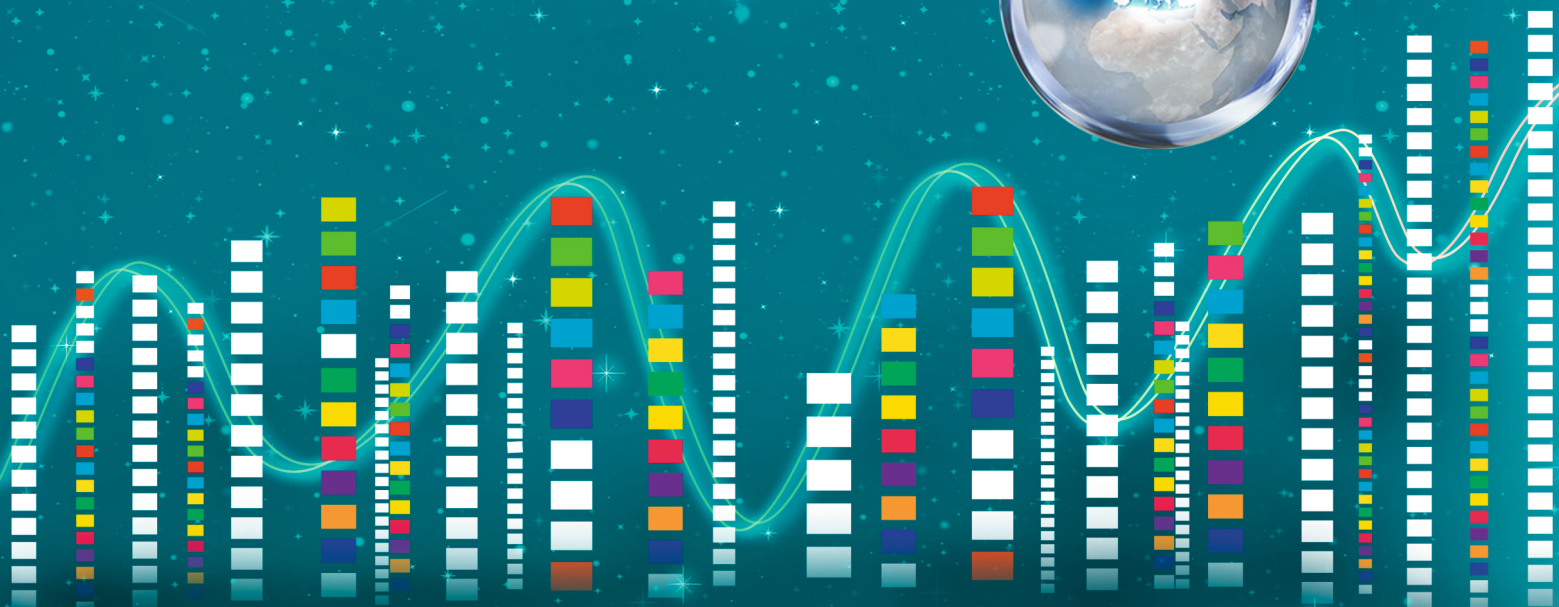




Knowledge Ecosystems in the new ERA

WP1-3: Knowledge Ecosystems and their Actors
across the ERA

Briefing Note for Stakeholder Consultation



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WP1-3: Knowledge Ecosystems and their Actors across the ERA

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1 Introduction

This briefing note gives an overview of the main findings from the analyses conducted in Work Package (WP)1 "Mapping & analysis of knowledge ecosystems and their actors across the ERA" of the wide-scoping study "Knowledge Ecosystems in the new ERA".

WP1 in this study had the objective of enhancing the understanding of R&I ecosystems and the role of universities and research organisations (in particular) to the production, circulation and use of knowledge across Europe, at national, regional, and local level. Through an analysis of success factors and needs, it aimed to gaining an improved understanding of the cooperation capacity within ecosystems, gaps in this capacity across ERA, and the potential tools for remediation. The key focus was on identifying the main characteristics and conditions for success, drawbacks, and obstacles of the R&I ecosystems. A mapping of the EU ecosystems landscape, developing an inventory of ecosystems, set the basis for a landscape and gap analysis, focusing on a selection of 24 R&I ecosystems. Methodological tools included a survey with the key actors in 20 successful R&I ecosystems, case studies on six EU and one international successful ecosystem, desk research and interviews. Outcomes are a Policy Brief 'Towards an ERA Hub Concept' and the 'Proof of Concept for an R&I ecosystem Observatory', which will serve as an input to the design and development of the ERA Hub initiative (in WP2) and a dedicated Observatory system (in WP3), respectively.

The **purpose of this briefing note** is to collect the **opinions of the stakeholders** on

- The conclusions drawn from the analyses conducted in WP1 in relation to the [objectives of the ERA Hub initiative and the role and functions of individual ERA Hubs](#) – presented in Chapter 4
- Building upon these conclusions, the [key principles for the detailed design of the ERA Hub initiative](#), outlined in Chapter **Error! Reference source not found.**

The stakeholders' opinions will be taken into account for the finalisation of our input to the design and development of the ERA Hub initiative, to be delivered at the end of September 2021.

The first two chapters in this briefing note aim at providing the stakeholders with the needed information on the considerations that led to the definition of the objectives and key concepts for the implementation of the ERA Hub concept:

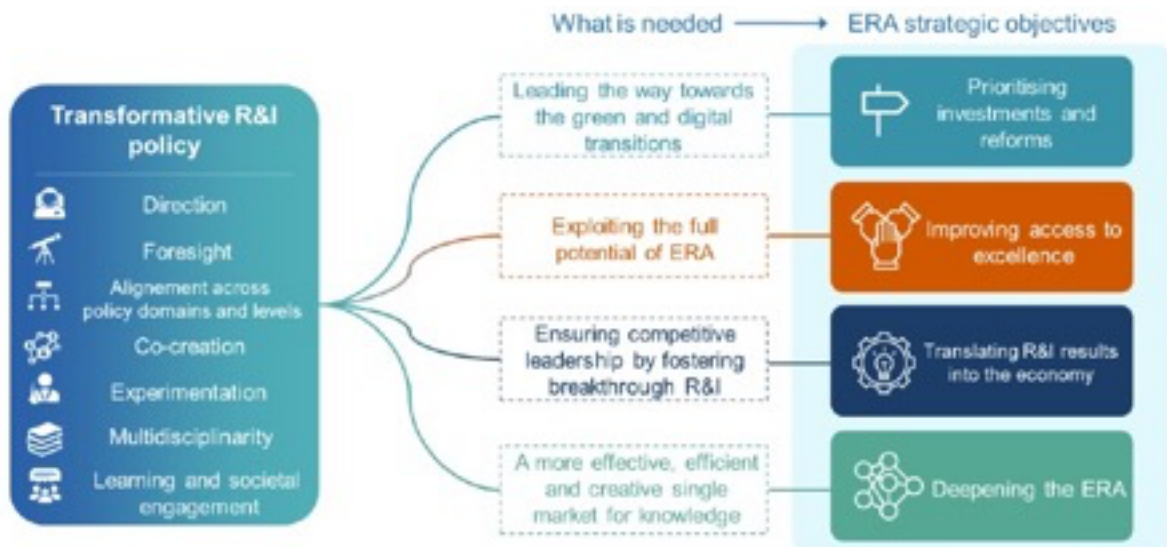
- In Chapter 3 we summarise our main findings from the analyses on the current state of play in the EU knowledge ecosystems and the factors allowing for or hindering their development, setting the rationale for the ERA Hub initiative
- We start this briefing note with a reminder of the policy context to the ERA Hub concept (Chapter 2)

2 Policy context

In January 2020, the ERAC published its “*Opinion on the future of the ERA*”. The ERAC highlighted the significant contribution that R&I makes to achieving Europe’s wider policy goals and particularly to addressing transformative changes based on smart directionality. It considered that a new ERA paradigm was needed with as overall objective “to exploit the significant contribution that R&I plays in achieving Europe’s wider policy goals and make the ERA more responsive to society [as well as to] promote the adoption of ambitious knowledge policies, targeting researchers, innovators, R&I organisations and citizens, in order to broaden the outreach of ERA-related initiatives while also improving communication activities.”

The Commission Communication of September 2020 “*A new ERA for research and innovation*” recognises that a new approach to developing the European Research Area (ERA) is needed, setting it firmly in the context of transformative R&I policy and the goal of fostering sustainable and inclusive growth. In order to ensure that a new ERA is fit for the challenges ahead, the Commission proposed a new vision based on **four strategic objectives**, aimed at broadening the ERA towards new priorities while also deepening the ERA in existing ones.

Figure 1 : Transformative R&I policy and the four ERA strategic objectives



One of the actions responding to the strategic objective ‘Translating R&I results into the economy’ foresees a *strengthening of innovation ecosystems for knowledge circulation and valorisation* by establishing stronger interconnection between existing collaborative and supportive structures engaging a *diversity of stakeholders in multi-disciplinary and cross-sectorial collaborations*. The communication indicated that “Based on a mapping of existing entities, and the analysis of potential gaps, an ERA Hub initiative could be developed, building on existing capacities, such as the Digital Innovation Hubs and clusters, and linking to the Enterprise Europe Network and StartUpEurope, to provide an interconnected knowledge space.” Finally, the ERA Roadmap includes the key action “*Develop and test a networking framework in support of Europe’s R&I ecosystems, building on existing capacities, in order to strengthen excellence and maximise the value of knowledge creation, circulation and use.*”, to be established by 2022.

The Council Conclusions on the New European Research Area adopted in December 2020 considered that the New ERA should “be based on shared responsibilities, participation of stakeholders and citizens, building on the diversity and strengths of the European R&I ecosystems, being responsive to smart directionality, and in which in particular fundamental research is essential for ensuring excellence, attractiveness and the competitive edge of R&I ecosystems.”

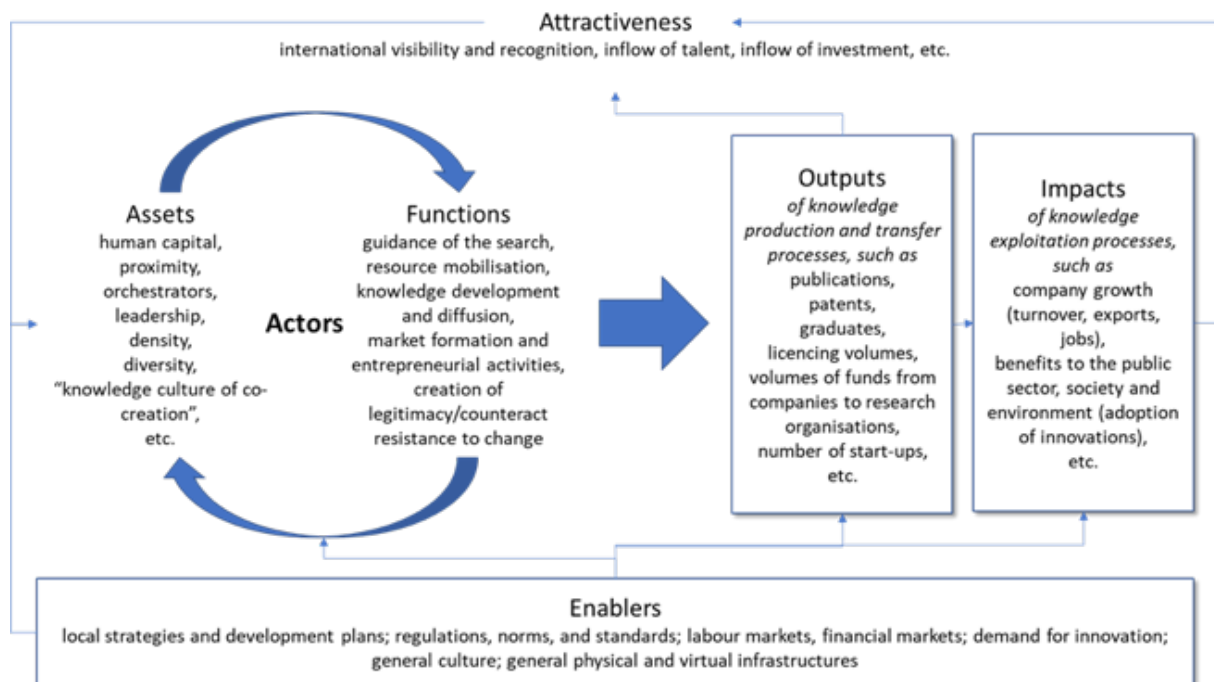
3 Rationale for an ERA Hub initiative

The key purpose of the analyses in WP1 was to understand why and how some knowledge ecosystems are more developed than others, i.e., the success factors and barriers for their development and the eventual patterns emerging related to the different types of knowledge ecosystems (science-oriented, innovation-oriented, etc).

Knowledge ecosystems are defined as “A community of interdependent heterogenous actors operating in a specific geographical area with specific enablers, governed through collaborative structures, engaged in or facilitating knowledge production, transfer and exploitation, and collectively delivering outputs and impacts which contribute to the development of the ecosystem.”

We based our analysis on the analytical framework shown in Figure 2, below: at the ecosystem level, success can be identified and measured by using the dimensions of its outputs, impacts, and attractiveness. The ecosystems’ ability to produce these outputs and impacts and be attractive is based on its assets and its ability to continuously improve them. The ecosystem develops its assets in functions, which are facilitated by the specific characteristics of the ecosystem’s environment, i.e., enablers.

Figure 2 : Knowledge ecosystem success dimensions



In the sections below we first summarise our main findings related to the features that characterise strong knowledge ecosystems (Section 3.1) and their governance models and structures (Section 3.2) to then draw our conclusions on the factors enabling and hindering development (Section 3.3).

3.1 Characteristics of strong knowledge ecosystems

The landscape and gap analyses conducted in the context of this study revealed several important features of place-based research and innovation ecosystems.

- First, the strongest ecosystems tend to be **strong in all knowledge processes**, creation, transfer, and exploitation, i.e., strong ecosystems feature both scientific and industrial excellence and performance visible in measurable outcomes and impacts. There are no strong knowledge ecosystems based *exclusively* on academic excellence or industrial exploitation. Capacities in research and innovation go hand in hand

- Second, **R&I related factors** such as access to skills and competences are increasingly important for companies when they make decisions where to locate their activities globally
- Third, strong research and innovation ecosystems have been able to create **virtuous circles** which continuously reinforces the ecosystem. Depending on the ecosystem, this may originate from a globally strong entrepreneurial and start-up activity, globally strong thematic research and/or innovation activity, globally highly interesting innovative platform or infrastructure allowing experimentation with future technologies, solutions, products and services in industrial and societal scales, or possibly different combinations of these
- Fourth, the interest and perceived need to **engage citizens, civil society actors and end-users** in general to R&I activities is increasing, especially in stronger ecosystems
- Fifth, external and internal crises may often be used to kick-start positive developments. Crises may cause shifts in **stakeholder motivations**, which may make joint local initiatives appear more attractive to them, thus allowing implementation of joint initiatives not possible in normal circumstances. The challenge is to provide sufficient evidence of added value before the crisis has subsided to ensure sustained activity beyond the crisis
- Sixth, the stronger the ecosystem is the less intrusive **policy measures** are needed (e.g., facilitation by ensuring sufficient funding is available), whereas more hands-on policy action is often needed for weaker ecosystems to kick-start positive developments. Challenge in stronger ecosystems is to avoid complacency and lack of dynamics, and hence, policies to ensure sufficient internal and external competition become important
- Seventh, ecosystems with strong scientific orientation from economically stronger regions rely less on EU connections and funding as they can rely more on local and national resources. Actors in stronger ecosystems also see limited need for **European level ecosystem support services**, whereas actors from less developed ecosystems have less trust on local policy makers and initiatives, and therefore welcome and promote externally introduced and managed initiatives
- Finally, **strong ecosystems from widening countries** typically perceive barriers to R&I and collaboration as being more severe compared to other strong ecosystems. This is likely because of cultural reasons (gap between academic and industrial mindsets) and the related misalignment between academic foci and local industrial interests and absorptive capacities

3.2 Governance and structures of the knowledge ecosystems

The analysis also shows that there is **no single optimal model** for the structure, orientation, or governance of successful strong research and innovation ecosystems. There are several different governance approaches that have been observed in the successful ecosystems, but no causal link can be attached between the ecosystem success and the governance format which ultimately seem to depend predominantly on **characteristics of the local environment** (i.e. the 'enablers' in our analytical framework):

- *Centralised approach across all ecosystem activities and actors.* These ecosystems are often led by public authorities. It is an easier approach when there is a clear thematic focus, but it may also be used across several foci
- *Multiple thematic foci, each with their own governance.* This may include lean overall governance (e.g., RIS3 process), but governance is mainly at the thematic sub-ecosystem level. These knowledge ecosystems are often led by universities, research organisations or intermediaries (e.g., cluster managers, science parks, etc.) and are often used in systems with several strong and differently oriented formal collaborative structures

- *Process oriented governance approach.* In this model, governance is based on shared processes rather than formal ecosystem-level governance or even coordination structures. These governance models are typically led by public authorities or joint collaborative public-private entities using shared processes which are typically interactive, inclusive, and consensus-oriented
- *Larger fragmented ecosystem with multiple thematic foci.* Successful governance is based on strong internal competition for resources and voluntary interactions without formal coordination. Examples are many of the largest US ecosystems

All ecosystems have the following **structural elements**: academic research, industry innovation activity, entrepreneurial activity, public sector innovation activity, and citizen and civil society activity. What is important in making a research and innovation ecosystem strong is not only that these key stakeholder groups are each strong in their respective activities, but particularly **how they are connected to each other** in these activities, thus identifying and capturing synergies, developing complementarities, ensuring effective and efficient transfer of knowledge, etc. The existing policy actions fostering the development of a stronger ERA and collaborations across the ERA already address these barriers to a large degree. Incentives for collaboration are already strong at the European level in Horizon 2020 and the coming Horizon Europe and particularly in European Partnerships. The stronger alignment across policies within the ERA as well as regulatory convergence and harmonisation is increasingly addressed in these and initiatives such as the Pact for Research and Innovation in Europe.

3.3 Success factors and barriers

There is no one-size fit all success model and attempting to categorise all ecosystems according to a limited set of criteria is challenging since each ecosystem has its own characteristics. Nevertheless, we could identify a set of **key common success factors**, outlined below.

First, one of the key factors of ecosystem success is the **sustained long-term policy support** to R&I. This originates in the awareness and weight that the local policy makers have placed on the importance and benefits of R&I. In successful ecosystems, R&I was not treated as a politically sensitive topic. Instead, support for research and innovation remained stable over time or was even enhanced at the time of major economic crises. A mindset supportive of research, innovation and exploitation is typically correlated with relatively high levels of awareness of the potential needs and opportunities embedded in R&D and innovation. This is partly an educational and partly a communications challenge.

Inclusive local governance processes are in place to guide the key stages of the policy making process: identification of policy needs, policy design, implementation, evaluation, and learning. These are based on sufficient levels of trust and awareness among local stakeholders, sufficiently balanced bargaining powers across key stakeholder groups and on procedures that enable transparency and openness. Consequently, stakeholders from all sectors can influence different aspects of the ecosystem, especially the regional or local policies, which facilitates the policies' relevance to the stakeholders' needs.

High alignment between research foci and industry needs is another feature of successful ecosystems. High levels of alignment can be typically found in ecosystems with sufficient levels of trust, collaboration culture and extensive experience in science-industry collaboration, as well as inclusive and balanced ecosystem governance. Strong involvement of local companies in scientific research is also noticed in ecosystems with high alignment between research and industry needs.

Improving alignment takes systematic effort over time. In ecosystems with high alignment between research and industry needs, knowledge transfer typically focuses on collaborations and mobility, complemented by licencing. Some of the ecosystems that displayed less alignment between research and industry needs focus more on developing the entrepreneurial dynamics, emphasising the mechanism of start-up creation as a means

of knowledge transfer. Demand articulation, clustering, corporate venturing, and open innovation processes are increasingly used as strategies, especially when local companies are also R&I intensive.

The [strong collaboration culture](#) present in the studied ecosystems has been another success factor. This is an element built over time, through mutually reinforcing good experiences, between local universities and research organisations, and local key industries and large companies. Collaboration culture is reinforced by further characteristics, such as the presence of open networks with low entry barriers towards newcomers, and the presence of incentives for collaboration (generally funding or structures that support R&I collaboration). The culture of collaboration is an element that can take time to build and is more present in ecosystems with higher social trust. However, even in a low trust environment, communities can develop, which may be able to overcome the lack of trust, at least temporarily (e.g. entrepreneurial communities operating largely outside traditional institutions).

R&I collaboration in the successful ecosystems is also facilitated by [direct links to resource allocations and development of shared resources](#), enabling access to relevant high-quality research and innovation infrastructures. The studied ecosystems are endowed with a wide variety of assets, accessible in various formats, including R&I infrastructures, R&I testing platforms and technical facilities, open innovation platforms, etc. Long term policy support, availability of regional and national funding, high alignment of research foci, the existence of joint strategies towards shared goals and the direct involvement of leading companies are correlated drivers of this aspect. Moreover, in the successful ecosystems, large companies also embrace collaboration and open innovation. The development of such resources also implies appropriate management resources and models, and sustainable business models for securing longer-term maintenance and developments.

Successful R&I ecosystems have [dedicated professional knowledge transfer organisations](#). This is underpinned by sufficient deal-flow volumes originating from local research, sufficient thematic specialisation, collaboration and networking with local private actors, sufficient resourcing but also performance monitoring, value for money. Successful ecosystems also show wide availability of and participation in [quality innovation services services](#) that connect the ecosystems players to enhance R&I cooperation, such as information sessions relating to R&I funding or other public support for SMEs, entrepreneurial events, competitions, and awards. This is often a consequence of the joint identification of service needs in interactive and inclusive governance processes. The existence of professional service providers, some operating close to universities, some closer to companies, as well as sufficient demand and balanced support are further observed traits. In the strong ecosystems, the focus of the services is typically either on collaboration or education. Only seldom is the major focus specifically on exploitation-related activities.

The table below provides an [overview of the success factors and barriers](#), summarising and presenting the main findings from the landscape and gaps analyses.

The table also presents the [possible policy approaches](#) to address the barriers, providing a basis for identifying potential policy approaches and more importantly combinations of policy measures that could be launched and incentives that could be made available for research and innovation ecosystems to help them overcome their respective barriers and become stronger contributors to ERA and their respective regional development and cohesion.

Success factor	Barrier	Potential policy approaches
Sustained long-term local policy support	Lack of vision and local policy support	Awareness of importance and benefits of R&I among local policy makers, through general, and targeted awareness raising initiatives.
Strong collaboration culture	Lack of trust and collaboration and innovation culture Opportunistic behaviour and poor business ethics	Several approaches models and experiences available, incl. competence centres and cluster initiatives. Challenge is to align requirements with readiness.
High alignment between research foci and industry needs Specific: Strong involvement of local companies in scientific research Specific: Significant investment in shared resources (research infra, innovation, testing and piloting platforms, etc.)	Misalignment between research foci and local industry needs, as well as academic and industrial cultures Low absorptive capacity among local companies	Several approaches available. Even if successful, will take a long time. E.g., establishment of proper local governance processes, targeted allocation of local funds and initiatives to developing resources and competences in areas where interests align, enhancing staff mobility between academia and industry, procurement of innovation, etc.
Inclusive local governance processes	Lack of leadership and orchestration Insufficient governance of the local ecosystem	Open and transparent allocation of local resources, systematic development of shared local resources, joint local foresight initiatives, evidence-based decision support, etc.
Little or no barriers for R&I and collaboration	Limited availability of funding for R&I and collaboration Limited availability of skills and competences Regulatory barriers	Targeted measures to address the specific barriers, e.g., regulatory reforms, skills and competences upgrading initiatives or attraction schemes, increased local R&D funding, collaborative infrastructures, etc.
Access to relevant high-quality research and innovation infrastructures	Limited access to research infrastructures Lack of shared resources	Increase availability of funding. Requirement to use based on joint local strategies.
Good availability and quality of innovation services	Limited availability and quality of innovation services Lack of support and services for experimentation, testing, piloting, demonstration, demand articulation and market access.	Setting up the missing quality business and innovation services (outsourcing to private or establishing as public services). Enhancing the demand for private business and innovation services. Focus on professionalisation.
Dedicated professional knowledge transfer organisations	Lack of professional knowledge transfer services	Developing dedicated entities to focus on supporting selected transfer mechanisms.
Strong entrepreneurial culture and community, hence also strong start-up activity	<i>Weak entrepreneurial culture and community¹</i>	Empowerment of private initiatives is usually quickest and most effective. Facilitation through regulations, entrepreneurial university, etc. initiatives.
Presence of large multinational corporations, connected and active in the local ecosystem	<i>Multinationals not connected to the local research and innovation ecosystem⁵</i>	Initiatives and incentives targeted to local multinationals focusing on addressing their challenges.

¹ Opportunity rather than a barrier

4 Objectives of the ERA Hub initiative and role & functions of an ERA Hub

The objectives of the ERA Hub initiative and the role and functions of an ERA Hub outlined in this chapter (in Sections 4.1 and 4.3, respectively) are based on the expectations set out in the policy documents combined with the 'lessons learned' from the landscape and gap analyses.

Seeing the large number of existing regional development and cohesion efforts, aimed at strengthening research and innovation in Europe, we also considered that the ERA Hub initiative needed to have a **clear added value**, i.e. ensuring benefits for the less developed (cohesion) as well as the most developed ecosystems (global competition) – *beyond what can be achieved with already existing initiatives*.

The ERA Hub concept also needs to be based on the **current best understanding** of how to maximise the value of knowledge production/creation, circulation/transfer/diffusion, and use/exploitation/valorisation, and address **two major policy objectives** simultaneously: strengthening the ERA and fostering cohesion.

In sum, the ERA Hub concept is to set a high ambition level to drive future excellence while facilitating long-term developments across the ERA.

4.1 Objectives of the ERA Hub initiative

Figure 3, below, presents the objectives hierarchy for the ERA Hub initiative.

Modern transitional research and innovation policy calls for an **ambitious ERA Hub concept**, addressing highly relevant societal challenges and going beyond enhancing and speeding up the transfer and exploitation of research results within the economy and society. The focus of the ERA Hub concept is on strengthening European research and innovation ecosystems, enhancing collaboration within and between ecosystems as well as mutual learning, and facilitating the ambitious development of place-based research and innovation ecosystems with capabilities to address their relevant local societal challenges through shared holistic research and innovation policy and collaborative actions.

Addressing societal challenges **holistically** requires **multidisciplinary approaches**. Hence, an effective ERA Hub initiative cannot be built only on a single scientific discipline or technology. However, a thematically non-specific focus is also not likely to be practical, as it may lead into too much fragmentation and too generic support measures, which are known to be less effective and efficient, e.g., in start-up ecosystems. Hence, the most appropriate approach is to build the concept around societal challenges that are highly relevant to the local environment and society. This allows straightforward alignment of the ERA Hubs with relevant regional and/or national priorities and policies as well as European R&I programmes and initiatives (e.g., Horizon Europe societal challenges, missions, partnerships).

The ERA Hub concept therefore calls for **widely inclusive quintuple helix formations and more coordinated larger scale efforts**, with **stronger problem owner and end-user engagement**, also in governance and leadership. Increased interaction and collaboration between actors within the local research and innovation ecosystems and across ecosystems can significantly contribute to the development of networks, structures, and platforms which, by bringing actors closer to each other, **shorten the distance between fundamental and applied research, experimental development, and innovation activities**, and thereby allow actors to combine their competences to address local societal challenges more effectively.

Increased interaction and collaboration are needed also to **promote increased alignment in the directional focus across actors**. This means that the ability of actors to provide increasingly valuable contributions to other actors will increase over time, strengthening mutual understanding of shared challenges as well as the needs and opportunities for joint

strategies, objectives, and activities. This will allow ecosystems to tackle increasingly difficult local societal challenges, often in collaboration with other ecosystems beyond their geographical borders.

It is practical to **make use** of the many already **existing** local, national, and European **collaborative structures** and integrate the possible ERA Hubs concept into existing actors and local collaborative structures. These include initiatives and structures focusing on enhancing knowledge transfer and exploitation, as well as SME services and service networks such as the Enterprise Europe Network, which can offer a wider range of services complementing those provided by the potential new ERA Hubs, local scientific research actors to ensure continuous access to latest knowledge and skills, and local public sector and civil society actors and their efforts to address relevant local societal challenges.

The added value the ERA Hubs initiative and concept can bring into the ERA landscape relates to **promoting and facilitating a holistic transformation approach to research and innovation policy** and implementation. Support would be directed to enhancing ambitious developments at research and innovation ecosystem level towards increased ability for addressing local societal challenges - beyond what can be achieved through more targeted initiatives (e.g., DIH/EDIH, clusters, EIT KICs) or regional development efforts geared towards industrial needs and economic impacts (e.g., ERDF, RIS3), thus creating an ERA-oriented bridge between them.

Figure 3 : Objectives hierarchy for the ERA Hubs initiative

Policy objectives	Strengthen R&I ecosystems throughout the European Research Area	Help deepening and completing the single market of knowledge		
Specific objectives of the ERAHub initiative	Support Europe’s R&I ecosystems, building on existing capacities, in order to strengthen excellence and maximise the value of knowledge creation, circulation and use	Support place-based innovation by applying the concept of smart directionality for knowledge production and exploitation, embracing societal goals/challenges	Provide an interconnected knowledge space for R&I ecosystems and their actors in the quintuple helix	
Specific objectives of an ERAHub	Engage researchers, businesses, entrepreneurs, people, and communities into joint research and innovation activities	Empower societal, economic, and environmental transformations by identifying and finding solutions to shared societal challenges	Enable development of competences and assets which attract further talent, societal and economic activities, and investment	Ensure adaptability and resilience, and thereby sustainable long-term societal, economic, and environmental development

4.3 Role and functions of an ERA Hub

The individual ERA Hub would consist of a formalised governance arrangement that builds upon existing collaborative structures, networks and infrastructures in the local ecosystem while ensuring participation of all relevant actors across the research and innovation value chain, from fundamental research to innovation and including civil society actors and public agencies. These actors would have in common the directionality of their activities towards a specific local societal need.

The specific objectives at the ERA Hub level are a direct consequence of the challenge-oriented directionality of the ERA Hub concept and include:

- **Engage researchers, businesses, entrepreneurs, people, and communities into joint research and innovation activities.** This implies: the evolution from triple- to quintuple helix, the development of new shared virtual and physical environments and platforms which allow the different actors to jointly engage in research and innovation activities,

not merely as spectators or objects, but as active participants. The ultimate aim is to close the distance and removing gaps between fundamental research, applied research, industrial development, and innovation

- *Empower societal, economic, and environmental transformations by identifying and finding solutions to shared societal challenges.* The focus is on challenges shared by all local actors, and to enable more systemic, holistic, and radical transformations and innovations, not merely small incremental improvements. To enable both engagement and empowerment, the virtual and physical environments and platforms must be sufficiently large in scale and implemented in real-life contexts
- *Enable development of competences and assets which attract further talent, societal and economic activities, and investment.* The competences relate to the needed and relevant scientific and industrial knowledge and skills (scientific and industrial thematic strengths, Smart specialisation), but regard also the understanding of how shared challenges can jointly be identified, addressed, and resolved –by whom, which, and when (governance structures and processes). The aim is to create a virtuous circle that allows maintaining and increasing attractiveness of the ecosystem over time
- *Ensure adaptability and resilience, and thereby sustainable long-term societal, economic, and environmental development.* Solutions to relevant local societal challenges allow development of solutions also to international markets, and thereby facilitate exports, internationalisation, and economic growth. The developed societal and environmental solutions support the European twin digital and green transition. The new governance structures and processes, and virtual and physical platforms and environments facilitate faster adaptation and transformations, and thereby better resilience, i.e., better preparedness, efficient management, and faster recovery from external shocks.

5 Implementation of the ERA Hub concept

The actual implementation of the ERA Hub initiative raises a number of questions, especially in terms of governance and incentive structures (i.e., funding modalities). The sections below outline some key principles that will guide the further design of the ERA Hub initiative. They relate to the incentive structure, potential support measures, and the modalities for the launch and management of the initiative.

These principles take the key concepts outlined above a step further and reflect the outcomes of the consultation with European research organisations, which we can summarise as follows:

- The most important policy action is to increase funding for R&I and collaboration. Stakeholders clearly see *different roles for local, national, and European funding*. European funding should focus more on cross-border collaborations and building critical mass by supporting coordination, harmonisation, and standardisation, whereas local and national funding should focus more on local and national strategies and acting as a steppingstone for European funding. European initiatives can also have a significant role in raising the awareness of the importance of research and innovation nationally and locally, thus convincing local and national policy makers to support them more.
- The potential ERA Hubs should be *clearly branded*, receive *broad support*, *be beneficial for businesses*, and *attract talent*. Investments should also be made on pan-European technology infrastructures, and better linking between European Partnerships and industrial ecosystems.
- The stakeholders see some possible *added value from an ERA Hubs quality label*, specifically in increasing the attractiveness of the ecosystem for private investment, research and innovation activities, talent, and collaboration. However, they *also* see *some possible problems* depending on how the label is designed. These might include

exclusion of possible partners, too much focus on top performers, deepening disparities, lack of added value, overregulation, over-management, and increasing complexity of ERA. According to these stakeholders, the key characteristics of a potential quality label should be excellence of key individuals, transparent and efficient management, public-private collaboration, strategic relevance, long-term financial commitment, peer quality control, mutual learning, complementarity, inclusiveness, and career support. Relevant quality labels that could be used for inspiration for the ERA Hubs label include models used for Digital Innovation Hubs, EIT KICs, Dutch Living Labs, European Universities Initiative, European Energy Research Alliance, and European Cluster Excellence. The HEInnovate initiative should also be recognised.

5.1 *The incentive structure*

While the targeted impacts should act as sufficient incentives, practice has shown that **funding is clearly the most important incentive**. European funding is very important particularly for less developed ecosystems, but even in their case sufficient commitment of national and regional/local funding is equally important in ensuring sustainable longer-term developments. The need to develop an incentive structure, which makes reaching higher levels of excellence, performance, and impacts attractive is to some extent inconsistent with the fact that the stronger an ecosystem is in these respects, the more likely it is to be able to access funds from various competitive sources, and thereby has less need for earmarked ERA Hub funding. Practice has also shown that lack of a sufficient incentive will result in stronger ecosystems not engaging in these types of initiatives, thus reducing their impact both on cohesion (reduced mutual learning impact) and on excellence (initiative has little impact on strong ecosystems). Total funds – including European, national, and regional/local – made available as incentives in the ERA Hubs initiative must be sufficient to make the initiative **attractive for ERA Hubs at all levels of maturity**.

Support from the initiative should be provided for a **limited time to pursue specific improvements**, i.e., based on an **ambitious development strategy and action plan** presented by the ERA Hubs. To ensure sufficient commitment of all relevant ecosystem actors, the strategy and action plan should be developed jointly, and it should secure sufficient own investment by means of commitments from local, regional and national policy makers (both human and financial resources). The strategies should clearly indicate how the ecosystem development integrates to and supports regional development, higher education, and other relevant ERA-related, European, national and regional policies and strategies. Execution and impact of the support should be monitored annually and continued only if ecosystem shows sufficient progress towards its development objectives (milestones). Failure to reach objectives and show progress could be penalised to further enhance the incentive structure (a negative incentive).

Special attention should be put on **defining the added value** and benefits expected from the ERA Hub concept/initiative and label for all ecosystems and their actors. Otherwise, there is a real possibility that assigning the ERA Hub label to an entity managing an existing collaborative structure, the ERA Hub concept competes with the existing collaborative structure and whoever received more resources and stronger incentives, will win at the cost of the other(s). The result being that either the management of the ERA Hub takes away resources needed for managing the existing collaborative structures, or it does not receive enough resources since the other collaborative structures are prioritised. It is therefore important to ensure the added value of the ERA Hub concept and label as well as its complementarities to existing collaborative structures are clearly defined, real and well communicated. Communicating the added value of the ERA Hub concept and label is also important in view of managing expectations among Member states and particularly different groups of stakeholders.

Because the proposed approach is to target all ecosystems and respond to both cohesion and excellence objectives, a **labelling model** could allow for **multilevel incentive structures**. The label could have several dimensions, e.g. separate between governance and performance, or between performance and capabilities. The labelling approach could be based on benchmarking against the strongest ERA Hubs in Europe, by means of periodical

(e.g., biannual) competitions. This multilevel incentive structure would allow access to increasing benefits along a labelling tree – in terms of modality for the funding and support rather than volume. Access to funding and support would change once a higher level has been reached, making levelling up highly attractive. This should, however, be balanced within the initiative with targeted funding to lower levels of the labelling tree.

Cohesion and excellence can both be addressed simultaneously using targeted funding allocations to specific activities, specific developments, and making some funds available based on the labelling model (e.g. specific calls targeted to those with no label or a lower level label). Cohesion objectives can be addressed by targeting funding and support actions to especially less developed ecosystems. Another cohesion specific support measure is to enhance mutual learning. The challenge is to provide sufficient incentives for the stronger ecosystems to motivate them to contribute to mutual learning activities.

5.2 Support measures

It is important that the ERA Hubs initiative is a **dynamic element of ERA**, and if it is planned to be a permanent feature of ERA, continuously encourages R&I ecosystems to pursue increasingly ambitious developments. Given the significant differences in strengths and maturity between ecosystems, and the many different governance, structural, and collaborative models employed, the initiative should show **high degrees of tailoring** to allow each ecosystem to pursue its own ambitious development path appropriate in their socio-economic and political context.

The ERA Hubs initiative should therefore consist of a **toolbox of a limited number of well-defined yet flexible support measures**. Each support measure should be designed to address a specific barrier or barriers with possible alternative approaches or measures for different socio-economic and political contexts if needed. This would allow some levels of standardisation of the specific support measures, but at the same time high levels of tailoring through different combinations. Especially less developed ecosystems need to prioritise targeting specific barriers and the prioritisation needs to change over time, so it is important that the support measures can be adjusted accordingly.

The support offered by the ERA Hubs initiative should consist of **financial incentives** allowing implementation of joint activities to improve the ecosystem and its performance, as well as **access to external expertise**. The ERA Hubs initiative could also include incentives for establishing strategic alliances between two or more ecosystems across regional and/or national borders, thereby establishing networks which could provide even stronger basis for mutual learning and developing complementarities and capitalising on synergies. External expertise support measures could focus especially on supporting analysis of barriers, needs, and opportunities for ecosystem developments, assisted peer learning, and implementation through longer-term mentoring-type engagements.

5.3 Launch and management of the ERA Hubs initiative

The differences between knowledge ecosystems and the tailored approach proposed for the ERA Hubs initiative imply that **decisions about who leads, manages, orchestrates, facilitates, or otherwise participates in the governance, coordination, and animation of ecosystems should be left to the ecosystem actors**. As the concept is foreseen to be based on existing collaborative structures, ecosystem actors are likely to propose an arrangement based on assigning the appropriate roles to existing actors and intermediaries. E.g., in highly misaligned ecosystems, hubs may be built either by integrating leading business support better to local research or strengthening leading local university knowledge transfer and integrating it better to local business support. What is important is not who the actors are, but what the minimum competence, resources, etc. required from them are. They also must have the necessary commitment and support of all ecosystem key actors, as well as regional and national policy makers.

As for the **geographical boundaries of the ERA Hubs**, place-based research and innovation ecosystems typically build around geographical areas which house both strong academic

research and strong industrial innovation activity. These are typically larger urban areas, which are also socio-economic centres of their respective regions. NUTS3 regions are in most cases geographical areas with one strong urban area. However, urban areas of one NUTS3 region may have particularly strong socio-economic ties to urban areas in neighbouring regions and/or rely on their complementary knowledge and expertise. It may therefore be more viable to leave the choice of the geographical boundaries of the ERA Hub up to the actors involved.

The main concern in launching a new initiative such as the ERA Hub concept and label is related to an [appropriate scheduling and timing of the necessary activities](#). While the rationale clearly indicates the ambitious direction to which the ERA Hubs should develop, the starting point and thereby the more immediate development steps and related objectives will be ecosystem-specific. For example, the transformational challenge-oriented approach to the ERA Hub initiative is likely to present a particular challenge in ecosystems where local industry or local research or both are less oriented towards sciences and technologies relevant for addressing local societal challenges. Mismatch with local industry orientation would need an approach strongly biased towards collaborations between public sector and research actors, possible relevant start-ups, and most likely companies outside the ecosystem. Similarly, mismatch with local academia would need an approach strongly biased towards collaborations between public sector and companies, possible relevant start-ups, and most likely research organisations outside the ecosystem. Some of these scheduling challenges can be addressed by using [transitional instruments](#). For example, short-term funding may be offered to ecosystems for the preparation of selected launch activities or more comprehensive action plans. Cross-ecosystem activities may also be implemented using temporary platforms while more permanent ones are being built. These activities may also be supported from temporary short-term funds.

Since the proposed approach is to target ecosystems widely across ERA, the launching process should be carefully [designed and implemented in well-defined steps](#). After the necessary stakeholder consultations and decisions to establish the ERA Hubs initiative, concept, and label, it should be launched as a pilot.

The [pilot stage](#) could last e.g., two years after which there is an evaluation, followed by possible revisions to the initiative, concept, and label, and eventually a relaunch in full scale. The pilot stage could focus on encouraging ecosystems to prepare their development strategies and action plans, integration to regional development, establishing ecosystem-level governance structures and processes, etc.

It might also be viable to introduce the labelling model after the pilot stage and use the pilot stage to experiment with different labelling approaches or at least confirm what the most appropriate labelling approach and respective labelling level criteria could be.

[Member states and regions](#) should be engaged in these activities throughout the launching period to ensure that the practical implementation of the initiative, concept, and label is relevant, effective, and efficient and thereby the ERA Hubs can secure the necessary support from national and regional/local policies, strategies, initiatives, and funds.

The management of the ERA Hubs initiative, including the selection and labelling of the ERA Hubs, should be operated by an independent entity. Once the initiative is fully launched, the Member states and European representatives of stakeholders should be involved in the management of the initiative, but only at the strategic level.

Annex 1 - Glossary

ERA	European Research (and Innovation) Area
DIH	Digital Innovation Hub
NUTS3	Level 3 in the nomenclature of territorial units for statistical purposes used in Europe
RIS3	Regional Innovation Strategies
ERDF	European Regional Development Fund
EIT	European Institute of Technology
KIC	Knowledge and Innovation Community
EDIH	European Digital Innovation Hub
RTO	Research and technology organisation
EU	European Union