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## 1 GENERAL INFORMATION

### 1.1 Draft title of the European Partnership

IAM4EU (Acronym)

Innovative Advanced Materials for the EU

### 1.2 Lead entity (main contact)

IAM-I (Acronym) – The Innovative Advanced Materials Initiative Association

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### 1.4 Summary (max 500 characters)

Innovative Advanced Materials (IAMs) are crucial for technological progress, driving the green and digital transitions and enhancing Europe's competitiveness and sovereignty. The Innovative Advanced Materials for the EU (IAM4EU) partnership will implement a systemic approach including developers, users, and intermediate stakeholders, targeting sustainable advanced materials and associated technologies for a green, digital and circular economy. The main aim of this transversal partnership is to establish an inclusive multi-disciplinary ecosystem to accelerate the development and uptake of IAMs for European strategic industrial value chains, starting with energy, mobility, construction and electronics as initial priorities.

### 1.5 Acknowledgments

To the following initiatives for their valuable contributions to this document:

- EMIRI, The Energy Materials Industrial Research Initiative
- EUMAT, The European Technology Platform for Advanced Engineering Materials and Technologies
- GRAPHENE FLAGSHIP, a FLAG-ERA initiative
- MANUFUTURE, The European Technology Platform for Sustainable Manufacturing
- SUSCHEM, The European Technology Platform for Sustainable Chemistry

## 2 CONTEXT, OBJECTIVES, EXPECTED IMPACTS

### 2.1 Context and problem definition

#### 2.1.1 Context

Materials innovation is essential for maintaining industrial leadership and competitiveness across sectors, playing a crucial enabling role in the twin transition towards both sustainability and digitalization. To remain competitive, industries must not only focus on developing new functionalities, performance improvements, and products, but they also must integrate

sustainability and circularity principles, such as Safe and Sustainable by Design (SSbD) [1]. This shift is necessary to address environmental challenges while capitalizing on opportunities provided by advanced digital tools, ensuring the EU's leadership in industrial innovation and safeguarding its environmental and digital future while boosting its industrial competitiveness.

Development and production of advanced materials currently faces significant issues, such as dependency on non-EU raw materials, fragmented research efforts, and limited private investment, in particular due to the difficulty of market uptake of new, more circular materials as alternatives to already qualified and well-performing materials currently used.

Innovative advanced materials (IAMs) are those AMs that fuel innovation in existing technologies as well as enabling new ones. These comprise: 1) enhanced forms of existing materials, with properties tuned for improved performance in specific applications, or to enable new ones; 2) novel materials enabling improved performance or new applications. The term "Innovative" emphasizes the novelty and commercial potential, and/or refers to modifications/functionalization used to enhance or create AMs, or innovative ways to use them.

AMs underpin many application areas across sectors, e.g. DeepTech and CleanTech for the Net Zero Industry Act [2] or can be used to reduce dependencies on and increase efficiencies of Critical Raw Materials (CRMs), as for the CRM Act (CRMA) [3]. In addition, there is a growing need for IAMs across various sectors to meet evolving societal and economic challenges, alongside increasing regulatory requirements like the Ecodesign for Sustainable Products Regulation (ESPR) [4], and chemicals regulations (REACH [5], CLP [6]) as well as voluntary initiatives like SSbD or enhanced focus on circularity.

The European Commission identified ten critical technology areas for the EU's economic security, including advanced materials, manufacturing and recycling technologies; energy technologies; and advanced semiconductors technologies [7]. The Niinistö report [8] emphasized that defence should be fully integrated into the EU's efforts in these critical (foundational) enabling technologies, in particular to develop European capabilities, so to reduce dependencies and protect against technology leakage.

The expert group report *Align, act, accelerate – Research, technology and innovation to boost European competitiveness* [9] highlighted the importance of optimizing the innovation potential that arises from increased investments in national security and defence-related advances, ensuring broader technological and economic benefits. The report also recommended i) that Partnerships should further leverage cash and in-kind contributions from industry, ii) the need for the deployment and use of results, and iii) the need for reinforced openness to new players, in terms of sectors, scientific disciplines and geographies. It also recommended the guiding principle of doubling down on what works, by continuing to strengthen European public-private partnerships (international, interdisciplinary, inter-sectoral, covering complete industrial value chains).

The Draghi report [10] asked to increase funding to boost EU industrial leadership in AMs, to reinforce and steer investment in technology development and deployment, by mobilising private capital and by building on a new partnership with industry. Building on the analysis of this report, the European Commission presented the strategic framework of the *Competitiveness Compass* [11] in January 2025, a new roadmap to restore Europe's industrial dynamic and boost economic growth, also highlighting the role of AMs to close the innovation gap.

The mission letter of EC President Ursula von der Leyen to the Commissioner for Start-ups, Research and Innovation, Ekaterina Zaharieva, recognized the growing importance and demand of AMs to support the competitiveness of European industries and the twin green and

digital transition, asking to start the work on an Advanced Materials Act to support the research and innovation process through to manufacturing and deployment.

The Working Group on Clean Technologies, operating under the Joint European Forum for IPCEI (JEF-IPCEI), is currently working on a proposal for an Important Project of Common European Interest (IPCEI) on Circular Advanced Materials for Clean Technologies. This initiative is designed to drive innovation and enhance Europe's strategic autonomy by tackling critical challenges in sustainability, resource efficiency, and the integration of circularity across value chains.

Aligned with the latest EU core strategies, the IAM4EU partnership supports Europe's broader vision for a resilient, competitive, and sustainable economy going beyond what current or previous Framework Programmes have addressed. By promoting a comprehensive European approach to a circular economy for advanced materials, it will address critical resource dependencies, enhance strategic autonomy, and create pathways for scaling up innovative solutions, ultimately driving long-term sustainability, economic growth, and global competitiveness.

To achieve this, Europe should:

- 1) Accelerate its research and technology development in advanced materials;
- 2) Scale up its innovation and manufacturing capacity;
- 3) Accelerate the industrial uptake of advanced materials in key sectors of activities and economic wealth for Europe.

This requires the creation of an environment that builds on existing strengths, retains research and innovation investments and production in the EU, and drives competitiveness, resilience and growth in advanced materials, processing and manufacturing.

### *2.1.2 Problem Definition*

The current landscape for AMs is hindered by a fragmented ecosystem of stakeholders, competencies, and resources, preventing industry from meeting the growing demand for materials at the necessary level and speed. The lack of investment, particularly in materials digitalization, further slows progress along and across industrial innovation chains. Private sector funding remains insufficient, limiting the adoption and uptake of IAMs by industry, while weak feedback loops between academia and industry prevent alignment of research and development with market demands.

At the same time, industry requires new tools and methods to ensure rapid compliance with new standards, approaches and increasing regulatory requirements responding to societal expectations for environmentally responsible products.

The lack of resilience and sustainability in industrial value chains further compounds these challenges. European industries face increasing dependencies on strategic and critical raw materials (SRMs, CRMs), and several critical supply chains are fuelled by external resources.

The inclusion of SMEs in industrial value chains remains weak. Strengthening collaboration across value chains and fostering SME inclusion are essential to enhancing Europe's competitiveness and sustainability by safeguarding the coherence of industrial value chains.

Europe still has a leading competitive position in AMs. However, this position is being massively challenged [12] and it has become necessary to boost the AM ecosystem in Europe, so as to reap the benefits that IAMs can give.

The overall assessment and necessary acceleration of the European advanced materials ecosystem - through measures such as greater coherence in the R, D&I value chain or the

strategic use of enabling technologies like digitalization - have not yet been comprehensively addressed. This makes IAM4EU both crucial and timely.

## 2.2 Common vision, objectives and expected impacts

### 2.2.1 Common vision

The IAM4EU vision is that, by 2035, Europe will be leading the global AM competition. To this end, the European industry will develop, produce and integrate more rapidly IAMs that meet increasingly stringent application requirements, more demanding sustainability and circularity profiles, and shorter technology cycles.

#### Ambition

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The overall ambition is to launch and operate a cross-sectorial accelerator for the design, development, and uptake of safe and sustainable AMs, also advancing progress towards a circular economy. This will be achieved by supporting IAMs and associated technologies in synergy with existing and new application-focused partnerships, along and across industrial value chains, prioritising all sectors where impacts on the twin transition and end-user perspective are highest.

IAM4EU will establish and maintain a cross-sectorial, multidisciplinary, collaborative Europe-wide research and innovation ecosystem that will significantly accelerate the time-to-market of IAMs by leveraging common motives between AM applications for different markets and associated technologies designed for a digital & circular economy.

IAM4EU will be driven by Europe’s challenges, needs and priorities, enabling the stakeholders to draw from the full range of materials and technologies to achieve the objectives set (materials and technology neutrality principle). IAM4EU will cover the complete AM lifecycle (from primary to secondary raw and AMs) ensuring that priorities are supportive of and supported by all actors along the industrial value chain (from design, development, production, transformation and integration into components & products, use, recovery and recycling): those producing AMs, those transforming them into components and articles, those integrating these into products, goods and systems, and those dealing with end-of-use management, along the whole innovation ecosystem. IAM4EU will support the full innovation cycle, directly through R&I activities bringing technologies from TRL 1 to 8, and indirectly by closely aligning with other and private funding along the whole innovation cycle.

IAM4EU will ensure that research investments meet industrial needs and boost uptake into marketable products through the broad bandwidth of industrial members in IAM-I. It will initially focus its activities on supporting areas where impacts on the twin transition and end-user perspective are the highest (Table 1), including the ones highlighted in the Commission Communication on Advanced Materials for Industrial Leadership [13].

*Table 1: Strategic areas for Europe (as prioritized by IAM4EU for 2025-27)*

SECTORS	APPLICATIONS
Clean Energy	<ul style="list-style-type: none"> <li>• Production / Storage / Distribution</li> <li>• High global emissions share in the energy sector (20%) [14]</li> </ul>
Clean Mobility	<ul style="list-style-type: none"> <li>• Terrestrial (Road &amp; Rail) / Maritime / Air &amp; Space</li> <li>• High global emissions share in the transport sector (22%) [14]</li> </ul>

Sustainable Construction	<ul style="list-style-type: none"> <li>• Energy Efficient Building / Smart Grid-ready Buildings / Sustainable Construction</li> <li>• High global emissions share in the transport sector (24%) [14]</li> </ul>
Electronics	<ul style="list-style-type: none"> <li>• Microelectronics / Optoelectronics / Photonics / Quantum Technologies, Sensors, IoT, firmware &amp; software (Industry 4.0-5.0, X.0), low energy consumption hardware for AI.</li> </ul>

### Links and/or collaboration opportunities

IAM4EU will closely collaborate, strengthen and bring together ongoing EU partnerships for the convergence of AMs technologies towards a sustainable future, building on existing know-how and gathering complementary knowledge and expertise. Key domains for collaboration will cover Technology and Markets; R&I activities; Innovation Uptake; Education & Skills; Regulation, Codes & Standards.

An assessment of potential synergies was carried out considering the relevant existing and candidate partnerships<sup>1</sup>. The results of this consultation indicated joint priorities, which will feed a more strategic approach on building up synergies on AMs across partnerships (cross-sectoral and spill-over approach envisioned by IAM4EU). E.g.,

- Expression of interest from Made in Europe and Processes4Planet illustrate how three transversal partnerships anticipate trilateral collaborations on energy & resource efficiency, end of use & recycling and the setting up of a federated digital framework covering the life cycle of materials. This was recently underlined in the consultation meeting with the Horizon Europe Cluster 4 partnerships [Made in Europe, Processes4Planet, Clean Steel, IAM4EU, ADRA (AI, Data & Robotics), Photonics21, Textiles of the Future], where IAM4EU was identified as crucial to reduce dependencies on CRM & substances of concern (SoC), for the future needs of electrification & materials for green energy, for the decarbonization of production chains and for Human Machine Interface, AI & Robotics.
- In-depth discussions took place with the Raw Materials partnership candidate to discuss boundaries, complementarity and joint collaboration in maximizing impacts along value chains from primary to secondary materials supply chains. Discussions with EIT Raw Materials have shown interest to jointly articulate research priorities with industrial needs, to address new skills and upskilling and the networking of cross-border infrastructures (Annex) in the field of materials (in general) and critical/strategic raw materials (in particular).

Similarly, sector-specific partnerships, such as Clean Hydrogen, Batt4EU, 2ZERO, Clean Aviation, Build4People, Chips JU, Photonics21 have shown great interest in collaborating on unmet materials needs on their side that could be taken on jointly with IAM4EU. To maximize impact, joint and complementary actions will be strategically planned and implemented, aligning with industrial value chains, the innovation cycle, and cross-sector synergies, within the frame of Horizon Europe work programmes.

Besides, IAM4EU will develop synergies with other European Union, national and regional initiatives (Table 2), complementary to Horizon Europe.

<sup>1</sup> 2ZERO / AI DATA ROBOTIC / BATT4EU / CHIPS JU / CIRCULAR BIO-BASED EUROPE / CLEAN AVIATION / CLEAN HYDROGEN / ECTP/ B4P / EIT RAW MATERIALS / EOSC / EUROPEAN METROLOGY / MADE IN EUROPE / PARC / PHOTONICS21 / PROCESS4PLANET / RAW MATERIALS

Table 2: Initiatives relevant to IAM4EU, other than Horizon Europe (non-exhaustive overview)

Digital Europe Programme (DIGITAL) and European Digital Innovation Hubs (EDIH)	Strategic digital capacities of the EU and deployment of digital technologies. Relevant for the development of key digital technologies and infrastructures (AI, Cyber security, HPC...) and to support uptake of digital technologies (via the EDIHs network)
EIC	Pathfinder instrument on IAMs research, with Transition instrument on research maturation, and with Acceleration instrument on uptake by SMEs
EIT	Advanced Materials Academy and support to technology scale-up, access to finance and adoption of the technology among industrial partners of the Raw Materials community
European Defence Fund	EU Defence Funds, European Defence Agency (EDA Materials Captech) and Circular Economy in Defence (IF CEED); important for dual use (civil and military) applications.
European Regional Development Fund (ERDF) – (European Structural and Investment Funds)	EU economic and social cohesion in the European Union. Broad coverage of the innovation cycle, particularly relevant for complementary funding i.e. capacitation (e.g. technological infrastructures), technology uptake, dissemination and demonstration, cross fertilization, entrepreneurship, etc.
European Social Fund+	Skilled and resilient workforce ready for the transition to a green and digital economy. Relevant to support the significant efforts needed across Europe related to education and training (e.g. upskilling and reskilling)
Innovation Fund (IF)	First-of-a-kind real scale demonstration of innovative low-carbon technologies
InvestEU Programme	Net-zero investments in the EU, catalysing private investments in EU priority areas
National and Regional funds	M-ERA.NET projects financed by national or regional funds; 3 interregional initiatives financed by DG REGIO and Regions (e.g. materials for batteries); EUREKA international calls financed with national funds; EUROSTARS calls addressing SMEs financed at national level
Strategic Technologies for Europe Platform (STEP)	Investments in critical technologies. Advanced materials are one of the investment areas (under clean technologies). STEP seeks to reinforce, leverage and steer EU funds – existing and new – to investments in deep and digital, clean and bio technologies in the EU, and in people who can implement those technologies into the economy.

## R&I investments

No recent study specifically targets R&D investments dedicated to advanced materials technologies across application sectors, as also evidenced by the recent tender call of the European Commission for a study on the production and use of advanced materials (EC-GROW/2024/OP/0063).

However, the 2024 EU Industrial R&D Investment Scoreboard, published by the JRC and DG-RTD [15], provides global figures on R&D investments by region and sector (Table 3). Based on these data, if advanced materials technologies account for a fraction of total investments - likely between 5% and 50%, depending on the sector (excluding financial and ICT services) - even under the most conservative assumption of 5%, this would still translate to an annual private sector investment of approximately €4 billion<sup>2</sup> in Europe.

Furthermore, assuming that 50% of this investment directly supports IAM4EU, the overall industry contribution - despite considerable uncertainties - would be in the order of €2 billion, annually.

Table 3: R&D investment (M€)

R&D invested	SB2012						SB2022					
	EU	JP	CN	US	RoW	Total	EU	JP	CN	US	RoW	Total
Aerospace & Defence	7 618	16	0	7 666	3 248	18 548	6 359	0	587	7 640	3 114	17 699
Automobiles & o.t.	36 343	23 385	3 017	20 076	5 321	88 141	62 614	33 189	18 037	27 588	10 979	152 407
Chemicals	4 356	6 460	97	6 660	2 682	20 255	5 346	7 848	3 787	4 733	3 425	25 138
Construction	1 453	1 211	2 730	672	647	6 714	2 910	1 374	24 750	590	1 228	30 852
Energy	4 365	1 134	2 691	3 641	4 649	16 480	5 550	991	6 792	2 477	3 688	19 498
Financial	3 861	0	0	557	4 898	9 316	7 095	0	2 014	3 511	6 525	19 145
Health industries	19 305	10 386	397	55 611	28 815	114 515	38 599	15 349	13 783	123 897	43 712	235 339
ICT producers	23 137	20 392	6 961	56 969	28 120	135 579	28 578	20 962	52 016	97 438	47 814	246 808
ICT services	7 487	5 435	1 381	37 138	4 410	55 852	14 821	9 498	34 732	145 501	11 709	216 260
Industrials	10 446	9 189	2 643	9 820	4 444	36 543	11 474	8 831	20 328	8 339	5 825	54 797
Others	7 722	13 998	719	13 544	7 830	43 814	9 411	15 763	19 032	17 965	13 745	75 916
<b>Total</b>	<b>126 096</b>	<b>91 606</b>	<b>20 637</b>	<b>212 355</b>	<b>95 064</b>	<b>545 757</b>	<b>192 756</b>	<b>113 802</b>	<b>195 858</b>	<b>439 680</b>	<b>151 763</b>	<b>1 093 860</b>

Source: The 2022 EU Industrial R&D Investment Scoreboard, European Commission, JRC/DG R&I.

## Transition strategy

### Phasing out of R&I areas or priorities

IAM4EU will set and implement an evaluation process of the projects portfolio overall impact based on the Key Performance Indicators (KPIs) defined in the Memorandum of Understanding (MoU). The KPIs set on the three *Specific Objectives* of IAM4EU will be used to deliver a holistic and updated overview of the achieved results. It will help to determine the impact achieved over time, which actions/priorities are successful and need to be continued and which are not delivering and need to be stopped or substituted. This process will ensure comprehensive information to anticipate phasing out of any R&I area/priority, so that resources are re-allocated in the most efficient way towards the delivery of expected outcomes and impacts.

### Phasing out of the partnership

The IAM4EU partners are committed to the success of the partnership. They consider the transition towards a climate-neutral, resilient, circular European society supported by a competitive industry a MUST. The phasing-out or an exit strategy should only be considered when the transition to a climate-neutral-circular society and economy at scale is well in progress and can be sustained in time through market uptake.

To deliver significant results, partners estimate that IAM4EU should be active for the next 10 years, and possibly even longer. The KPIs set on the *General Objective* of IAM4EU (MoU) will be used to monitor the contribution to and impact on European technology sovereignty, industrial leadership and competitiveness in IAMs in strategic markets for the twin green and digital transition. Achievements on these KPIs will be used for informed decision making

<sup>2</sup> 5% of (192756-7095- 14821) M€ R&D investment for EU in 2022 (Table 3).



regarding the progress and functioning of the Partnership, the result of which eventually will be the strengthening of the overall European advanced materials ecosystem contributing significantly to European industrial competitiveness. Only then will the partnership have achieved its objectives, assessing it versus the policy context it was set-up in.

The latest developments on the world market, investments and market access of IAMs will be monitored. An exit or adaptation case scenario will be developed, and implemented if IAM4EU fails to operate, if policy priorities are met by other means or have changed, if technological objectives have been met, if IAM4EU fails to demonstrate achievements or value added etc. The full report to the Commission will include relevant information to update on how the partnership evolves towards its objectives.

## 2.2.2 Objectives

### General objective

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In line with the Horizon Europe strategic plan 2025-27 and the EC Communication on Advanced Materials for Industrial Leadership, the **general objective (GO)** of the IAM4EU partnership is to secure and strengthen **European technology sovereignty, industrial leadership and competitiveness of IAMs** in strategic markets for the twin green and digital transition.

### Specific objectives

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**Specific objectives (SOs)** are:

- **SO1** – Deliver the IAMs and associated technologies needed for the twin green and digital transition.
- **SO2** – Exploit innovative technologies to accelerate the innovation cycle while responding to new requirements.
- **SO3** – Enable a dynamic innovation ecosystem for IAMs.

### Operational objectives

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**Operational objectives (OOs)** are:

- **OO1** – Design and develop IAMs and associated technologies enabling resilient and circular value chains.
- **OO2** – Foster the uptake by industry of IAMs and associated technologies.
- **OO3** – Support the scaling up of innovative SMEs.
- **OO4** – Cooperate with relevant digital, research, technology and industrial infrastructures, and produce and implement a joint strategy.
- **OO5** – Develop tools and methods to accelerate the design, development and integration of SSbD IAMs along industrial value chains.
- **OO6** – Implement a user-friendly SSbD approach for IAMs.
- **OO7** – Create an IAM stakeholder community covering all types of IAMs across and along industrial value chains with the necessary skills to lead innovation.
- **OO8** – Facilitate the use of all IAMs to enable the creation of new circular business models.
- **OO9** – Contribute to standards and norms.

### 2.2.3 *Expected impacts*

#### Green transition

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The need to establish and consolidate sustainable, resilient, and circular materials value chains, particularly in strategic sectors and markets, is paramount for advancing the objectives outlined in the European Green Deal [16]. By prioritizing sustainability, industries can mitigate environmental impact and contribute to the overarching goals of carbon neutrality, resource efficiency and zero pollution. Strengthening these value chains entails re-thinking design, production, manufacturing and end-of-use processes, adopting eco-friendly materials, substituting or reducing the use of CRMs and substances of concern (SoC), and embracing circular economy principles that promote recycling and reuse. This not only aligns with the EU's commitment to environmental protection but also enhances resilience by reducing dependence on scarce resources and minimizing waste. Strategic areas starting with energy, mobility, construction and electronics [13], key for society and economic stability, are focal points for implementing these sustainable practices, ensuring that the transition to green technologies is comprehensive and impactful. Manufacturing firms in Europe spend on average 40% on materials (Circular Economy Action Plan [17]). Applying circular economy principles across the EU economy has the potential to increase EU GDP by an additional 0.5% by 2030 creating around 700 000 new jobs [18]. Changing consumer patterns and supported by policy goals, as in the European Green Deal, will lead to an increase in the responsibility of industry for supply chains.

#### Digital transition

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In the Digital Age, focusing on AMs and generation, management and exploitation of materials data along value chains accelerates product innovation and sustainability. Digital Product Passports (DPP), including data on materials, empower consumers with transparent information for informed decisions on sustainability and durability. The synergy between materials and digital technologies drives innovation, enhancing efficiency and performance. AMs with cutting-edge functionalities and capability for recycling, integrated with data insights, optimize usage across applications. Materials Acceleration Platforms (MAPs), leveraging AI, automation, and high-throughput experimentation, further accelerate materials discovery and deployment [19]. Real-time monitoring and predictive analysis enable informed decision-making, fostering progress in sectors like clean energy, clean mobility, sustainable construction, electronics or other sectors. This symbiotic relationship between AMs and data transforms industries, paving the way for a more interconnected and intelligent future.

#### Competitive & sovereign Europe

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To strengthen EU sovereignty, global leadership in key sectors is essential, aligning with European values. The EU must assert itself not just economically, but also politically and technologically, particularly in the area of AMs. Investing in research and development, fostering innovation, and breaking down silos in interdisciplinary collaboration are crucial. Combining AI with data analytics can optimize manufacturing processes. Integrating sustainable practices can boost environmental responsibility and market growth. IAM4EU aims to promote access to technology infrastructures, supporting industry (incl. start-ups and SMEs) to adapt faster to emerging trends and ultimately enhance competitiveness in the global industrial landscape. As laid out in the EC's plans for a Clean Industrial Deal [7], competitiveness of the European industry needs to go hand in hand with the transition to a greener and more digital future. Hence, AMs are a crucial field for championing Europe's industrial leadership and global competitiveness.

## 2.3 Necessity for a European Partnership

IAM4EU is a strategic initiative designed to align with the objectives of Horizon Europe and the broader political priorities of the European Union (EU), its Member States, and Associated Countries. By fostering innovation in advanced materials, IAM4EU contributes to scientific leadership, industrial competitiveness, and societal progress, ensuring Europe remains at the forefront of technological advancements.

IAM4EU supports the EU's political and strategic goals by strengthening Europe's scientific and technological base, technology sovereignty, industrial leadership and competitiveness through coordinated research in advanced materials and directly relates to the following EU strategies and policies:

- the European Green Deal [16];
- a Europe fit for the digital age [20];
- IAMs play a crucial role within the Circular Economy Action Plan by contributing to resource efficiency, sustainable product design, circular value chains, and fostering innovation;
- the Clean Industrial Deal (CID) [7];
- Action Plan on Automotive Industries [21];
- the Chips Act [22];
- the Critical Raw Materials Act [3];
- the Net Zero Industry Act [2];
- the upcoming Advanced Materials Act;
- the EU Taxonomy for Sustainable Activities [23];
- the Ecodesign for Sustainable Product Regulation [4];
- Commission Communication on Advanced Materials for Industrial Leadership to address energy, mobility, construction and electronics sectors in priority along with cross-cutting aspects such as digitalisation and the SSbD concept.

Safety, sustainability and circularity of materials and applications are guided by the SSbD Framework recommendation [1], the Chemicals Strategy for Sustainability and its elements [24], supported by its Strategic Research and Innovation Plan (SRIP) and the Ecodesign for Sustainable Products Regulation.

IAM4EU enhances traditional Horizon Europe projects by overcoming fragmentation in AMs stakeholders & communities, research policies, programmes and investment across Europe [25] and fostering long-term strategic alignment in advanced materials research, innovation, and their rapid cross-sectorial industrial uptake. The initiative drives the development of Safe and Sustainable-by-Design (SSbD) approaches, ensuring that new materials and technologies meet environmental, health, and circularity standards from the outset. By integrating academia, research, industry, and policymakers within a structured framework, IAM4EU accelerates innovation cycles through digitalization, advanced modelling, and data-driven decision-making. Its technology- and materials-neutral approach enables the development of future-proof solutions, promoting industrial scalability and resilience. Additionally, IAM4EU facilitates cross-sectorial technology transfer, regulatory alignment, and industrial scale-up, bridging the gap between early-stage research and market deployment across the EU.

By aligning with national and regional initiatives, IAM4EU harmonizes research and investment priorities with EU strategies, leveraging programs like Smart Specialization Strategies (S3) [26], Digital Europe [27], and IPCEIs [28]. It fosters European strategic autonomy by reducing reliance on non-EU suppliers and strengthening supply chains. Additionally, it promotes joint investments in Open Innovation Test Beds (OITBs), workforce development, and industry-led training initiatives.

Governance structures, including the Technology Council for Advanced Materials, Thematic Working Groups, and Advisory Committees, ensure alignment between research, policy, and industrial strategies at multiple levels. IAM4EU will contribute to establishing a sustainable innovation framework that enhances Europe’s technological sovereignty, industrial competitiveness, economic resilience, and environmental sustainability.

## 2.4 Partner composition and target groups

IAM4EU builds on EMIRI, SUSCHEM, MANUFUTURE and EUMAT communities brought together under the AMI2030 initiative<sup>3</sup> and on the Graphene Flagship initiative. It also benefits from the Flag-ERA and M-ERA.NET communities, EU funded networks established as ERA-NET Co-fund actions in H2020, to support and increase the coordination between European and national research programmes and related funding in materials science and engineering.

*Table 7: Previous R&I initiatives*

<b>PREVIOUS R&amp;I INITIATIVES</b>	<b>MISSION</b>
EMIRI	Driving research, innovation and competitiveness across the advanced materials industry for the benefit of clean and sustainable energy and mobility
ERA-NETS (M+FLAG)	Research and innovation on materials and battery technologies, supporting the European Green Deal
EUMAT	Promote leading global position and competitiveness of EU technology in Advanced Engineering Materials contributing with R&D&I European policy in this area, involvement of industry and other stakeholders in establishing European R&D priorities, and promoting social and citizens’ engagement.
FLAG-ERA	Coordinating national and regional funding for the Future and Emerging Technologies Flagships
GRAPHENE FLAGSHIP (GF)	Bringing graphene and related layered materials and their hetero-structures from the realm of academic laboratories into European society for the benefit of its citizens.
MANUFUTURE	Develop and implement R&I strategies to speed up the rate of industrial transformation to high-added-value products, processes and services, securing high-skills employment and winning a major share of world manufacturing output in the knowledge-driven economy.
SUSCHEM	Initiate and inspire European chemical and biotechnological innovation to respond effectively to societal challenges by providing sustainable solutions.

The ambition and scope of IAM4EU call for a paradigm shift in how AMs are conceived, produced, and utilized, bringing together in a collaborative effort, sectors, communities and initiatives that currently work mostly apart. There is a pressing need to defragment the current landscape of stakeholders, competences, resources, initiatives, streamlining efforts, establishing coordinated initiatives, fostering collaboration, and creating synergies.

<sup>3</sup> The Advanced Materials 2030 Initiative (AMI2030) was triggered by the publication in February 2022 of the [Materials 2030 Manifesto](#), calling for new forms of inclusive cooperation across the entire advanced materials value chain.

EMIRI<sup>4</sup>, SUSCHEM, MANUFUTURE, EUMAT and the Graphene Flagship have engaged their members and networks to join the IAM-I association aiming to embark actors from all relevant communities, so to enable IAM4EU's successful implementation, with complementarities across domains of intervention and expertise.

The different communities to be involved in IAM-I include:

#### Large companies and SMEs along materials value chains

- Materials producers: developing and producing AMs, including chemicals, plastics, fibres, composites, nano/2D/layered materials, etc.
- Materials transformers, integrators, users, involved in AM processing, transformation into intermediary or end-products, integration into finished goods and systems, in priority application sectors, etc.
- Recycling industry: collecting, sorting, de-manufacturing, disassembling, dismantling products, recycling materials, etc.

#### Large companies and SMEs offering cross-enabling or associated technologies and solutions

- Digital solutions providers (modelling, data management, AI, traceability, etc.)
- Materials processing equipment manufacturers; automation tools providers; etc.
- Analysis and characterisation solutions providers.

#### Industrial/Sectorial associations, European alliances, platforms and clusters

- Organizations that represent a relevant group of stakeholders, either at EU or national/regional level, with a sectorial or thematic focus.
- Significant role in representing (channelling the voice) and mobilizing of large numbers of stakeholders, particularly SMEs.

#### Research Organisations

- Universities – providing scientific knowledge and education skills.
- RTOs – competences and capabilities in the different scientific and technological areas; bridging basic research with industry needs.

IAM-I will establish synergies with other initiatives, both at European and national/regional level, covering segments/aspects/parts of the materials value chain(s), with significant momentum and results/impact, to make the most of all contributions while filling remaining gaps. This will be achieved by a strong and persistent joint collaborative work/effort with the following initiatives and organisations (the “target groups”):

#### European PPP's and EIT KICs

- Industry led, EU partnerships acting in complementary domains, upstream or downstream, including relevant sectorial and thematic cross-enabling/associated ones.
- Align roadmaps, provide complementary R&D capabilities and funding, reinforce links with other relevant communities.

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<sup>4</sup> On January 30, 2025, EMIRI AISBL transitioned into IAM-I AISBL, with all former EMIRI members transferring to the new organization. This transformation ensures the continued engagement of its industrial community focused on materials for energy.

- Synergies in collaborative roadmapping, complementary R&D programmes, joint calls, education and skills, etc.
- Examples: P4P (AMs design, development and production; recycling), MiE (AMs processing; de-manufacturing, disassembly, dismantling), EIT Raw Materials (CRM substitution, education and skills; innovation uptake).
- Promote knowledge transfer and training: Speed up the innovation cycle, especially of SMEs and start-ups, incl. actively scouting early-stage start-ups that align with industry needs, using the Regional Hubs of EIT/KICs across Europe and within their startup portfolios, to finalize proof of concept, mature technologies, and accelerate time to market.

Research and technology infrastructures (Open Innovation Test Beds (OITB), Digital Innovation Hubs (DIH), Testing and Experimentation Facilities (TEF), Materials Acceleration Platforms (MAP) etc.)

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- Design, development, upscaling and production of AMs.
- Involved in the production, processing stages of AMs, and associated areas.

Funding agencies and financial investors

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- Public agencies providing financial support for research and innovation in AMs
- European Investment Bank, Venture capitalists, etc.
- Facilitate access to financial investments for start-ups and SMEs

Standards and regulatory bodies and authorities

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- Policy makers and regulators who are responsible for setting guidelines and regulations related to the development, use, and disposal of AMs.
- Definition, implementation and monitoring of standards and regulations, at EU or international levels.
- Collaboration in the definition of new standards and regulations. Support for the implementation of existing standards and regulations.
- Regulatory preparedness activities.

Consumers and civil society

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- Organizations that represent consumers, and/or citizens in general (e.g. NGOs), also targeting safety, environmental and sustainability goals.
- Address societal challenges, provide scientifically and fact-based information.

International partners (Open Strategic Autonomy)

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Multilateral partnerships where beneficial (e.g., trade, climate, security) while ensuring independence in critical areas (e.g., energy, technology, defence, and supply chains).

- Engaging with organizations on a global scale will be necessary to bring diverse perspectives, expertise, and resources.
- Enhance scientific and technological cooperation between countries, leading to the development of new and innovative technologies.

## 3 PLANNED IMPLEMENTATION

### 3.1 Activities

#### 3.1.1 R&I priorities

R&I priorities are set in the *Strategic Research & Innovation Agenda* (SRIA)<sup>5</sup>, the outline of which is given in Figure 1. Priorities are organized through the specific objectives set for IAM4EU to address and advance IAMs and associated technologies across sectors and applications of strategic importance and significant impact (SRIA, Part 2); cross-enabling tools throughout industrial value chains (SRIA, Part 3); and ecosystem enablers and synergies that integrate IAM4EU stakeholders into a unified ecosystem along the innovation cycle (SRIA, Part 4).

The approach for identifying R&I priorities was based on the following criteria:

- Pinpoint the relevance of individual IAMs and their properties to focus on the 4 initially prioritized areas for IAM4EU (Energy, Electronics, Mobility, Construction), as well as any other strategic areas.
- Scope interaction and collaboration with existing partnerships, ecosystems and initiatives.
- Facilitate conceptualization of future calls to be proposed under IAM4EU.
- Identify the needs of technical working groups (WGs) to be set up by the IAM-I association.

A set of 19 R&I priorities was identified and will be regularly updated:

P#1 – CRM-free/lean and efficient catalysts for energy conversion and CO<sub>2</sub> reduction

P#2 – High-conductivity and durable membranes for efficient H<sub>2</sub> production and conversion, and e-fuels and e-chemicals production

<b>1. INTRODUCTION</b>
1.1. Context & Objectives
1.2. Innovative Advanced Materials
1.3. Technologies for the design, development and uptake of IAMs
1.4. Safety, Sustainability and Circularity
1.5. Collaboration with other partnerships and initiatives
<b>2. IAMs AND ASSOCIATED TECHNOLOGIES</b>
2.1. Priority Areas
2.1.1. Energy
2.1.2. Mobility
2.1.3. Construction
2.1.4. Electronics
2.2. Overarching needs & challenges
2.3. R&I priorities
2.4. Types of activities across P#1-10
<b>3. CROSS-ENABLING TOOLS AND METHODOLOGIES</b>
3.1. Transversal intervention areas
3.1.1. Digitalisation
3.1.2. Materials modelling, characterisation and testing
3.1.3. Embedding Safe and Sustainable-by-Design (SSbD) principles
3.2. Overarching needs & challenges
3.3. R&I priorities
3.3.1. Types of activities across P#11-14
<b>4. ECOSYSTEM ENABLERS AND SYNERGIES</b>
4.1. Priority topics for ecosystem enablers and synergies
4.1.1. Stakeholders: get together, work together
4.1.2. Fostering the production, use and re-use of IAMs
4.1.3. Standards & norms
4.2. Overarching needs & challenges
4.3. R&I priorities
4.3.1. Types of activities across P#15-19
<b>5. KEY PERFORMANCE INDICATORS</b>

Figure 1: SRIA outline

<sup>5</sup> <https://www.iam-i.eu/wp-content/uploads/2025/02/SRIA-Innovative-Advanced-Materials-for-Europe.pdf>

- P#3 – Innovative concepts, designs & components for efficient H<sub>2</sub> and thermal energy storage
- P#4 – CRM-free/lean magnetic phases for high-performance permanent magnets in circular value chains
- P#5 – Innovative electrodes, electrolytes, binders and separators for electrochemical energy storage
- P#6 – IAMs-enabled surfaces & interfaces for multifunctional components & products
- P#7 – IAMs for lightweight, durable and sustainable structural systems
- P#8 – IAMs for energy efficient, multifunctional, photonic, electronic, spintronic, and quantum technologies
- P#9 – IAMs based on (designed for) recyclable polymers/polymeric composites
- P#10 – IAMs as PFAs alternatives or based on PFAS alternatives
- P#11 – FAIR and semantic interoperable digital materials data space
- P#12 – Predicting performance and lifecycle of materials
- P#13 – Validated test methods supporting the implementation of SSbD
- P#14 – Data management & curation for efficient SSbD
- P#15 – New business models
- P#16 – Education and skills
- P#17 – Networking and widespread use of technology infrastructures
- P#18 – LRI, OITB and MAP integration
- P#19 – Contributions to further development of standards & norms

### *3.1.2 Portfolio of activities*

Annex 4.2 summarises the IAM4EU activities, which can be mainly split between R&I and complementary activities, according to their type/positioning and their main source of funding.

R&I activities constitute the backbone of IAM4EU's R&I activities at TRL 1-8.

IAM-I provides input and advice to the EC so to contribute to the identification of priorities of R&I activities to be included in the Work Programmes (WPs) of HE and future frameworks within the scope of the co-programmed European Partnership's activities.

In addition, in-kind R&I activities contributing to achieving the IAM4EU objectives will be conducted by the Partners (other than the EU). These typically include R&I activities within the scope of the SRIA but not funded by the Partnership, such as:

- Side/upstream projects, including low-TRL research activities and proof of concept activities, feeding into Partnership projects; and
- R&I at higher TRL/MRL and/or to ensure demonstration, market, regulatory and societal uptake, which are in the scope of the SRIA but are not covered by EU funding.

Non-R&I actions, complementary and strategic, will be implemented to address the broader scope of the ecosystem and ensure comprehensive and substantial impacts in the long run. A given type of complementary activity can be supported by IAM4EU and/or other public/private sources, in different ways, as illustrated with the following two examples:



- Support the Advanced Materials Academy by identifying education and skills needs, promoting PhD programs in IAMs, and facilitating education and training activities at various levels;
- Contribute to regulations and standards by conducting impact assessments, funding R&I projects, advocating for inclusion of IAM-related standards in funded projects, and promoting adoption of relevant standards by industry.

## 3.2 Resources

IAM4EU is embedded in a network of thousands of industrial companies in Europe, which annually invest dozens of billions of Euros into research and innovation [29]. The public funding that will be invested in overcoming the challenges and opportunities identified by IAM4EU will concentrate on collaborative research between companies, RTOs and Universities.

The activities financed by partners other than the EU, directly or indirectly associated with the Partnership and its research and innovation framework, will be:

- In-kind contributions to the EU funded projects (on the basis of non-reimbursed eligible costs), with lower funding rates for higher TRLs;
- In-kind contributions to the National/Regional funded projects that relate to IAM4EU;
- Company funds directly or indirectly linked to the IAM4EU SRIA R&D&I framework;
- Additional investments by companies triggered by technologies provided by the IAM4EU projects;
- Costs incurred by companies associated to the financing of capital equipment, clean rooms, demonstrators or pilot lines.
- Training programmes for workers and the development of curricula that have the potential to be scaled up.

IAM4EU should offer the opportunity to unlock private capital, doubling the EU's expected contribution of 250 M€ for 2025-2027, allowing to scale and accelerate the deployment of advanced materials.

On top of these investments in R&I activities, companies also foresee investments in operational activities that go beyond the work set out in the SRIA, which contribute to achieving the objectives of the Partnership, and where there is a clear link between the investment and the activities of the Partnership, encompassing:

- Industrial infrastructures (Annex 4.1) and test facilities;
- Construction of production facilities;
- Other activities required to produce and place on the market the product/service resulting from R&I activities performed as part of IAM4EU.

These investments in operational activities are not included in the in-kind contributions (in-kind additional activities) intended by the Partners other than the European Union, but they will be monitored by IAM-I in order to report on the leveraging impact of the Partnership.

## 3.3 Governance

### 3.3.1 *The Partnership Board*

IAM4EU will be established by signing a Memorandum of Understanding (MoU) between the European Union (represented by the EC) and IAM-I, representing the Partners other than the European Union, i.e. all interested AMs stakeholders other than public authorities. This MoU will set out a cooperative relationship for the duration of the Partnership with a long-term

common vision, and the Partners pledge to pursue this common vision throughout the duration of this MoU. It will also define the governance bodies of the Partnership.

The **Partnership Board (PB)** will comprise representatives of the **EC services** and **IAM-I's Association Delegation (AD)** - see IAM-I's Articles of Association, TITLE VIII.:

- 1) The AD will bring its expertise and knowledge of R&I activities happening within the IAM-I members and at national or regional level where they are also active. It will represent all members of the Association in the PB, where it will actively provide inputs and advices. It will provide input and advice to the EC on identifying the priorities for research and innovation activities and for defining call topics to be included in the HE WPs, within the scope of the Partnership. This input and advice will be based on the outcome of IAM-I Working Groups (WGs) and Task Forces (TFs). The AD will report back to the IAM-I General Assembly (GA) on discussions and outcomes of the PB meetings, providing information to all stakeholders and guarantee transparency of the process.
- 2) The EC services will ensure that the topics are in line with the public interest and with the latest EU policies and strategies, and that there is coherence with the overall EU research framework. The Commission remains solely responsible for writing the work programmes. The EC undertakes to duly take inputs and advice from the Partners other than the European Union into account when identifying and drafting call topics for R&I activities in the scope of and linked to the IAM4EU partnership to be included in the HE WPs.

The PB will be the main governing body of the Partnership. It will validate the IAM4EU SRIA, approve the additional activities report and the full report, to be provided together every second year. It will also ensure complementarity and good coordination with other parts of the Research and Innovation Framework programme, especially with other Partnerships where synergies have been defined. The PB will have gender balance and adequate representation of:

- the EC;
- relevant R&I communities;
- SMEs;
- industry and research stakeholders along the value chains;
- relevant sectors.

The PB may agree to invite or nominate as observers: representatives of Member States and countries associated to HE; representatives of other European Partnerships; civil society organisations; standardisation bodies; certification bodies; regulators; public procurers; and experts in the areas covered by IAM4EU.

The Partnership Board will be co-chaired by the European Commission, represented by the lead department in charge of the co-programmed European Partnership IAM4EU, together with a co-chair from the Partners other than the European Union, being the Chair of IAM-I (see Article 34.15, IAM-I's Articles of Association<sup>6</sup>).

The PB will adopt its rules of procedure, based on a harmonised template provided by the EC that includes rules on confidentiality, transparency, and avoidance of conflicts of interest.

### 3.3.2 *IAM-I Association*

A non-profit association, IAM-I AISBL, was launched on 30 January 2025. It gathers all AMs stakeholders (other than European/national/regional authorities) willing to contribute to

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<sup>6</sup> <https://www.iam-i.eu/wp-content/uploads/2025/01/IAM-I-Articles-of-Association-English.pdf>

IAM4EU, from upstream developers, downstream users, citizens and all stakeholders in between.

IAM-I provides a common and shared framework on AMs, covering the industrial value chains and the different needs and challenges along their lifecycle. The IAM-I governance will ensure a balanced representation of stakeholders between different communities.

According to IAM-I's Articles of Association (AoA, Article 5), legal entities can participate in IAM-I *“with relevant activities in research and development, demonstration, industrialisation, commercialisation or deployment of the technologies and services (i) within the scope of the purpose and objectives of the Association and (ii) if applicable, within the scope of the Innovative Advanced Materials for Europe (IAM4EU) Partnership, structurally organised to conduct, in Europe and beyond significant research and innovation activities within the scope of the Innovative Advanced Materials for Europe (IAM4EU) Partnership;*

*(iii) Sharing, supporting, and endorsing the purpose and the objectives of the Association and, if applicable, the Innovative Advanced Materials for Europe (IAM4EU) Partnership; and (iv) If applicable, willing to actively contribute as partner in projects of the European Framework Programme for Research and Innovation.”*

There are two categories of membership: full members with voting rights (AoA, Article 6) and associate members without voting rights (AoA, Article 7). Full members are split across an Industry and a Research Constituencies. Membership fees<sup>7</sup> are structured into subcategories within these two types, considering the entity's background and size.

### 3.3.3 IAM-I Working Groups, Task Forces

IAM-I's Articles of Association define the establishment, governance, and oversight of Working Groups, Structures, and Committees (Art. 38.1 to 38.4):

- The Executive Board has full control over creating, dissolving, and assigning tasks to these bodies, defining their mission, composition, powers, and procedures. Two kinds of bodies are created at the onset of IAM-I, being working groups (WGs) and task forces (TFs);
- They cannot represent the Association externally unless explicitly authorized;
- They report to the Executive Board and act under its responsibility;
- They can invite third parties to meetings, but without voting rights.

By-laws will be set that provide detailed internal regulations governing the daily operations and management of the association, including in the context of WGs and TFs:

- Purpose and scope of each WG/TF;
- Procedures for creating, modifying, or dissolving a WG/TF;
- Membership criteria and participation rules;
- Decision-making processes;
- Reporting obligations to the Executive Board and Secretary General (Art. 38.3).

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<sup>7</sup> <https://www.iam-i.eu/become-a-member/>

The primary role of the WGs/TFs is to define R&I priorities and develop recommendations within the scope of IAM4EU, contributing to updates of the SRIA. They will be supported by the AD (Art. 35.1), which will engage with the EC within the PB to discuss priorities for research and innovation activities and provide input and advice on call topics. The framework and procedures for these exchanges will be established and mutually agreed upon with the EC in the rules of procedure for the PB.

### 3.4 Openness and transparency

#### 3.4.1 Openness

All companies, organizations, associations, institutes, Universities and other legal persons willing to bring value to the Partnership, regardless of their size, are welcome to join IAM-I and their contribution will be considered, provided:

- (i) they are established in a country which is a member of the European Economic Area<sup>8</sup> or the European Free Trade Association<sup>9</sup>, the United Kingdom or one of the countries to whom the EU grants the status of candidate countries to the EU, or eligible for funding under HE or the next EU's funding framework programmes for research and innovation;

and

- (ii) they are organised to conduct in one or more of the countries above significant research and innovation activities within the scope of the SRIA of the Partnership.

Openness is a key aspect and a quality contributor of IAM-I. Therefore, no artificial barriers shall prevent any entity to participate. The IAM-I membership fees are staggered so that type, size and financial capacity of an entity are considered.

Whereas the application for calls designed under the Partnership and participation in events the Partnership will organize remain open to all parties active in relevant fields and/or interested in funding through HE, activities such as SRIA drafting, elaboration of recommendations to the EC remain activities that are exclusive to IAM-I members.

#### 3.4.2 Transparency

The open design requires a transparent leadership of IAM4EU. Transparency ensures credibility and is a key factor for efficient processes at all stages of the partnership implementation. It will facilitate the on-boarding of new and interested parties during the application process for funding. All achievements and results linked to IAM4EU will be publicly accessible and widely disseminated by IAM-I. An appropriate level of transparency, reflected in the governance compositions of the Partnership and IAM-I, will ensure involvement and open dialogue between stakeholders and partnership members. All privacy-related matters will be handled to ensure the rights of all parties and preserve respective competitive positions.

The HE Rules for Participation will apply to all R&I activities funded by the EU financial contribution to the IAM4EU Partnership, which means that all calls for proposals will be open to any entities and organisations that are eligible for funding under HE, independently of their membership to IAM-I.

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<sup>8</sup> Currently, the 27 EU Member States, Iceland, Liechtenstein and Norway

<sup>9</sup> Currently, Iceland, Liechtenstein, Norway and Switzerland

## 4 ANNEXES

### 4.1 Infrastructures

IAM4EU requires both AM development infrastructures and data infrastructures. While Research Infrastructures (RI) play a role in achieving the planned outcomes, IAM4EU will primarily focus on Technology Infrastructures (TI). This focus is driven by their critical role in AM development and their unique value as enablers for industry - particularly for SMEs and start-ups - to accelerate innovation cycles.

Leveraging existing (and upcoming) technology infrastructures - mapped under the European Network of Pilot Production Facilities [30] and resulting projects funded under previous Framework programs [31] - and associated innovation services to support testing, modelling, and upscaling for European industrial players, particularly start-ups and SMEs, is important for accelerated development and uptake of IAMs by industry. Access to Technology Infrastructures is vital for the exploration of new materials necessary for enhanced sustainability and performance as well as resilience of industrial value chains in an inclusive European ecosystem.

The landscape of and access mechanisms to TIs are currently fragmented, suffer from regional disparities and transnational access issues. To overcome these challenges, priorities have been set inside the IAM4EU's SRIA specifically supporting the networking and widespread use of TIs and the leverage of Large-scale Research Infrastructures (LRIs), Open Innovation Test Beds (OITBs) and Materials Acceleration Platforms (MAPs) across Europe. This will foster interoperability of results obtained using TIs, help connect stakeholders in an inclusive ecosystem, provide "test before invest" services, support companies in navigating available resources, and access to financial support. Gaps in technology infrastructures and associated services will be identified and addressed to accelerate the safe and sustainable transformation of IAMs into products.

Industrial Infrastructures (II) will also be a focal point, given their significant contribution to the European R&I landscape, particularly through in-kind additional actions (Table 6). IAM-I will actively collaborate with (II) holders to explore and develop access models that enable third parties to utilize these infrastructures. This approach will foster open innovation, ensuring broader exploitation of industrial resources and enhancing the overall impact of the R&I ecosystem.

*Table 6: Expected contributions to [relevant] infrastructures*

CATEGORY	OWNERSHIP FUNDING	LARGE ENTERPRISES	SMES AND START-UPS
RESEARCH INFRASTRUCTURES	Mainly Public	<ul style="list-style-type: none"> <li>• Complementary funding for specific equipment / services</li> <li>• R&amp;D services (incl. tests)</li> <li>• Education and training</li> </ul>	<ul style="list-style-type: none"> <li>• R&amp;D services (incl. tests)</li> <li>• Education and training</li> </ul>
TECHNOLOGY INFRASTRUCTURES	Public/Private	<ul style="list-style-type: none"> <li>• Co-owners/Members (fee)</li> <li>• Co-fund investments</li> <li>• R&amp;I services (including tests, validation, demonstration)</li> <li>• Education and training</li> </ul>	<ul style="list-style-type: none"> <li>• Members (fee)</li> <li>• R&amp;I services (including tests, validation, demonstration)</li> <li>• Education and training</li> </ul>
INDUSTRIAL INFRASTRUCTURES	Mainly Private	<ul style="list-style-type: none"> <li>• Creation/Operation/Funding</li> <li>• Collaboration with Academia/RTO</li> </ul>	<ul style="list-style-type: none"> <li>• R&amp;I services (including tests, validation, demonstration)</li> </ul>

- Collaboration with SMEs/start-ups
- Promote entrepreneurship

## 4.2 Activities addressed by IAM4EU

	R&I ACTIVITIES ① ②	Additional ACTIVITIES <sup>10</sup> ② ③
FUNDED	<ul style="list-style-type: none"> <li><input type="checkbox"/> R&amp;I activities implemented as actions following open calls for proposals (RIA, IA...)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Activities contributing to <b>strategic and operational alignment (e.g. roadmapping)</b>, coordination and synergies with other partnerships and EU/Nat/Reg/Int. initiatives, incl. projects supported under relevant CSA calls<sup>11</sup></li> <li><input type="checkbox"/> Activities contributing to the development of <b>R&amp;I ecosystems</b> at EU/national/regional or international level (support to industry-academia cooperation; ...).</li> <li><input type="checkbox"/> Activities promoting, facilitating or accelerating <b>innovation uptake</b> in the market, including via financing opportunities provided by the EIB or VC funds.</li> <li><input type="checkbox"/> <b>Communication, networking, and outreach</b> (matchmaking, brokerages, awareness-raising, citizen engagement ...).</li> <li><input type="checkbox"/> <b>Dissemination and exploitation</b> of results of R&amp;I activities in the scope of the SRIA of the Partnership.</li> <li><input type="checkbox"/> Identification of major needs on <b>education and skills</b> along industrial value chains and the innovation cycle.</li> <li><input type="checkbox"/> <b>Regulations and standards</b> activities, especially on safety and sustainability aspects.</li> </ul>
ADDITIONAL <sup>12</sup>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Side/upstream projects</b>, including: <ul style="list-style-type: none"> <li>▪ Low-TRL preparatory research activities and Proof of concept, feeding into Partnership projects.</li> </ul> </li> <li><input type="checkbox"/> <b>R&amp;I activities within the scope of the SRIA</b> but not funded by the Partnership</li> <li><input type="checkbox"/> <b>R&amp;I activities at higher TRL</b> and/or to ensure <b>industrial, market, regulatory and societal uptake</b>, such as <ul style="list-style-type: none"> <li>▪ Scaling of technologies at higher TRL/MRL and uptake of results from Partnership projects, such as pre-commercial trials, improvement of existing production lines for up-scaling or building new production facilities.</li> <li>▪ Demonstrators</li> </ul> </li> </ul>	

SOs: ① Deliver the innovative advanced materials (IAMs) and associated technologies needed for the twin green and digital transition ② Exploit innovative technologies to accelerate the innovation cycle while responding to new requirements ③ Enable a dynamic innovation ecosystem for IAMs

<sup>10</sup> either funded by the partnership (typically via CSA) or not

<sup>11</sup> E.g. HORIZON-CL4-2024-HUMAN-02-36 on “Synergy with national and regional initiatives in Europe on Innovative Materials“

<sup>12</sup> As defined and exemplified in MoU. Not funded by the Partnership.

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  - <sup>3</sup> [https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act\\_en#documents](https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act_en#documents)
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