about new projects and benefits, preventing them from failing.

At the current stage, JOULIA focuses on the avoidance of unacceptable research. JOULIA does not deal with work in ethical-compromised areas, such as the investigation of human embryos, humans, or animals. All the personal data used within the frame of the project will adhere to EU regulations regarding General Data Protection Regulation, to ensure that the data is protected accordingly.

In short, this policy considers incorporating Research Integrity, by sharing responsibility for the impacts of science and reflecting on people’s ideas and concerns about R&I.



Figure 2: A normative framework for RRI: the six policies agendas

2.5 Events and actions

Within JOULIA, a plan for integrating the RRI into the project has been prepared since the early beginning. This plan considers among other organising various promotional and educational activities taking advantage of the project encounters.

Besides extraordinary encounters that may occur during the development of the project, JOULIA consortium plans to physically meet to discuss and move steps forward within the evolution of the project.

Up to 9 physical events have been planned (Figure 3:). The meetings, specially focused on the monitoring of project progress, achievements review, decision-making and conflict resolution, as well as technical discussions are hosted by local organizations which are part of the project.

		Year 1					Year 2					Year 3					Year 4				
KoM	x																				
General Assembly							x					x					x				
Steering Committee			x				x		x			x		x			x		x		x

Figure 3: JOULIA's expected meetings calendar

In this context, in-person meetings offer an excellent opportunity to conduct additional activities that enhance the project's outcomes, increase awareness among citizens and relevant organizations, and, importantly, engage companies and industries for the early adoption of the solutions.

The preliminary agenda for these events includes, in addition to technical and administrative topics, side activities focused on dissemination and exploitation. The goal is not only to raise awareness of the project but also to strengthen connections among project partners and industries. In this regard, the coordinator, CIRCE, brings extensive experience in organizing side events to promote project activities, as do other partners such as WR and CORE.

Last but not least, the role of CIRCE is to provide the consortium with an overview of the innovations planned within the project in each meeting, so all partners have a common idea and approach to them. In this sense, information on the project innovation will be provided from different points of view including technical, regulatory, social and organizational aspects.

2.6 Golden rules for achieving RRI

Summing up, the RRI approach to follow under the framework of the project, the partners need to consider how to include these guides in their work. It can be stated that there are [5 golden rules](#) to follow to achieve RRI. These rules should be used within JOULIA to put into practice the RRI approach:

1. Think about what society wants
2. Involve a wide range of stakeholders
3. Consider all possible impacts
4. Be open and transparent
5. Respond and adapt

3. Progress of RRI implementation up to M12

During the first twelve months of the JOULIA project, the consortium implemented a set of Responsible Research and Innovation (RRI) practices aligned with the six thematic dimensions defined by the European Commission. This section summarises the progress achieved, the mechanisms put in place, and the initial evidence collected during this period.

3.1 Ethics & GDPR

During the first reporting period, JOULIA ensured full GDPR compliance across all activities involving personal data. The Data Management Plan was submitted in Month 6 (D1.2), providing the baseline framework for data handling, storage, access levels and ethical safeguards.

Ethical protocols were applied in WP4 during the stakeholder interview campaign, using informed consent forms and secure handling of qualitative data. Ethical management practices were further reinforced during the 1st Steering Committee (Genoa, September 2025), where CIRCE reminded partners to respect confidentiality obligations, ensure that sensitive information is not disseminated publicly, and to use only the official JOULIA communication channels (Teams, SharePoint, and mailing lists) for project-related information exchanges.

These actions ensure that JOULIA adheres to EU ethical standards and maintains responsible practices when engaging external stakeholders.

3.2 Gender Equality

Gender balance within the project was monitored through the contact database and through attendance in project meetings. As of Month 12, women represent 18.8% of the individuals registered in the JOULIA consortium contact list. This level is aligned with typical participation rates in engineering- and manufacturing-oriented Horizon Europe projects, though further improvements will be encouraged.

Formal gender-disaggregated data will be collected and reported during the first Periodic Report, as required by the Grant Agreement. Additionally, gender balance considerations will be integrated into future dissemination, training and stakeholder engagement activities.

3.3 Public Engagement

Public engagement activities progressed significantly in the first 12 months. As part of WP4, the consortium conducted 12 semi-structured interviews with representatives of manufacturing industries, operators, and energy suppliers. This campaign provided early insights into perceptions, barriers and enablers related to industrial electrification.

In addition, the consortium organised on-site visits and workshops at ARTIGO and SIMLAB during the 1st Steering Committee meeting, enabling direct dialogue between technology developers, pilot partners, and end users. These interactions facilitated early co-design, requirement validation and user-centred discussions on technology integration and operational constraints.

These actions contributed to an inclusive approach, ensuring that the perspectives of relevant actors are embedded in the early phases of JOULIA's technical development.

3.4 Open Access

Open Access principles were implemented from the beginning of the project. The JOULIA public website was launched in Month 4, and active dissemination through LinkedIn, X, Bluesky and YouTube began shortly thereafter. A visual identity package and the first project newsletter (M6) further supported the transparent communication of project goals and progress.

Although no peer-reviewed scientific publications have been produced in the first year—consistent with the early technical maturity of the work—the consortium is preparing initial technical results that may be shared through public deliverables and future open-access publications in subsequent reporting periods.

3.5 Governance

The project governance structure has been fully deployed and is functioning effectively. Monthly Steering Committee meetings took place throughout M1–M12, ensuring continuous monitoring of progress, alignment across work packages, and proactive identification of risks.

The first in-person Steering Committee meeting (Genoa, September 2025) served to reinforce cross-WP coordination and addressed key integration topics, such as:

- technical dependencies between WP4, WP5, WP6 and WP7
- data exchange needs for digital optimisation tools
- preliminary risk identification and mitigation
- alignment on pilot requirements and technology pathways

This strong governance activity contributed to maintaining a coherent roadmap and ensuring that RRI considerations (ethics, safety, stakeholder engagement) remain integrated into technical decisions.

3.6 Science Education

Science education activities have begun through knowledge-transfer exchanges among partners, especially during the workshops conducted at the 1st SC. These sessions introduced concepts related to digital optimisation, predictive maintenance, flexibility analysis, and electrified heating technologies to pilot-site staff and technical teams.

These early actions lay the foundation for more formal training modules to be developed in future phases (WP14–WP16), contributing to capacity building and fostering understanding of the socio-technical implications of JOULIA’s technologies.

MoRRI indicators (M1-M12)

MoRRI Indicator	Evidence M1-M12	Source
PE5 — Public engagement events	2 co-design workshops + 1 Steering Committee meeting with on-site pilot engagement	Steering Committee Minutes
GE1 — Gender balance	18.8% women in the consortium	Contact list
OA1 — Open dissemination tools	Website (M4), Social media, Promotional package, 1st Newsletter (M6)	WP14
ETH1 — Ethical procedures	DMP (M6), informed consent forms, GDPR guidance reminders	WP1, WP4
GOV1 — Governance activity	9 monthly virtual SC meetings + 1 in-person SC	WP1, SC Minutes
EDU1 — Training activities	WP7 knowledge-transfer and technical workshops	SC Minutes

Conclusions

The present document serves as the first version of the Responsible Research and Innovation (RRI) report within the JOULIA project, D1.5, with a clear objective outlined to guide the consortium in RRI practices throughout the project implementation. The work is being done within the framework of Task 1.4 ‘Innovation Management and Responsible Research and Innovation’, led by CIRCE as project coordinator.

The RRI practices outlined in the document are aligned with the European Commission’s framework of Responsible Research and Innovation, focusing on the six key policies: Ethics, Public engagement, Open Access, Gender, Governance, and Science Education. The commitment to these RRI principles demonstrates the project’s dedication to societal values and responsible practices.

As the project progresses, the JOULIA team will continue to monitor and adapt its approach to ensure that RRI remains at its core. The commitment to the five golden rules – thinking about society’s needs, involving diverse stakeholders, considering all impacts, being open and transparent, and responding and adapting – will guide the project’s path towards success.

This document will be updated in M48 with the creation of the D3.2 RRI First report and Progress Report (update M48).

Annex



Electrification of industrial processes using induction and microwaves technologies



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