

ERAC 1201/20

NOTE

From: ERAC Secretariat
To: ERAC delegations
Subject: ERAC Opinion on the future of the ERA

Delegations will find annexed to this Note the **ERAC Opinion on the future of the ERA** adopted at the ERAC plenary on 17 December 2019.

ERAC opinion on the future of the ERA

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1. Introduction

The ERAC Working Group (WG) on the future of the ERA was approved by an ERAC written procedure on 26 April 2019. In total, 26 Member States and Associated Countries nominated national representatives to the WG, namely AT, BE, BG, CZ, DE, DK, EE, ES, FI, FR, HR, HU, IE, IT, LT, LU, CH, NL, NO, PT, RO, SE, SI, SK, TR and the UK, although the average presence at the meetings was about 20 country representatives. The European Commission (DG RTD) participated in all the meetings.

The group had its first meeting on 24 May 2019 in which Eduardo MALDONADO (PT) was elected as Chair and Alexander GRABLOWITZ (DE) as Rapporteur. Between May and November 2019, the WG had nine meetings in total. During this period, the WG offered ERA-related groups and ERA stakeholders two opportunities to provide written comments and feedback on draft reports prepared by the WG. ERA stakeholders were invited twice to face-to-face meetings. The following ERA stakeholder groups provided input to the deliberations of the WG: ALLEA, Business Europe, CEASAR, COST, EARTO, EIRO-Forum, ERIC-Forum, ERF, ERRIN, EU-LIFE, EUA, EUREKA, EURODOC, LERU, MSCA Alumni Association, Science Europe, TAFTIE and The Guild. ERA groups were invited once to a face-to-face meeting. All six ERA groups provided useful and welcome written inputs at least once during the process.

A first set of conclusions and recommendations on the new ERA paradigm was discussed and approved by ERAC at its meeting on 2 October 2019 in Helsinki.

The outcomes and deliverables of the WG have been made possible due to the high personal commitment of all the WG members and through a highly constructive, friendly, professional and results-oriented working atmosphere.

The WG had a very demanding schedule that consisted of nine meetings over seven months, including the summer vacation period. Half of the meetings were two days long. All meetings took place in Brussels except one, in early September 2019, that took place in Porto, Portugal. This demanding engagement of all its members underlines the WG's deep commitment to jointly developing a convincing and relevant new ERA paradigm for the coming decade.

2. Mandate

The mandate of the Ad Hoc WG was approved by written procedure on 26 April 2019. The core elements of the mandate read as follows:

'The Ad Hoc Working Group on the Future of the ERA is expected to advise ERAC on:

- *options for a new narrative/paradigm on the future of the ERA, taking into account both the experiences of 20 years of ERA policies and emerging needs for policy reforms;*
- *possible future ERA priorities and other relevant trends, inter alia of Horizon Europe, which may feed into a new ERA policy framework post-2020.*

Taking forward the Council conclusions of 30 November 2018, the Ad Hoc Working Group will concentrate on the following aspects:

A. Options for a new narrative/paradigm on the future of the ERA

The WG will provide its assessment of the current state of play and of the factors for success or failure of the ERA policy framework so far, drawing lessons from the experience since 2000. The group will also outline possible options for a new narrative/paradigm on the future of the ERA.

B. Possible future ERA objectives and priorities

The WG will provide a rationale for possible future ERA objectives and priorities. To this purpose, the WG might also exchange with stakeholder organisations and other outside experts, and invite them to provide feedback. This work package is first and foremost future-oriented. It should enable ERAC to contribute to the Commission's reflections in view of a possible new Communication on the ERA in 2020.

The WG on the Future of the ERA shall not advise ERAC on the advisory structure of the ERA, as this will be the task of the next review cycle in 2021, after possible Council conclusions on the ERA priorities of the future in 2020".

Furthermore, the mandate defines two deliverables expected by the group, notably

"The WG will submit a draft ERAC Opinion with the following deliverables to ERAC:

1. *Options for a new narrative/paradigm for the ERA 2020-2030 (until September 2019)*
2. *Possible future ERA objectives and priorities, taking into account, inter alia, relevant interlinkages with Horizon Europe, in particular the part 'Reforming and enhancing the EU Research and Innovation System' (until December 2019)*

A draft ERAC Opinion should be available by 1 December 2019, with a view to the ERAC plenary on 17 December 2019".

The two deliverables are annexed to this final report. The final report includes the main messages in these two deliverables. This report was approved by the Ad Hoc WG by written procedure on 3 December.

3. Assessment of current state of play

- (1) The European Research Area (ERA) is about to celebrate 20 years of its implementation. It was launched in 2000 based on the idea that Europe needed a Research Area with a European dimension. In 2008, it acquired directionality with the grand challenges approach and the 'Ljubljana Process' for governance along with a revised structure.
- (2) The European Commission confirmed its engagement in the ERA with its ERA communication in 2012, with an ensuing renewed partnership between Member States, the Commission and research stakeholders adopted in Council conclusions¹.
- (3) With the adoption of the ERA Roadmap 2015-2020 and the related national ERA action plans, the national focus and dimension of the ERA was strengthened and improved, while the European Commission focused more on playing a supporting and monitoring role.

¹ [Council conclusions on 'A reinforced European research area partnership for excellence and growth'](#).

- (4) Over the last two decades, a wide range of ERA-related policy reforms and initiatives have been successfully implemented, contributing towards the overarching objective of realising the ERA.
- (5) The need for a new ERA paradigm is recognised in the European Leaders' agenda 2019-2024 which underlines that 'we must step up investment in people's skills and education, do more to foster entrepreneurship and innovation and increase research efforts, in particular by addressing the fragmentation of European research, development and innovation'.
- (6) The policy approach of the ERA Roadmap 2015 – 2020 to focus on national policy reforms and actions strengthened the role of the ERA at national level, because the European Commission considered that conditions were properly in place at EU level. The ERA Roadmap 2015 therefore included fewer initiatives and actions at EU level, including those based on the essential role of the EU framework programmes for research and innovation in delivering a fully functioning ERA.
- (7) Progress on ERA implementation has been slowing down in recent years and there are still major disparities between countries and regions, some of which are even diverging rather than converging, as stated in the ERA Progress Report 2018.
- (8) Despite the multiple achievements of the ERA, an effective European dimension is missing in many national, including regional and local, R&I policies, hindering joint multi-level action, which is an essential element of a fully functioning ERA.
- (9) This deficiency is leading to an insufficient co-evolution of European, national, including regional, R&I systems, that is building-up an unhealthy level of concentration of R&I pockets of excellence across Europe. Moreover, it leads to an unbalanced mobility and knowledge circulation pattern that contradicts ERA policy objectives.

4. Lessons learned

From past experience, the following key lessons can be identified:

- a) Sustained political ownership and continuous commitment at all levels (European, national and regional) are key to achieving the ERA and fostering progress towards a fully functioning European area for research and, *mutatis mutandis*, for innovation, that acknowledges the value of diversity among MS/AC and their regions and raises scientific excellence across the whole of Europe.
- b) A new ERA paradigm needs to contribute more to a better quality of life for European citizens, driven by a new knowledge-based and innovation-led sustainable growth model, in line with wider economic, societal and environmental policy objectives, namely the transition to a healthy planet.
- c) There is a need for greater acknowledgement of the shared competence and responsibility of R&I policies and of the multi-level reality in Europe. A new ERA needs to ensure relevance, impact and visibility across Europe, and this should be achieved through tangible, larger and more impactful joint actions.
- d) A new ERA paradigm should be based on an integrated, coherent approach to education, research and innovation policies and instruments in order for the ERA to effectively achieve its wider objectives.
- e) Education plays a key role for the future ERA and a special emphasis should thus be placed on a coordinated approach with the higher education sector, in particular the European Higher Education Area (EHEA) and ERASMUS+.

- f) The design and implementation of a new ERA paradigm must take place in close interaction with all the relevant R&I stakeholders, as well as, whenever possible, with the wider society, to provide a greater focus on outcomes and impacts to ensure that the ERA delivers benefits for them all.
- g) Existing barriers at national, including regional, and European level to a fully functioning ERA cannot be overcome by R&I policy alone. They need to be addressed by a broader set of horizontal and sectoral policies in a coherent whole-of-government approach.
- h) There must be monitoring mechanisms in place from the start to assess progress and identify gaps, impacts and successes, in order to steer the ERA and enable it to adapt to evolving demands and needs.
- i) A new ERA paradigm and its corresponding narrative must build on all its many achievements since 2000, upgrade the future vision underpinning the ERA in line with new forms of knowledge production, dissemination and use, the changed environmental, economic and societal context and the need for a knowledge-based and innovation-led sustainable growth model, and provide solutions to the societal challenges and to the identified shortcomings that have so far prevented the achievement of a fully functioning ERA.

5. Recommendations for a new ERA narrative/paradigm

Building on the lessons learned and conclusions presented above, as well on the changed socio-economic environment and the need to better address future challenges both in Europe and globally, the new ERA paradigm² and its underlying narrative should:

1. (OVERALL OBJECTIVE) Exploit the significant contribution that R&I plays in achieving Europe's wider policy goals and make the ERA more responsive to society. 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.
2. (CORE VALUES) Strengthen the focus on science, research and knowledge as core values of Europe. Define a set of core principles for the ERA and promote them.
3. (SCOPE ON KNOWLEDGE) Aim to realise the full potential of a knowledge-driven society, encompassing knowledge co-creation, dissemination and use/exploitation, as well as their interactions, based on effective Open Science and Open Innovation approaches, turning this dynamic knowledge circle into the new metaphor for the future ERA.
4. (POLITICAL RESPONSIBILITY) Be supported by high-level, strong and sustained political ownership and continued commitment at EU and national, including regional, levels.
5. (STRATEGY FIRST) Be focused on strategic policy objectives and a broader/bolder policy vision/scope, while relevant governance aspects should be addressed at a later stage.
6. (INCLUSIVENESS): understand, respect and tap into the diversity of the national, including regional and local, research and innovation systems, to achieve a more synchronised co-evolution of R&I systems, strengthen their quality and excellence, reduce the existing inequalities and fragmentation, and foster connectivity, collaboration and complementarities, thus maximising the effectiveness of the ERA at all levels.

² Fully respecting subsidiarity and the scope of Article 179 TFEU in a way that meets today's needs.

7. (RECOGNITION) Become more broadly recognised in order to allow education, research and innovation to better and more visibly contribute to wider EU policy objectives, including cohesion and societal objectives.
8. (EMPOWERMENT) Mobilise and empower all national, including regional and local, R&I systems and their actors, to create, disseminate and exploit knowledge, fostering transnational and trans-regional cooperation through networks with adequate critical mass, framed within EU policies and programmes, notably the EU's R&I framework programmes, with the European Commission as a full and engaged partner.
9. (MULTI-LEVEL OWNERSHIP) Knowledge-centred policies should be used to trigger a functional multi-level European R&I ecosystem that avoids unnecessary duplication, reduces fragmentation and ensures that policy-makers and stakeholders assume their responsibilities at all relevant levels.
10. (ENABLING) Position research and innovation as an important horizontal enabler of solutions for societal needs/challenges and for improving the well-being of European citizens, as well as achieving knowledge-based sustainable growth for improved European competitiveness on a global scale.
11. (FREE CIRCULATION) Continue to improve the circulation of researchers, knowledge and technologies, while addressing the challenge of brain drain and unbalanced circulation patterns, as well as ensuring gender equality and access opportunities for all.
12. (REGULATORY MEASURES) Be open to the potential need for a more complementary and coherent European approach to knowledge policy, namely potential soft law measures or possible legislative action at European level, including assessment and reform of national ERA-related policies within the context of the European Semester.

The new ERA paradigm and its underlying narrative should also meet additional requirements stemming from the existing shortcomings and from a changed societal and economic environment in Europe and globally. Notably, the new ERA paradigm should:

13. (DIRECTIONALITY/RRI) Underline the importance of ambitious and sustained investments in R&I, possibly applying a 'smart directionality'³ policy approach for knowledge production and exploitation, embracing societal goals/challenges and placing a greater focus on responsible use of knowledge and research results for societal purposes (policy-led Responsible R&I) in order to ensure the long-term sustainability of national, including regional, R&I systems.
14. (EHEA LINK) Adopt more holistic and comprehensive policy approaches encompassing research, innovation and education (including training and skills development), in particular with respect to higher education (EHEA), where the ERASMUS+ programme and the European Universities Initiative, as well as the EIT, could be building blocks.
15. (SUSTAINABILITY) Underline that a fully functioning ERA will allow Europe to better address societal goals/challenges, in particular sustainable development and the Sustainable Development Goals (SDGs), without undermining the relevance of fundamental 'blue sky' research.
16. (EVIDENCE-BASED POLICY-MAKING) Underline that Europe has among the highest quality-of-life standards in the world, which derives from the shared principle that scientific freedom and

³ The role of policy as setting the direction of change beneficial to society. Mazzucato, M. (2015b). *From Market Fixing to Market-Creating: A New Framework for Economic Policy* (No. 2015-25). SPRU-Science and Technology Policy Research, University of Sussex.

the exchange and use of knowledge are key for progress, and call for a new focus on the use of knowledge and scientific evidence in policy-making, viewed as a differentiating feature of the European culture of policy-making.

17. (SECTORAL POLICY IMPLEMENTATION) Proactively support other sectoral policies, in order to facilitate their evidence-based development and monitoring, help assess their expected impact and contribute to their implementation through testing and experimentation.
18. (OVERCOME BARRIERS) Promote a dialogue and concerted actions with horizontal policies to overcome existing barriers to a fully functioning ERA which are beyond the strict remits of R&I policy.
19. (GLOBAL DIMENSION) Put a greater focus on promoting and enabling collaboration with all relevant third countries to find solutions to global challenges.

And, finally:

20. (ERA LIGHTHOUSES) To provide visibility and demonstrate the implementation of these priorities as well as their impacts, ERA policy tools, such as 'ERA lighthouses', could be put in place. These tools should (a) allow for concrete outcomes and impacts in the short to medium term based on concrete societal needs; (b) address issues of European-wide relevance inside and beyond the R&I system; and (c) lead to improved acceptance and recognition of, and support for, the ERA by policy-makers, ERA stakeholders and wider society. ERA lighthouses should help to demonstrate in a tangible and concrete way the added value of the renewed ERA paradigm/narrative and its associated ERA objectives and priorities in practice.

6. Elements for the new ERA paradigm/narrative

From these recommendations, it is possible to conclude that the European Research Area (ERA) should be the basis for a dynamic knowledge circle in Europe, building on a corresponding multi-level and multi-actor steering framework.⁴ A fully functioning ERA, meeting the requirements laid down in Article 179(1) of the Treaty on the Functioning of the EU (TFEU), should serve broader policy objectives while ensuring the best framework conditions for the circulation of new research-based knowledge and technologies as well as for researchers' careers. 11 closely interlinked dimensions of change should constitute the main new elements of the new ERA narrative:

1. *From free circulation of researchers, knowledge and technology to a European community of knowledge producers and users.*
2. *From overcoming barriers to seizing opportunities.*
3. *From valuing R&I's service for society to valuing the contribution of research-based knowledge for the cohesion of European society based on freedom-of-science principles.*
4. *From global competitiveness to research-based knowledge-driven sustainable growth leadership.*
5. *From addressing grand challenges to addressing transformative changes based on smart directionality.*
6. *From evidence-based policy-making to research-based knowledge-driven policy change.*
7. *From innovation divide to an all-encompassing view of inclusiveness.*
8. *From individual knowledge dimensions to an integrated and dynamic knowledge circle.*

⁴ See Annex 1.

9. *From* a largely monitoring role for the European Commission *to* the European Commission as an active and engaged partner for delivering on the ERA across Europe.
10. *From* involvement of stakeholders in research-based knowledge policy design and implementation *to* broader societal engagement and responsiveness.
11. *From* fully autonomous national frameworks for research-based knowledge policies *to* a truly multi-level steering framework.

To address these dimensions of change, the revised ERA objectives and priorities must deliver on the following five challenges:

- achieve a dynamic knowledge circle;
- better demonstrate the societal relevance of the ERA and be responsive to societal needs;
- advocate a new R&I-driven sustainable growth and development model;
- drive the co-design of R&I with relevant horizontal and sectoral policies;
- harness the diversity of Europe's R&I systems.

7. Future ERA objectives and priorities

7.1 Future ERA objectives

In order to advance and implement a fully functioning European Research Area that meets the requirements laid down in Article 179(1) of the Treaty on the Functioning of the EU (TFEU) and of the new ERA paradigm, the European Commission, the Member States and the Associated Countries must build on the ERA's many important achievements and progress so far, and act jointly to pursue the following **three equally important strategic objectives**:

- ***Be wholly inclusive and collaborative, and increase research quality throughout Europe***: ERA policies and actions at all levels should increase inclusiveness, openness, brain circulation and integrity, pursuing scientific excellence throughout Europe. The overarching guiding principles should be collaboration and quality of research processes, outputs and data. These principles apply to geography (within Europe and the world), culture and people (including gender equality and minority integration). The ERA should involve institutions from academia, research & technology organisations (RTOs) and industry as well as from the public sector and society, in order to achieve high-quality, responsible European R&I ecosystems characterised by the flourishing of existing and new collaborative links.
- ***Be seamless and connected, and drive Europe's competitiveness***: In order to fully exploit the ERA's potential for knowledge-based, innovation-led sustainable growth and development in Europe, the ERA needs to become truly effective in its capability to produce, circulate and use research-based knowledge. This entails increasing the interoperability of the European ecosystems, as well as improving the framework conditions for researchers, innovators, industry and institutions. Higher education and skills development are integral components of an impactful ERA, requiring better coordinated R&I and higher education policies.
- ***Be inspiring and open, and contribute to wider European policy objectives***: ERA policies and actions at all levels should be more responsive to the needs of ERA stakeholders and more relevant to the wider society, by means of smart directionality and investments aimed at solving societal needs. In particular, the ERA should contribute both to the Sustainable Development Goals (SDGs) and to

Europe's wider policy objectives. This can only be achieved by recognising the primordial importance of curiosity-driven basic research, and by creating, disseminating and exploiting research-based knowledge, making it visible in more inspiring and empowering ways across Europe, in the context of the new opportunities offered by Open Science and Open Innovation principles.

To achieve these three strategic objectives, the ERA must have wide political support and commitment at the highest national and EU levels, to drive the implementation of better coordinated knowledge-based R&I policies while harnessing the full diversity of Europe's R&I systems. The achievement of a fully functioning ERA also needs to be supported by EU-level programmes and policies, in particular Horizon Europe (2021-2027) and future EU R&I Framework Programmes. Adequate and ambitious EU funding is a prerequisite to ensure complementarity and collaboration between European and national/transnational activities through a strategic planning process. Specifically, the 'ERA pillars' of the Framework Programmes should have sufficient funding and be designed and implemented so as to effectively contribute to the objectives and priorities of the new ERA paradigm.

7.2 Future ERA priorities

To meet the previously described objectives, the ERA should focus on four equally important strategic priorities, fully in line with the renewed ERA paradigm. These four priorities may require legislative, soft regulatory or administrative measures, including through the European Semester process, for effective implementation.

For each strategic priority, a limited number of potential areas of intervention are listed for illustrative purposes only. They represent issues which ERAC considers to be highly relevant and important for achieving the ERA objectives. However, defining a detailed ERA action plan, which should include adequate monitoring mechanisms and quantifiable Key Performance Indicators (KPIs), is beyond the mandate of this WG and can only be done at a later stage once specific political agendas and policy priorities are set at the appropriate level.

To provide visibility and demonstrate the implementation of these priorities as well as their impacts, ERA policy tools, such as 'ERA lighthouses', could be put in place. These tools should (a) allow for concrete outcomes and impacts in the short to medium term based on concrete societal needs; (b) address issues of European-wide relevance inside and beyond the R&I system; and (c) lead to improved acceptance and recognition of, and support for, the ERA by policy-makers, ERA stakeholders and wider society. ERA lighthouses should help to demonstrate in a tangible and concrete way the added value of the new ERA paradigm and its associated ERA objectives and priorities in practice.

(1). **Framework conditions for the production, circulation and use of knowledge, including research career issues**

Key issues/challenges to be addressed: The complex interplay within the European multi-level and multi-actor ecosystems for knowledge production, circulation and use constitutes a major obstacle to a fully functioning ERA. The establishment of a functional multi-level and multi-actor steering framework for research-based knowledge policies, encompassing the whole policy cycle from design to implementation and monitoring/review, is therefore a key requirement for the future. Particular opportunities stem from more aligned approaches across Europe concerning evaluation systems for research careers, both within academia and across sectors (academia and industry) and countries.

Description of the priority: In order to take full advantage of possible synergies and complementarities between EU and national ecosystems for knowledge production, circulation and use, the complex legal and administrative policy frameworks should be made compatible and interoperable at all levels. An integrated approach towards effective framework conditions should address common criteria for assessing the quality of research (processes, outputs and data), linking research to innovation and higher education policies and promoting institutional change within all ERA institutions, as well as where potentially harmful effects may derive from broader policies such as EU-level IP and state aid rules. A particular focus should be placed on opportunities stemming from Open Science and Open Innovation policy approaches, in particular regarding research career interoperability and rewarding systems, including gender and minority considerations, when assessing career opportunities.

Potential intervention areas include:

- exploring ways to increase the interoperability of national and EU R&I systems to reduce the fragmentation of rules and procedures for R&I funding, such as promoting ERA seals of quality and enhancing trust and recognition between funding agencies across Europe;
- developing a European framework for career evaluation and career progression for researchers, including inter-sectoral mobility (academia, industry, etc.) and gender-related issues under the Open Science and Open Innovation principles;
- promoting dialogue and concerted actions with horizontal policies with an impact on research careers (e.g. labour, social security, education, etc.);
- further developing Open Science and Open Innovation policy approaches at European and national levels in order to truly foster the circulation of knowledge;
- ensuring framework conditions for the pursuit of scientific excellence, including effective monitoring of progress to achieve a fully functioning ERA, for example, through the European Semester;
- ...

(2). **R&I-driven joint action with other policy areas in a global context**

Key issues/challenges to be addressed: Research-based knowledge does not fully exploit its potential to provide the smart directionality needed to achieve transformative changes required to meet Europe's wider policy objectives and the SDGs. The research-based knowledge sector does not sufficiently exploit the potential for co-design, co-creation and co-implementation of R&I with other policy areas.

Description of the priority: Research-based knowledge should better provide the smart directionality needed for transformative changes based on new knowledge and technologies (e.g. digital transformation, energy and ecological transition, genetic revolution in an ageing population, robotics, etc.) and contribute to meeting the SDGs, sustainable growth requirements and other societal needs. New priority-setting, synchronised investments and implementation mechanisms require a holistic dimension and should be established based on co-design and co-implementation with other European policy areas. This should include a joint strategic approach for international cooperation as well as for regulation mechanisms to reduce policy fragmentation and unnecessary duplication.

Potential intervention areas include:

- mobilising support at the highest level for knowledge-based policy design and implementation;

- promoting cooperation among MS on specific topics (e.g. through R&I infrastructures or European partnerships);
- promoting a dialogue and concerted actions with sectoral policies beyond the strict remits of R&I policy, to avoid fragmentation with regulation policies or impact assessments;
- embedding R&I and promoting capacities for absorption of new knowledge and technologies in other sectoral policies, including towards the SDGs and within missions;
- ensuring closer collaboration between MS and the EU Commission on international cooperation;
- ...

(3). **Relevance and visibility of R&I for society**

Key issues/challenges to be addressed: Research-based knowledge and thus the ERA have not achieved the appropriate level of visibility in society despite their major contributions to Europe's welfare and competitiveness and the 'European way of life' and its core values. There is insufficient awareness among citizens of the impact and benefits that R&I has in their daily lives, as the interaction of research-based knowledge policies with broader society is still underdeveloped across the policy cycle, from policy design to implementation and monitoring/review. This underdeveloped interaction with society may pose a long-term risk to the sustainability of the research-based knowledge sector and the ERA as there may not be sufficient support from policy-makers for the necessary investment in R&I.

Description of the priority: ERA actions and initiatives addressing both curiosity-driven and applied research have to better direct national, including regional, and EU knowledge policies to increase their responsiveness to societal needs, thus raising the relevance and visibility of R&I activities for society. Particular attention should be paid to involving stakeholders and citizens, including the most vulnerable populations, in setting R&I policy priorities and in the knowledge-creating processes. Effective branding and communication are needed for better outreach and visibility of the ERA's potential and achievements.

Potential intervention areas include:

- co-designing, implementing and assessing R&I policies with stakeholders and society, namely by finding more effective ways of involving citizens in setting and implementing R&I policy priorities;
- promoting the valorisation and recognition of R&I achievements by society, by designing and implementing better communication of the impact and benefits of R&I, its relevance and its achievements that improve the daily lives of European citizens;
- as researchers themselves are mostly unfamiliar with the ERA, targeting the whole research community and institutions via information campaigns to familiarise them with the ERA, its objectives and priorities and showing how they can benefit from the ERA and how they can actively influence its development and priority-setting;
- within the context of supporting Open Science and Open Innovation approaches, developing participatory approaches such as citizen science as well as socio-innovation, social entrepreneurship and the protection of cultural heritage;
- ...

(4). **Broad inclusiveness**

Key issues/challenges to be addressed: Insufficient inclusiveness of research-based knowledge policies and thus of the ERA is an obstacle to fully activating their potential to improve the well-being of Europe's citizens. ERA actions and initiatives have not been sufficiently tailor-made to respond to the needs of the diverse socio-economic situations across and within the EU Member States, especially since the financial and economic crisis.

Description of the priority: ERA actions and initiatives have to better ensure that European and national, including regional, R&I policies are coherent and inclusive in the broadest sense. Open and transparent engagement of all relevant actors, including the most vulnerable ones, should strengthen ERA policy to enhance quality and excellence across disciplines and reduce fragmentation. ERA actions should facilitate collaborative links between researchers, institutions and citizens, encompassing the geographical dimension, human capital, gender and minority-groups-related issues, as well as both public and private institutions in all sectors. The need for institutional reform aimed at higher standards and core values should be considered. ERA policy should promote knowledge and brain circulation at all levels and reduce the undesirable phenomenon of brain drain.

Potential intervention areas include:

- ensuring a more synchronised co-evolution of R&I systems, to strengthen their quality and promote excellence, and reduce the existing regional/geographic/territorial inequalities;
 - developing effective measures to foster brain circulation and counteract brain drain;
 - ensuring gender equality throughout research careers and research content;
 - ensuring access opportunities for all minority groups throughout research careers and research content;
 - fostering connectivity and pan-European R&I collaborative links;
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Annexes:

- Deliverable 1: Options for a new paradigm on the future of the ERA
- Deliverable 2: Future ERA objectives and priorities

Annex I - Options for a new paradigm on the future of the ERA (deliverable 1)

1. Background, conclusions and recommendations

1.1 Background

- The European Research Area (ERA) is about to celebrate 20 years of its implementation. It was launched in 2000 based on the idea that Europe needed a Research Area with a European dimension. In 2008, it acquired directionality with the grand challenges approach and the 'Ljubljana Process' for governance along with a revised structure.
- The European Commission confirmed its engagement in the ERA with its ERA communication in 2012, with an ensuing renewed partnership between Member States, the Commission and research stakeholders adopted in Council conclusions⁵.
- With the adoption of the ERA Roadmap 2015-2020 and the related national ERA action plans, the national focus and dimension of the ERA was strengthened and improved, while the European Commission focused more on playing a supporting and monitoring role.
- Over the last two decades, a wide range of ERA-related policy reforms and initiatives have been successfully implemented, contributing towards the overarching objective of realising the ERA.
- The need for a new ERA paradigm is recognised in the European Leaders' agenda 2019-2024 which underlines that *'we must step up investment in people's skills and education, do more to foster entrepreneurship and innovation and increase research efforts, in particular by addressing the fragmentation of European research, development and innovation'*.

1.2 Conclusions

- The policy approach of the ERA Roadmap 2015 – 2020 to focus on national policy reforms and actions strengthened the role of the ERA at national level, because the European Commission considered that conditions were properly in place at EU level. The ERA Roadmap 2015 therefore included fewer initiatives and actions at EU level, including those based on the essential role of the EU framework programmes for research and innovation in delivering a fully functioning ERA.
- Progress on ERA implementation has been slowing down in recent years and there are still major disparities between countries and regions, some of which are even diverging rather than converging, as stated in the ERA Progress Report 2018.
- Despite the multiple achievements of the ERA, an effective European dimension is missing in many national, including regional, R&I policies, hindering joint multi-level action, which is an essential element of a fully functioning ERA.
- This deficiency is leading to the insufficient co-evolution of European, national, including regional, R&I systems, which is building up an unhealthy level of concentration of R&I pockets

⁵ [Council conclusions on 'A reinforced European research area partnership for excellence and growth'](#).

of excellence across Europe. Moreover, it leads to an unbalanced mobility and knowledge circulation pattern that contradicts ERA policy objectives.

- From past experience, the following key lessons can be identified:
 - a. Sustained political ownership and continuous commitment at all levels (European, national and regional) are key to achieving the ERA and fostering progress towards a fully functioning European area for research and, *mutatis mutandis*, for innovation, that acknowledges the value of diversity among MS/AC and their regions and raises scientific excellence across the whole of Europe.
 - b. A renewed ERA needs to contribute more to a better quality of life for European citizens, driven by a new knowledge-based and innovation-led sustainable growth model, in line with wider economic, societal and environmental policy objectives, namely the transition to a healthy planet.
 - c. There is a need for greater acknowledgement of the shared competence and responsibility of R&I policies and of the multi-level reality in Europe. A renewed ERA needs to ensure relevance, impact and visibility across Europe, and it may be possible to achieve this through tangible, larger and more impactful joint actions.
 - d. A renewed ERA should be based on an integrated, coherent approach to education, research and innovation policies and instruments in order to effectively achieve its wider objectives;
 - e. Education plays a key role for the future ERA and a special emphasis should thus be placed on a coordinated approach with the higher education sector, in particular the European Higher Education Area (EHEA) and ERASMUS+.
 - f. The design and implementation of a renewed ERA must take place in close interaction with all the relevant R&I stakeholders, as well as, whenever possible, with the wider society, to provide a greater focus on outcomes and impacts to ensure that the ERA delivers benefits for them all.
 - g. Existing barriers at national, including regional, and European level to a fully functioning ERA cannot be overcome by R&I policy alone. They need to be addressed by a broader set of horizontal and sectoral policies in a coherent whole-of-government approach.
 - h. There must be monitoring mechanisms in place from the start to assess progress and identify gaps, impacts and successes, in order to steer the ERA and enable it to adapt to evolving demands and needs.
- A new ERA paradigm and narrative must build on all its many achievements since 2000, upgrade the future vision underpinning the ERA in line with new forms of knowledge production and dissemination, the changed environmental, economic and societal context and the need for a knowledge-based and innovation-led sustainable growth model, and provide solutions to the societal challenges and to the identified shortcomings that have so far prevented the achievement of a fully functioning ERA.

1.3 Recommendations

Building on the lessons learned and conclusions presented above, as well on the changed socio-economic environment and the need to better address future challenges both in Europe and globally, the new ERA paradigm⁶ and its underlying narrative should:

⁶ Fully respecting subsidiarity and the scope of Article 179 TFEU in a way that meets today's needs.

1. (OVERALL OBJECTIVE) Exploit the significant contribution that R&I plays in achieving Europe's wider policy goals and make the ERA more responsive to society. 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.
2. (CORE VALUES) Strengthen the focus on science, research and knowledge as core values of Europe. Define a set of core principles for the ERA and promote them.
3. (SCOPE ON KNOWLEDGE) Aim to realise the full potential of a knowledge-driven society, encompassing knowledge co-creation, dissemination and use/exploitation, as well as their interactions, based on effective Open Science and Open Innovation approaches, turning this dynamic knowledge circle into the new metaphor for the future ERA.
4. (POLITICAL RESPONSIBILITY) Be supported by high-level, strong and sustained political ownership and continued commitment at EU and national, including regional, levels.
5. (STRATEGY FIRST) Be focused on strategic policy objectives and a broader/bolder policy vision/scope, while relevant governance aspects should be addressed at a later stage.
6. (INCLUSIVENESS): understand, respect and tap into the diversity of the national, including regional and local, research and innovation systems, to achieve a more synchronised co-evolution of R&I systems, strengthen their quality and excellence, reduce the existing inequalities and fragmentation, and foster connectivity, collaboration and complementarities, thus maximising the effectiveness of the ERA at all levels.
7. (RECOGNITION) Become more broadly recognised in order to allow education, research and innovation to better and more visibly contribute to wider EU policy objectives, including cohesion and societal objectives.
8. (EMPOWERMENT) Mobilise and empower all national, including regional and local, R&I systems and their actors, to create, disseminate and exploit knowledge, fostering transnational and trans-regional cooperation through networks with adequate critical mass, framed within EU policies and programmes, notably the EU's R&I framework programmes, with the European Commission as a full and engaged partner.
9. (MULTI-LEVEL OWNERSHIP) Knowledge-centred policies should be used to trigger a functional multi-level European R&I ecosystem that avoids unnecessary duplication, reduces fragmentation and ensures that policy-makers and stakeholders assume their responsibilities at all relevant levels.
10. (ENABLING) Position research and innovation as an important horizontal enabler of solutions for societal needs/challenges and for improving the well-being of European citizens, as well as achieving knowledge-based sustainable growth for improved European competitiveness on a global scale.
11. (FREE CIRCULATION) Continue to improve the circulation of researchers, knowledge and technologies, while addressing the challenge of brain drain and unbalanced circulation patterns, as well as ensuring gender equality and access opportunities for all.
12. (REGULATORY MEASURES) Be open to the potential need for a more complementary and coherent European approach to knowledge policy, namely potential soft law measures or possible legislative action at European level, including assessment and reform of national ERA-related policies within the context of the European Semester.

The new ERA paradigm and its underlying narrative should also meet additional requirements stemming from the existing shortcomings and from a changed societal and economic environment in Europe and globally. Notably, the new ERA paradigm should:

13. (DIRECTIONALITY/RRI) Underline the importance of ambitious and sustained investments in R&I, possibly applying a ‘smart directionality’⁷ policy approach for knowledge production and exploitation, embracing societal goals/challenges and placing a greater focus on responsible use of knowledge and research results for societal purposes (policy-led Responsible R&I) in order to ensure the long-term sustainability of national, including regional, R&I systems.
14. (EHEA LINK) Adopt more holistic and comprehensive policy approaches encompassing research, innovation and education (including training and skills development), in particular with respect to higher education (EHEA), where the ERASMUS+ programme and the European Universities Initiative, as well as the EIT, could be building blocks.
15. (SUSTAINABILITY) Underline that a fully functioning ERA will allow Europe to better address societal goals/challenges, in particular sustainable development and the Sustainable Development Goals (SDGs), without undermining the relevance of fundamental ‘blue sky’ research.
16. (EVIDENCE-BASED POLICY-MAKING) Underline that Europe has among the highest quality-of-life standards in the world, which derives from the shared principle that scientific freedom and the exchange and use of knowledge are key for progress, and call for a new focus on the use of knowledge and scientific evidence in policy-making, viewed as a differentiating feature of the European culture of policy-making.
17. (SECTORAL POLICY IMPLEMENTATION) Proactively support other sectoral policies, in order to facilitate their evidence-based development and monitoring, help assess their expected impact and contribute to their implementation through testing and experimentation.
18. (OVERCOME BARRIERS) Promote a dialogue and concerted actions with horizontal policies to overcome existing barriers to a fully functioning ERA which are beyond the strict remits of R&I policy.
19. (GLOBAL DIMENSION) Put a greater focus on promoting and enabling collaboration with all relevant third countries to find solutions to global challenges.

And, finally:

20. (ERA LIGHTHOUSES) To provide visibility and demonstrate the implementation of these priorities as well as their impacts, ERA policy tools, such as ‘ERA lighthouses’, could be put in place. These tools should (a) allow for concrete outcomes and impacts in the short to medium term based on concrete societal needs; (b) address issues of European-wide relevance inside and beyond the R&I system; and (c) lead to improved acceptance and recognition of, and support for, the ERA by policy-makers, ERA stakeholders and wider society. ERA lighthouses should help to demonstrate in a tangible and concrete way the added value of the renewed ERA paradigm/narrative and its associated ERA objectives and priorities in practice.

The Commission is encouraged to take into account ‘ERA Lighthouses’ with a view to preparations for the upcoming Commission communication on the future of the ERA, including the possibility of launching a pilot project on lighthouses.

⁷ The role of policy as setting the direction of change beneficial to society. Mazzucato, M. (2015b). *From Market Fixing to Market-Creating: A New Framework for Economic Policy* (No. 2015-25). SPRU-Science and Technology Policy Research, University of Sussex.

2. The evolution of the ERA

The ERA concept took shape in 2000 with the Commission communication ‘Towards a European Research Area’⁸ adopted by the European Council in Lisbon in 2000 with a view to overcoming fragmentation and isolation of national efforts and systems and reducing disparities in regulatory and administrative frameworks. It proposed seven dimensions with a corresponding list of possible themes for actions, including capacities: (i) European research infrastructures (ESFRI); (ii) a European vision for research careers; (iii) coherent use of public instruments, with the opening up and coordination of research programmes; (iv) dynamic private investment, including a European patent system and risk capital; (v) a common system of references for better policy-making; (vi) more human resources and research mobility; and (vii) a dynamic European landscape building on shared values, including ethical issues. The sixth Framework Programme (2002-2008) strongly supported the development of the ERA with specific ERA instruments and dedicated horizontal schemes. However, according to the ex-post evaluation of FP6, the results were mixed⁹.

In April 2007, following a public consultation process, a green paper ‘The European Research Area: New Perspectives’¹⁰ was published and discussed in the course of the Portuguese Presidency. With the ERA seen as a cornerstone of the knowledge society, where education and training and research and innovation were fully mobilised, and with a focus on catching up with the USA and the emergent powers of China and India, the ERA was redefined around six priorities: (1) an adequate number of researchers with mobility at all levels; (2) world-class infrastructures; (3) excellent research institutions forming clusters and engaging in public-private partnerships; (4) effective knowledge-sharing; (5) well-coordinated research programmes and priorities and joint programming; and (6) opening of the ERA to the world.

In 2008, under the Slovenian Presidency, the Council of the European Union launched the ‘Ljubljana Process’ in order to provide Europe with a common vision and effective governance, promoting the ERA as a partnership between the Member States and the Commission. The governance system linked the ERA to education, innovation and other relevant policies, included both Member States and Associated Countries and stakeholders in the system, and created the basis for a monitoring system. The 2020 ‘Vision for the ERA’ was developed during the French Presidency, with a focus on promoting sustainable development, competitiveness and the satisfaction of citizens’ needs underpinned by the free circulation of knowledge and technology. Coordination and cooperation were based on a voluntary approach, with variable geometry and due respect for the subsidiary principle. It envisioned that the ERA would contribute to the knowledge triangle and highlighted the importance of intergovernmental programmes and of the EIT and its KICs. It was expected that the ERA would connect strongly with society and reap the full benefit of Europe’s diversity while finding the right balance between competition and cooperation.

⁸ Commission communication ‘Towards a European Research Area’ ([COM\(2000\)6](#)).

⁹ [Ex-post evaluation of FP6](#).

¹⁰ Council conclusions on the definition of a 2020 Vision for the European Research Area ([16767/08](#)).

The ERA was enshrined in the Lisbon Treaty in 2009, making its implementation a ‘constitutional commitment’ and the joint responsibility of the European Commission and the Member States. The Lisbon Treaty defines the mission of the ERA policy as follows (**Article 179(1) TFEU**):

‘The Union shall have the objective of strengthening its scientific and technological bases by achieving a European research area in which researchers, scientific knowledge and technology circulate freely, and encouraging it to become more competitive, including in its industry, while promoting all the research activities deemed necessary by virtue of other Chapters of the Treaties.’

The Treaty does not refer to the ERA as a goal to be achieved by a given date. Rather, the ERA is a basis for the continuous strengthening of the scientific and technological base in Europe.

The current ERA framework was put in place in 2012 with the Commission communication ‘A reinforced European Research Area partnership for excellence and growth’¹¹ following a public consultation process. It defined five ERA priorities focused on cross-cutting issues that have mostly prevailed until today: (1) more effective national research systems, (2) optimal transnational cooperation and competition, (3) an open labour market for researchers, (4) gender equality and gender mainstreaming in research, (5) optimal circulation, access to and transfer of scientific knowledge and – at a later stage – (6) international cooperation. The communication also specified concrete commitments linked to competitiveness and to maximising excellence and the returns on public R&I investment. It kept the emphasis on the knowledge triangle and the interlinkages between R&I and other EU policies. It reinforced the idea of merit-based recruitment to make research careers more attractive, called for brain circulation, and included the ERA in the national reform programmes and in the European Semester. The stakeholder organisations were integrated into the governance system of the ERA through the ERA Stakeholder Platform. International cooperation was incorporated as a sixth ERA priority by way of Council conclusions shortly afterwards¹².

In February 2011, the European Council called for the completion of the internal market as well as of the ERA by 2014, focusing on the circulation of knowledge and mobility and career prospects¹³. In this context, and to give more visibility to Member States’ actions in support of these ERA priorities and strengthen the commitment to link European and national policies, the Council launched the ERA roadmap process in 2015¹⁴. The Council encouraged Member States and Associated Countries to draw up National ERA Action Plans and called on them to identify a limited number of top priorities that would have an impact at EU level, taking into account national specificities. The plans would list ongoing and planned national measures and activities in support of the six ERA priorities and provide information about their integration into the national research systems. 25 Member States and eight Associated Countries had presented their national plans by the end of November 2019. While the ERA

¹¹ Commission communication ‘A Reinforced European Research Area Partnership for Excellence and Growth’ ([COM\(2012\) 392](#)).

¹² Council conclusions on ‘A Reinforced European Research Area Partnership for Excellence and Growth’ ([17649/12](#)).

¹³ The Council reviewed the ERA and called for the following in paragraph 19: ‘Europe needs a unified research area to attract talent and investment. Remaining gaps must therefore be addressed rapidly and the European Research Area completed by 2014 to create a genuine single market for knowledge, research and innovation. In particular, efforts should be made to improve the mobility and career prospects of researchers, the mobility of graduate students and the attractiveness of Europe for foreign researchers. Furthermore, information about publicly financed R&D should be better disseminated, whilst respecting intellectual property rights, notably through the establishment of an inventory of EU-funded R&D, linked to similar inventories of R&D programmes funded at national level.’

¹⁴ Council conclusions on the European Research Area Roadmap 2015-2020 ([9351/15](#)).

roadmap exercise contributed to the Member States' ownership of and responsibility for the ERA, it nevertheless slowed down, to a certain extent, the progress of ERA implementation at EU level.

The ERA policy framework has significantly enhanced collaboration, mobility and scientific excellence in Europe. The EU framework programme for research and innovation was the main enabler for a more dynamic mobility of researchers and collaborations across borders. Bilateral and multilateral cooperation between national research funders, co-funded partnerships (notably ERA-NETs and European Joint Programmes) and Joint Programming Initiatives also contributed, to a certain extent, to aligning national research agendas to jointly address common challenges and priorities. There are signs that the Open Science policies are having an impact on accessibility to and sharing of knowledge. Important advances were achieved in various matters related to research careers, including gender equality issues. The ERA has best demonstrated the efficiency gain of European collaboration through investing in shared research infrastructures under the ESFRI.

Despite all the progress achieved after 20 years of ERA policy, and with a view to the next EU programming period starting in 2021, it is nevertheless time to take stock and strive for a new orientation. A critical assessment of the current ERA policy framework should feed into a new ERA paradigm. It should revitalise the common efforts to provide a strong base for excellent science in Europe. The need for a new ERA paradigm is recognised in the European Leaders' Agenda 2019-2024 which underlines that *'we must step up investment in people's skills and education, do more to foster entrepreneurship and innovation and increase research efforts, in particular by addressing the fragmentation of European research, development and innovation'*. The next EU framework programme for research and innovation (Horizon Europe) will have to play an important role if the ERA policy objectives are to be achieved.

3. Major achievements of the current ERA policy narrative

Since its inception in 2000, the ERA's achievements have been significant. The ERA has given an important impetus to strengthening the European dimension in national R&I systems, mainly through the national ERA action plans, while at the same time providing the legal base for many EU-level initiatives and interventions that would not have been possible without the ERA policy framework. A few of the most prominent ERA achievements are listed below. The extent of their success is a matter for debate, as some have fallen short of achieving their original objectives as well as their expected outcomes and impacts. Therefore, the following list should not necessarily be understood as an assessment of these initiatives by the Working Group:

- The European Research Council, launched under FP7 as a core pillar of the EU framework programme for research and innovation, provides a clear EU added value despite being a largely mono-beneficiary programme because it clearly contributes to the ERA objectives at the level of the individual researcher.
- The forthcoming European Innovation Council (EIC) under Horizon Europe is based on a similar legal and political rationale to the ERC, this time with a focus on innovative companies.
- The European Institute of Technology (EIT) and its thematic KICs have also been established on the basis of an ERA legal and political rationale and consequently funded through the EU FPs despite their legal base being Article 173 of the TFEU.
- The ESFRI Roadmap facilitates and promotes European investment in world-class infrastructures, which complements the closer cooperation with the large European intergovernmental organisations. It was pivotal in the creation of Euroforum 2002, the association of the large intergovernmental organisations and infrastructures.
- The ERA-NET instrument and its successors (ERA-NET+, EJP, CoFund, etc.) allowed networking of the funding organisations and thus promoted the coordination of national programmes in specific thematic areas. The diffusion of international peer-review and best practices in programme management, for the evaluation and selection of project winners, is one of its widely recognised achievements.
- Public-public partnerships (Article 185 TEFU) and public-private partnerships (Article 187 TEFU) have been implemented, some of them as a follow-up to the roadmaps developed by European Technology Platforms or ERA-NETs. Joint Programming Initiatives have been set up in a Member-States-driven policy approach to address societal challenges in a joint manner.
- The European Open Science Cloud (EOSC) was set up as a trusted virtual environment for research and innovation in Europe to provide access to open data and related services. It promotes FAIR principles as an important element of Open Science and was implemented as a common initiative of European and national partners. Starting from 2020, all European researchers and research organisations should be able to deposit, access and analyse European scientific data through the EOSC.
- Human resources, the European dimension of research careers and mobility, have been a cornerstone of the ERA from the start and where enshrined as such by Article 179(1) TFEU. Fostered by EURAXESS, significant progress has been made in opening up the recruitment process to non-nationals. The Principles for Innovative Doctoral Training¹⁵, approved by the

¹⁵ [Principles for Innovative Doctoral Training](#) (IDTP, 27/06/2011) and [Council conclusions on the modernisation of higher education](#).

Council for Education, and the Human Resources Strategy for Researchers (HRS4R)¹⁶, which, by way of the HR Excellence in Research Award¹⁷, helps to implement the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers, are important instruments for fostering structural institutional change in higher education institutions, research and technology organisations, etc. However, partly due to issues outside the remit of research policy, such as social security and employment laws, there is clearly still room for further progress to achieve a truly effective, interconnected research career framework across sectors and countries.

- The ERA Vision 2020 highlighted the need to ensure that both female and male researchers should be attracted by the working conditions of European research institutions. In 2016, the Commission launched the Gender Equality in Academia and Research (GEAR) tool to provide guidance on how to develop Gender Equality Plans. The Commission's 2012 communication on the ERA encouraged MS to create a favourable legal and policy environment for removing gender barriers in research careers, addressing gender imbalances in decision-making, and strengthening the gender dimension in the content of research. However, recent figures underline that, to achieve significant advances, there is a clear need for more disruptive policies across the whole ERA.
- Knowledge transfer is the second cornerstone of the ERA enshrined in Article 179(1) TFEU. The IP Charter was set up in 2008 by the Commission Recommendation on the management of intellectual property in knowledge transfer activities and a Code of Practice for universities and other public research organisations¹⁸. ERA guidelines for IP management with non-EU partners¹⁹ followed in 2012. Also, activities in other policy fields like European Patents or the Directive on public sector information²⁰ improved the framework conditions for knowledge transfer.

¹⁶ In November 2008, the Commission launched the [Human Resources Strategy for Researchers](#) implementing the 2005 Commission Recommendation on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers.

¹⁷ [Human Resources Excellence in Research Award](#).

¹⁸ [Council Resolution on the management of intellectual property in knowledge transfer activities and on a Code of Practice for universities and other public research organisations](#).

¹⁹ [ERA guidelines on IP management in international research agreements](#) (ERAC Knowledge Transfer WG, June 2012).

²⁰ [Directive \(EU\) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information](#).

4. Shortcomings of the current ERA policy narrative

The knowledge-related challenges are different today compared to a decade ago. Not only have the knowledge policies at national and European level evolved, but the societal environments in which the knowledge policies are embedded differ substantially. A good example is Open Science policies that benefited significantly from digitalisation. Digitalisation has opened up new dimensions of transnational cooperation overcoming geographical distance and accelerating the speed of knowledge exchange.

Moreover, the global situation calls for faster policy responses to achieve higher quality impacts from knowledge policies for the benefit of society and the economy. The current growth models are showing limited capacity to respond to the challenge of simultaneously advancing competitiveness, protecting against climate change, maintaining the European social model and quality of life and achieving the strategic goals, such as the Sustainable Development Goals (SDGs). With knowledge and people as Europe's strategic resources and sources of competitive advantage, Europe can champion a new innovation-led sustainable growth model and lead in the development of new global standards. The new ERA paradigm needs to take the changed societal and environmental context and relevance of research for society into account.

The current ERA narrative, the foundation of the ERA policy framework, includes two main lines of argument. First, a 'single market for research' is a prerequisite to '*exploit the internal market potential to the full*' (TFEU) (strong competitiveness focus); and second, better coordinated national R&D policies (including 'opening-up' of national programmes) are a prerequisite for optimal transnational cooperation, in particular addressing the growing societal challenges. Both lines of argument continue to be relevant. However, they have reached their limits with respect to ensuring strong political ownership and commitment, despite the important achievements the ERA was able to deliver during the last two decades (see highlights in Chapter 3).

These shortcomings can be partly explained by a lack of recognition of the achievements of individual actors as most of these achievements have been linked to Framework Programme successes or to national policies. In fact, one core challenge of a complex multi-level system like the ERA, which includes a broad range of actors and governance levels, is 'attribution' of successes. The contribution of one small part of a complex system to the overall success is barely recognised and valorised. A missing or reduced 'attribution' limits the ownership of actors in the complex multi-level system. It tends to be perceived as an additional coordination burden. In relation to the ERA, this leads to the following implications:

- The actual and perceived contributions of effective ERA policies at EU, national and regional levels to competitiveness and 'welfare' (quality of life for EU citizens) cannot be attributed and, consequently, additional coordination efforts are often seen as a burden and not as an asset. Empirical evidence suggests that this attribution challenge can eventually be overcome by demonstrating the added value through joint actions (see Section 6 on ERA Lighthouses).
- The application of the subsidiarity principle varies within the complex R&I system in Europe and is subject to a variety of related legal frameworks (from education and local social security systems to global trade policies) leading to widespread uncertainty at the different governance levels on how they relate to the overall ERA policy framework.

The ERA progress report 2018 highlights that the 'speed' of policy reforms has faltered somewhat since 2015, which can be an indication of decreasing political commitment at all levels to further

accomplishing the ERA and implementing the Commission's 2012 communication that shifted the focus for the development of the ERA to the national level. As in the debate on the single market, it is fair to say that a lot has been achieved but that a renewed political engagement is necessary to achieve a fully functioning ERA. The recently adopted 'Leaders' strategic agenda for 2019-2024' clearly identified this renewed challenge.

The slowing down of the implementation of the ERA at national level manifests itself in the continued fragmentation of the European R&I landscape. There are still major disparities among countries and regions in Europe as the ERA progress report 2018 and the European Innovation Scoreboard clearly demonstrate. The insufficient co-evolution across Europe has led to a geographical concentration of R&I pockets of excellence, leaving other regions behind. These divergences lead to unbalanced patterns of mobility in Europe that are incompatible with the goal of an inclusive and open ERA.

The ERA policy framework did not succeed in driving sectoral ministries towards a transdisciplinary R&I-driven 'directed' policy change on global challenges at EU and national level, such as climate, energy or agriculture, nor did it allow individual R&I actors to experience the benefits stemming from it. The ERA could yet enhance its interlinkage with the European Higher Education Area within the knowledge triangle. A close interlinkage among research and education policy is thus beneficial for both areas.

5. Lessons learned

The future of the ERA builds on the lessons learned from the past 20 years of experiences with creating a competitive and integrated research area in Europe. The three main shortcomings, as outlined in the previous chapter, were the slowing down of implementation of the ERA due to limited societal and political recognition and support for the ERA, the continued fragmentation of the EU research landscape, and the lack of coordination with other policy areas. The lessons learned thus point towards the goal of creating a strong political commitment to the ERA, ensuring successful coordination with other policy areas and implementing the ERA in such a way as to produce tangible benefits.

Firstly, a key learning from the past is that, to revitalise efforts to achieve a fully functioning ERA at national and EU level, a **strong political commitment** is needed. Without political commitment, the necessary resources and ERA-related reforms will not become a reality. A new ERA narrative should demonstrate the relevance of R&I for society and mobilise support at all levels and across policy areas. There is an urgent need for action, as research and innovation can and should be active drivers for transformational changes to achieve an innovation-led sustainable growth pattern and increase European solidarity and identity. The new ERA narrative should envision closer interactions with and responsiveness to society.

Secondly, the success of the ERA is dependent on the **interlinkage with other policy areas**: first and foremost those of research-based knowledge policies, but also beyond. Many ERA challenges are beyond the scope of R&I policies and hence require dialogue and concerted actions with other policies in a horizontal approach (e. g. higher education, innovation, cohesion, taxes, labour, pension systems, etc.). The new ERA should foster an integrated and coherent approach between higher education, research and innovation policies and instruments. A special focus will be on the relationship with the European Higher Education Area. Research performance and innovation have their roots in excellent education and, *vice-versa*, high-quality and interdisciplinary research and innovation should inspire innovative formats and quality in higher education.

Thirdly, the new political commitment and coordinated effort for a dynamic, integrated and competitive ERA should translate into an **accelerated implementation of the ERA policy objectives**. Optimal framework conditions and opportunities for research and innovation are at the core of the ERA. The challenges of the complex EU multi-level governance system can be overcome by a stronger emphasis on joint, coordinated ERA actions at national, including regional, and European levels and a reinforced partnership between the EU Commission and MS in the implementation of the new ERA. The joint action for the ERA should also involve R&I stakeholders and, where appropriate, citizens. Finally, the implementation of the new ERA paradigm should be accompanied from the start by a monitoring mechanism to assess progress, gaps, impacts and successes. Monitoring will enable the European Council and the European Commission to steer the ERA and to adapt it to evolving demands and needs. The ERA lighthouses, which combine the involvement of stakeholders and political actors at all levels with a clearly defined goal, could be an opportunity for joint action and added visibility (see Chapter 6). The new dynamic of implementation will contribute to a coherent and inclusive ERA overcoming the current fragmentation.

The new ERA paradigm is thus to be inspired by the changed societal, technological and environmental context, as well as by the lessons learned from the political progress on the ERA since 2000.

6. Elements for the new ERA paradigm and narrative

As indicated in Article 179(1) TFEU, the ERA is not a goal in itself but should strengthen the scientific and technological base of Europe. The ERA is characterised by the free circulation of researchers, research-based knowledge and technology – a true internal market for researchers as knowledge producers and for research-based knowledge, namely to strengthen and circulate knowledge production, dissemination and usage.

The new ERA paradigm initiates the evolution to a more dynamic, more cohesive and more innovative future ERA. It reassesses the role of science for society and the goals of the ERA policy framework based on the lessons learned. Table 1 summarises the ‘dimensions of change’ that should characterise the central pillars of the new ERA narrative.

Table 1: Dimensions of change between the ‘old’ and the ‘new’ ERA narratives

	Dimensions of change	From -> to dynamic (without questioning the continued relevance of the ‘from’ part of the sentence)
1	Overall goal	<i>From free circulation of researchers, knowledge and technology to a European community of knowledge producers and users</i>
2	Policy approach	<i>From overcoming barriers to seizing opportunities</i>
3	Societal function of knowledge (encompassing education, science and innovation)	<i>From valuing R&I’s service to society to valuing the contribution of research-based knowledge to the cohesion of European society based on freedom-of-science principles</i>
4	Relation to socio-economic objectives I	<i>From global competitiveness to research-based knowledge-driven sustainable growth leadership</i>
5	Relation to socio-economic objectives II	<i>From addressing grand challenges to addressing transformative changes based on smart directionality</i>
6	Relation to sectoral policies	<i>From evidence-based policy-making to research-based knowledge-driven policy change</i>
7	Level of activation	<i>From innovation divide to an all-encompassing view of inclusiveness</i>
8	Planning and implementation approach I	<i>From individual knowledge dimensions to an integrated and dynamic knowledge circle</i>
9	Planning and implementation approach II – role of the European Commission	<i>From a largely monitoring role for the European Commission to the European Commission as an active and engaged partner for delivering on the ERA across Europe</i>
10	Interaction with other societal actors	<i>From involvement of stakeholders in research-based knowledge policy design and implementation to broader societal engagement and responsiveness</i>
11	Regulatory framework	<i>From fully autonomous national frameworks for research-based knowledge policies to a truly multi-level steering framework</i>

These 11 closely interlinked dimensions of change constitute the main new elements of the renewed ERA narrative. They can be summarised under five requirements, notably that the ERA should:

- achieve a dynamic knowledge circle;
- better demonstrate its societal relevance and be responsive to societal needs;
- advocate a new R&I-driven sustainable growth and development model;
- drive the co-design of R&I with relevant horizontal and sectoral policies;
- harness the diversity of Europe’s R&I systems.

These five new requirements will ultimately guide the identification of the revised ERA objectives and priorities (see deliverable 2). These five requirements reflect all the recommendations identified in Chapter 1 of this document.

1) **The ERA must achieve a dynamic knowledge circle**

The ever-moving knowledge circle (Fig. 1) is the symbol for the future ERA. It stands for the realisation of the full potential of knowledge and for meeting not only the requirements of an internal ‘market’ of knowledge based on effective Open Science approaches but also citizens’ demands for an ever-improving quality of life. The knowledge circle implies a more holistic federated approach to research, innovation and education, including training for skills and career development. Research policy should particularly link to the European Higher Education Area (EHEA), with Erasmus+, the European Universities Initiative and the EIT as important building blocks.

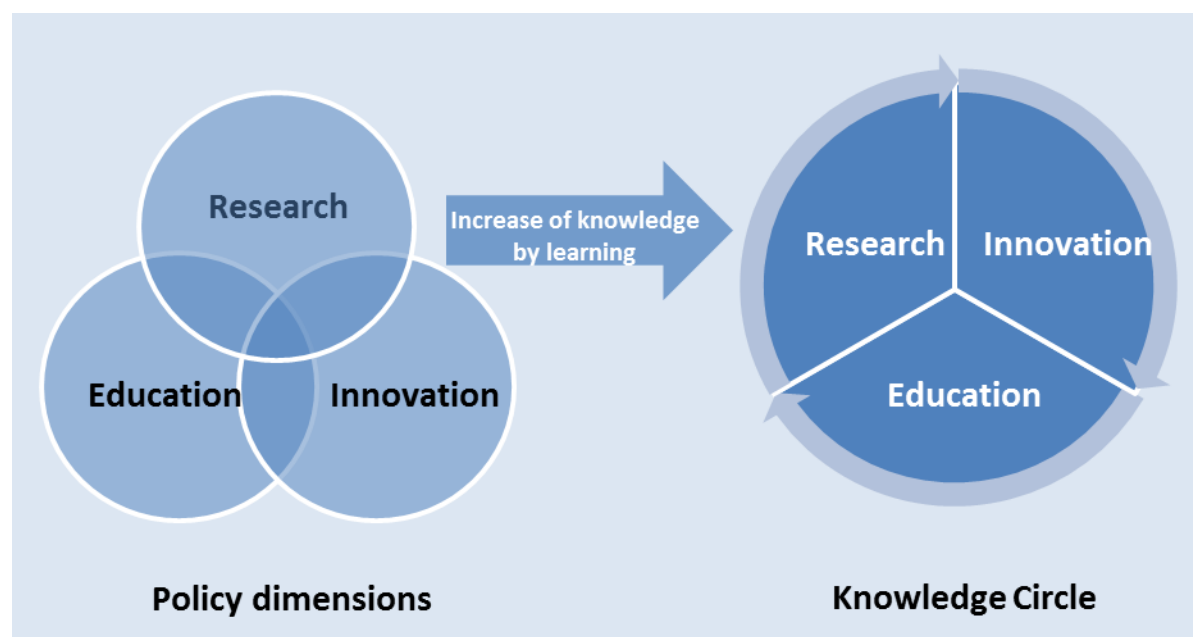


Figure 1: The evolution towards a dynamic knowledge circle

The knowledge circle embraces the multi-level reality of the European knowledge system and targets all activators and enablers at local, regional, national and European level who contribute to the steady movement of the knowledge circle, encompassing policy makers, ‘traditional’ R&I actors in public and private research, end-users and beneficiaries, as well as citizens in society. This can only be achieved in close partnership between Member States and the Commission, overcoming the current division of labour between the EU Commission (mainly ERA monitoring) and the Member States (implementation of ERA policy reforms).

2) The ERA must better demonstrate its societal relevance and be responsive to societal needs

The recognition of knowledge as a pivotal component of the European social and economic structure should be reinforced, in particular its link to a European identity and democratic values. In the ERA, excellent research is transformed into globally competitive and sustainable products and services. Research-based knowledge is a key enabler of Europe's economic prosperity and the high standard of living of its citizens. The high value of the common principle of scientific freedom demonstrates the valorisation of knowledge in the ERA. The cultural relevance of research manifests itself in scientific evidence-based policy-making as an important contribution to Europe's cohesion.

Knowledge production should be based on strong and clear ethical standards, which can help address global societal challenges. The ERA should define and promote the core principles for knowledge production, dissemination and use.

An ambitious but flexible set of ERA policies, actions and governance mechanisms is needed to address the multi-level and multi-actor reality of Europe, including researchers and citizens. Societal and political recognition and support for the ERA will depend on the extent to which societal needs are drivers for ERA priority-setting and implementation. The interaction with society at all levels of the knowledge policy cycle, from designing to monitoring and implementing, is key to ensuring the continued responsiveness to and relevance for societal needs.

3) The ERA must advocate a new R&I-driven sustainable growth and development model

The contribution of research-based knowledge and innovation to productivity, growth and job creation must become more visible. The ERA should increase the impact of R&I investment, notably through 'smart directionality' for knowledge production, dissemination and use. 'Smart directionality' is aimed at providing direction for sectoral policy making and steering the research agenda towards the knowledge demands of society. R&I is at the core of delivering outputs for achieving the goals of the Sustainable Development agenda. The SDGs can act as an ethical foundation as well as a driver for priority-setting beyond blue-sky research. Fundamental research, protected by the core value of scientific freedom, must remain the core element of the ERA.

The ERA should integrate the evolution of national and EU-level knowledge creation policies, in particular by establishing a more 'modern' and thus systemic approach towards a knowledge ecosystem, encompassing research, innovation and (higher) education, including training and skills development. A closer interaction with other policy areas will enhance the ERA's contribution to the wider EU policy objectives and, thereby, its visibility.

4) The ERA must drive the co-design of R&I with relevant horizontal and sectoral policies

The ERA should drive sectoral ministries towards a transdisciplinary R&I-driven 'directed' policy change on global challenges policies at EU and national level, such as climate, energy, agriculture, etc. The implementation and uptake of knowledge for sectoral policy-making should be strengthened. The new ERA should champion an effective policy and governance interface for a bottom-up approach, in which the research and innovation landscape has a recognised role in the implementation of sectoral policies. In the same vein, the ERA must continuously encourage efforts at all levels to increase the overall

excellence and quality of the knowledge policy systems in Europe, in close cooperation with horizontal policies such as employment, social, pension and finance policies. The new ERA should focus more on seizing opportunities for joint actions between knowledge policies and other policy areas in order to demonstrate tangible impacts and benefits for society.

In recent years, efforts on this front have been intensified at EU level via the European Semester, which in 2019 for the first time included a recommendation that all MS need to increase their investments in R&I and a call for policy reform to enhance the quality and efficiency of national R&I systems (smarter investments in research and innovation). The new ERA paradigm should increase awareness of sectoral policy-makers in such a way as to exploit research and innovation results in their policy design and engage with actors in this field. For the achievement of a more complementary and coherent European approach to knowledge policy, it might become necessary, in full respect of the subsidiarity principle, to reflect on initiatives that are needed, including potential soft law measures or possible legislative action at European level, to achieve a truly multi-level, effective steering framework.

5) The ERA must harness the diversity of Europe's R&I systems

In the past, the ERA contributed substantially to a common understanding of 'knowledge policies' (notably R&I policies). However, it has become obvious that this common understanding does not sufficiently harness the diversity of Member States' R&I systems, in particular the necessary translation and adaptation of ERA policies to local and/or regional demands. The ERA needs to become more 'tailor-made' in order to be able to ensure relevance at local and regional level and overcome existing inequalities across Europe. ERA initiatives should respect and harness the diversity of EU Member States (and Associated Countries) and regions. A healthy balance between competition and collaboration should ensure that the different strengths of the regions complement each other. In view of the diverse starting points across countries, the ERA can only be successful if it is fully inclusive and provides added value to the whole of Europe and triggers a synchronised co-evolution across the whole continent. An encompassing view of 'inclusiveness' and 'diversity' is required, covering geographic, human capital, gender and minority groups-related issues, as well as both public and private institutions of all sectors.

While freedom of movement, including for researchers, is a fundamental achievement of the EU, more emphasis is needed to ensure an appropriate brain circulation at all levels while reducing the undesirable phenomena of 'brain drain'.

7. ERA ‘lighthouses’ to bring the ERA to life

The new ERA paradigm calls for more concrete and tangible ERA-related actions and impacts in order to increase ownership of the ERA by policy-makers, ERA stakeholders and broader society. While the ERA national action plans (NAPs) underline the manifold activities that are going on at the national level, there is still a widespread perception that societal and political recognition of the value of the ERA as an enabler of Europe’s future remains underdeveloped. One possible approach to ensure and demonstrate more concrete and tangible ERA actions and impacts with higher visibility is the establishment of initiatives – rather narrowly defined as ‘ERA policy tools’ – that:

- allow for concrete outcomes and impacts in the short to medium term based on concrete societal needs, including from within the R&I system;
- address issues of European-wide relevance inside and beyond the R&I system for which a significant number of existing initiatives at regional, national and European level are ongoing;
- lead to improved acceptance and recognition of, and support for, the ERA by policy-makers, ERA stakeholders and wider society.

So far, the term ‘ERA lighthouses’ has been used to describe such potential ERA initiatives/policy tools. ‘Lighthouses’ refer here to the visibility function of lighthouses, as a ‘light in the dark’.

Consequently, the problems that ERA lighthouses should address are threefold. First, ERA lighthouses must show that R&I-driven transformative changes contribute to the well-being of European citizens – thus they must be developed and implemented in close interaction with societal actors and be based on societal needs, including from within the R&I system. Second, ERA lighthouses must demonstrate the power/added value of collaboration across Europe to provide more and better transformative changes – thus they should be designed and implemented with a European-wide perspective in variable geometry and largely build on existing initiatives at regional, national and European level within and beyond the R&I system that lack a European-wide connection. Third, the ERA lighthouses must acknowledge the diversity of the ERA – thus they should start small and expand gradually in order to minimise complexity and keep transaction costs reasonable.

OBJECTIVES

The general objective for ERA lighthouses is the following:

ERA lighthouses should improve substantially the acceptance and recognition of, and support for, the ERA by policy-makers, ERA stakeholders and wider society by demonstrating in a tangible and concrete way the added value of the new ERA paradigm/narrative and its associated ERA objectives and priorities in practice.

From this general objective, the following specific objectives can be derived:

1. Demonstrate the societal benefits of R&I-driven transformative changes, be they technological, political, economic, environmental or social changes.
2. Highlight the power/added value of European-wide collaboration within and beyond the R&I system for providing better transformative changes for the benefits of EU citizens.
3. Identify opportunities for new forms of European-wide collaboration in the ERA, with the diversity of regional/national R&I systems as an asset (and not a barrier).

Annex II - Future ERA objectives and priorities (deliverable 2)

1. ERA objectives

In order to advance and implement a fully functioning European Research Area that meets the requirements laid down in Article 179(1) of the Treaty on the Functioning of the EU (TFEU) and of the new ERA paradigm, the European Commission, the Member States and the Associated Countries must build on its many important achievements and progress so far, and act jointly to pursue the following three equally important strategic objectives:

- ***Be wholly inclusive and collaborative, and increase research quality throughout Europe:*** ERA policies and actions at all levels should increase inclusiveness, openness, brain circulation and integrity, pursuing scientific excellence throughout Europe. The overarching guiding principles should be collaboration and quality of research processes, outputs and data. These principles apply with regard to geography (within Europe and the world), culture and people (including gender equality and minority integration). The ERA should involve institutions from academia, research & technology organisations (RTOs) and industry as well as from the public sector and society, in order to achieve high-quality, responsible European R&I ecosystems characterised by the flourishing of existing and new collaborative links.
- ***Be seamless and connected, and drive Europe's competitiveness:*** In order to fully exploit the ERA's potential for knowledge-based, innovation-led sustainable growth and development in Europe, the ERA needs to become truly effective in its capability to produce, circulate and use research-based knowledge. This entails increasing the interoperability of the European ecosystems, as well as improving the framework conditions for researchers, innovators, industry and institutions. Higher education and skills development are integral components of an impactful ERA, requiring better coordinated R&I and higher education policies.
- ***Be inspiring and open, and contribute to wider European policy objectives:*** ERA policies and actions at all levels should be more responsive to the needs of ERA stakeholders and more relevant to wider society, by means of smart directionality and investments aimed at solving societal needs. In particular, the ERA should contribute both to the Sustainable Development Goals (SDGs) and to Europe's wider policy objectives. This can only be achieved by recognising the primordial importance of curiosity-driven basic research, and by creating, disseminating and exploiting research-based knowledge, making it visible in more inspiring and empowering ways across Europe, in the context of the new opportunities offered by Open Science and Open Innovation principles.

To achieve these three strategic objectives, the ERA must have wide political support and commitment at the highest national and EU levels, to drive the implementation of better

coordinated knowledge-based R&I policies, while harnessing the full diversity of Europe's R&I systems. The achievement of a fully functioning ERA also needs to be supported by EU-level programmes and policies, in particular Horizon Europe (2021-2027) and future EU R&I Framework Programmes. Adequate and ambitious EU funding is a prerequisite for ensuring complementarity and collaboration between European and national/transnational activities through a strategic planning process. Specifically, the 'ERA pillars' of the Framework Programmes should have sufficient funding and be designed and implemented to effectively contribute to the objectives and priorities of the new ERA paradigm.

2. ERA priorities

To meet the previously described objectives, the ERA should focus on four equally important strategic priorities, fully in line with the new ERA paradigm. These four priorities may require legislative, soft regulatory or administrative measures, including through the European Semester process, for effective implementation.

For each strategic priority, a limited number of potential areas of intervention are listed for illustrative purposes only. They represent issues which ERAC considers to be highly relevant and important for achieving the ERA objectives. However, defining a detailed ERA action plan, which should include adequate monitoring mechanisms and quantifiable Key Performance Indicators (KPIs), is beyond the mandate of this WG and can only be done at a later stage once specific political agendas and policy priorities are set at the appropriate level.

To provide visibility and demonstrate the implementation of these priorities as well as their impact, ERA policy tools, such as ‘ERA lighthouses’, could be put in place. These tools should (a) allow for concrete outcomes and impacts in the short to medium term based on concrete societal needs; (b) address issues of European-wide relevance inside and beyond the R&I system; and (c) lead to improved acceptance and recognition of, and support for, the ERA by policy-makers, ERA stakeholders and wider society. ERA lighthouses should help to demonstrate in a tangible and concrete way the added value of the new ERA paradigm and its associated ERA objectives and priorities in practice.

2.1 Framework conditions for the production, circulation and use of knowledge, including research career issues

Key issues/challenges to be addressed: The complex interplay within the European multi-level and multi-actor ecosystems for knowledge production, circulation and use constitutes a major obstacle to a fully functioning ERA. The establishment of a functional multi-level and multi-actor steering framework for research-based knowledge policies, encompassing the whole policy cycle from design to implementation and monitoring/review, is therefore a key requirement for the future. Particular opportunities stem from more aligned approaches across Europe concerning evaluation systems for research careers, both within academia and across sectors (academia and industry) and countries.

Description of the priority: In order to take full advantage of possible synergies and complementarities between EU and national ecosystems for knowledge production, circulation and use, the complex legal and administrative policy frameworks should be made compatible and interoperable at all levels. An integrated approach towards effective framework conditions should address common criteria for assessing the quality of research (processes, outputs and data), linking research to innovation and higher education policies and promoting institutional change within all ERA institutions, as well as where potentially harmful effects may derive from broader policies such as EU-level IP and state aid rules. A particular focus should be placed on

opportunities stemming from Open Science and Open Innovation policy approaches, in particular regarding research career interoperability and rewarding systems, including gender and minority considerations, when assessing career opportunities.

Potential intervention areas include:

- exploring ways to increase the interoperability of national and EU R&I systems to reduce the fragmentation of rules and procedures for R&I funding, such as promoting ERA seals of quality and enhancing trust and recognition between funding agencies across Europe;
- developing a European framework for career evaluation and career progression for researchers, including inter-sectoral mobility (academia, industry, etc.) and gender-related issues under the Open Science and Open Innovation principles;
- promoting a dialogue and concerted actions with horizontal policies with impact on research careers (e.g. labour, social security, education, etc.);
- further developing Open Science and Open Innovation policy approaches at European and national levels in order to truly foster the circulation of knowledge;
- ensuring framework conditions for the pursuit of scientific excellence, including effective monitoring of progress to achieve a fully functioning ERA, for example, through the European Semester;
- ...

2.2 R&I-driven joint action with other policy areas in a global context

Key issues/challenges to be addressed: Research-based knowledge does not fully exploit its potential to provide the smart directionality needed to achieve transformative changes required to meet Europe's wider policy objectives and the SDGs. The research-based knowledge sector does not sufficiently exploit the potential for co-design, co-creation and co-implementation of R&I with other policy areas.

Description of the priority: Research-based knowledge should better provide the smart directionality needed for transformative changes based on new knowledge and technologies (e.g. digital transformation, energy and ecological transition, genetic revolution in an ageing population, robotics, etc.) and contribute to meeting the SDGs, sustainable growth requirements and other societal needs. New priority-setting, synchronised investments and implementation mechanisms require a holistic dimension and should be established based on co-design and co-implementation with other European policy areas. This should include a joint strategic approach for international cooperation as well as for regulation mechanisms to reduce policy fragmentation and unnecessary duplication.

Potential intervention areas include:

- mobilising support at the highest level for knowledge-based policy design and implementation;
- promoting cooperation among MS on specific topics (e.g. through R&I infrastructures or

- European partnerships);
- promoting a dialogue and concerted actions with sectoral policies beyond the strict remit of R&I policy, to avoid fragmentation with regulation policies or impact assessments;
- embedding R&I and promoting capacities for absorption of new knowledge and technologies in other sectoral policies, including towards the SDGs and within missions;
- ensuring closer collaboration between MS and the EU Commission on international cooperation;
- ...

2.3 Relevance and visibility of R&I for society

Key issues/challenges to be addressed: Research-based knowledge and thus the ERA have not achieved the appropriate visibility in society despite their major contributions to Europe's welfare and competitiveness and the 'European way of life' and its core values. There is insufficient awareness among citizens of the impact and benefits that R&I has in their daily lives, as the interaction of research-based knowledge policies with broader society is still underdeveloped across the policy cycle, from policy design to implementation and monitoring/review. This underdeveloped interaction with society may pose a long-term risk to the sustainability of the research-based knowledge sector and the ERA as there may not be sufficient support from policy-makers for the necessary investment in R&I.

Description of the priority: ERA actions and initiatives addressing both curiosity-driven and applied research have to better direct national, including regional, and EU knowledge policies to increase their responsiveness to societal needs, thus raising the relevance and visibility of R&I activities for society. Particular attention should be paid to involving stakeholders and citizens, including the most vulnerable populations, in setting R&I policy priorities and in the knowledge-creating processes. Effective branding and communication are needed for better outreach and visibility of the ERA's potential and achievements.

Potential intervention areas include:

- co-designing, implementing and assessing R&I policies with stakeholders and society, namely by finding more effective ways of involving citizens to set and implement R&I policy priorities;
- promoting the valorisation and recognition of R&I achievements by society, by designing and implementing better communication of the impact and benefits of R&I, its relevance and its achievements that improve the daily lives of European citizens;
- as researchers themselves are mostly unfamiliar with the ERA, targeting the whole research community and institutions via information campaigns to familiarise them with the ERA, its objectives and priorities and showing how they can benefit from the ERA and how they can actively influence its development and priority-setting;
- within the context of supporting Open Science and Open Innovation approaches, developing participatory approaches such as citizen science as well as socio-innovation, social entrepreneurship and the protection of cultural heritage;
-

2.4 Broad inclusiveness

Key issues/challenges to be addressed: Insufficient inclusiveness of research-based knowledge policies and thus of the ERA is an obstacle to fully activating their potential to improve the well-being of Europe's citizens. ERA actions and initiatives have not been sufficiently tailor-made to respond to the needs of the diverse socio-economic situations across and within the EU Member States, especially since the financial and economic crisis.

Description of the priority: ERA actions and initiatives have to better ensure that European and national, including regional, R&I policies are coherent and inclusive in the broadest sense. Open and transparent engagement of all relevant actors, including the most vulnerable ones, should strengthen ERA policy to enhance quality and excellence across disciplines and reduce fragmentation. ERA actions should facilitate collaborative links between researchers, institutions and citizens, encompassing the geographical dimension, human capital, gender and minority-groups-related issues, as well as both public and private institutions in all sectors. The need for institutional reform aimed at higher standards and core values should be considered. ERA policy should promote knowledge and brain circulation at all levels and reduce the undesirable phenomenon of brain drain.

Potential intervention areas include:

- ensuring a more synchronised co-evolution of R&I systems, to strengthen their quality and promote excellence, and reduce the existing regional/geographic/territorial inequalities;
- developing effective measures to foster brain circulation and counteract brain drain;
- ensuring gender equality throughout research careers and research content;
- ensuring access opportunities for all minority groups throughout research careers and research content;
- fostering connectivity and pan-European R&I collaborative links;
-

3. Rationale for the selection of the ERA objectives and priorities

3.1 Background – elements of a new ERA narrative

The European Research Area (ERA) is not a goal in itself but should enable the strengthening of the scientific and technological base of Europe. The ERA is thus the basis for the creation of a fully functioning dynamic knowledge circle in Europe, building on a corresponding multi-level and multi-actor steering framework²¹ and serving broader policy objectives while ensuring the best framework conditions for implementation of the ERA. The knowledge circle implies a more holistic federated approach to research, innovation and higher education, including skills development.

The ERA should be a framework for the free circulation of researchers, research-based knowledge and technology, a true European community of research-based knowledge producers and users.

ERA policies should be designed to help facilitate the production, dissemination and use of new research-based knowledge, including by removing barriers and by extending its reach beyond the traditional R&I sector. ERA policies should seize all opportunities to link R&I to other sectoral areas through smart directionality, and promote R&I-driven policy change.

Deliverable 1 of the ERAC WG proposed 20 recommendations for a renewed ERA paradigm¹, from which 11 ‘dimensions of change’ and five major challenges were derived:

- achieve a dynamic knowledge circle,
- better demonstrate its societal relevance and be responsive to societal needs,
- advocate a new R&I driven sustainable growth and development model,
- drive the co-design of R&I with relevant horizontal and sectoral policies,
- harness the diversity of Europe’s R&I systems.

These challenges, ‘dimensions of change’ and recommendations form the basis for the three equally important overarching ERA objectives and the four ERA priorities that were presented in the previous chapter. Their rationale is described in the next sections.

As stated in earlier recommendations (see deliverable 1 ‘ERA narrative’), the effective delivery of the ERA will depend on two essential boundary conditions:

- The ERA must have wider political support and commitment at the highest national and EU levels to drive the delivery of better coordinated and more impactful research-based knowledge policies and harness the opportunities arising from Europe’s diversity.
- The achievement of a fully functioning ERA needs to be supported by EU-level programmes and policies. Horizon Europe (2021-2027) and future EU framework programmes (FP) for R&I will ensure the necessary glue and complementarity for collaboration with national/transnational activities *inter alia* through a strategic planning process. Specifically, actions financed through an ‘ERA-pillar’ of the FPs with sufficient funding should be designed and implemented so as to effectively contribute to the objectives and priorities of the new ERA paradigm.

²¹ See Annex I.

3.2 New ERA objectives

The definition of the new ERA objectives needs to ensure that the challenges and dimensions of change in the new ERA narrative are fully covered. The objectives should highlight the key novelties of the new ERA paradigm while also covering all the legal ERA-related directions of the TFEU (article 179 – 1).

The selection of three strategic and encompassing objectives will allow for a continued relevance under changing policy environments:

- ***Be wholly inclusive and collaborative, and increase research quality throughout Europe.***
- ***Be seamless and connected, and drive Europe’s competitiveness.***
- ***Be inspiring and open, and contribute to wider European policy objectives.***

Figure 1 outlines the relationship between the five challenges of the ERA narrative and the three strategic objectives. The main message is that each ERA objective contributes to all challenges, albeit in a specific way. As an example, the objective of being ***wholly inclusive and collaborative, and increase research quality throughout Europe*** contributes:

- with ‘inclusive’ and ‘collaborative’, to the dynamic knowledge circle;
- with ‘inclusive’, to better demonstrating its societal relevance;
- with ‘collaborative’ and ‘increased research quality’, to the R&I-driven sustainable growth model;
- with ‘inclusive’, ‘collaborative’ and ‘increased research quality’, to the co-design with relevant horizontal and sectoral policies;
- with ‘inclusive’ and ‘collaborative’, to harnessing Europe’s diversity.

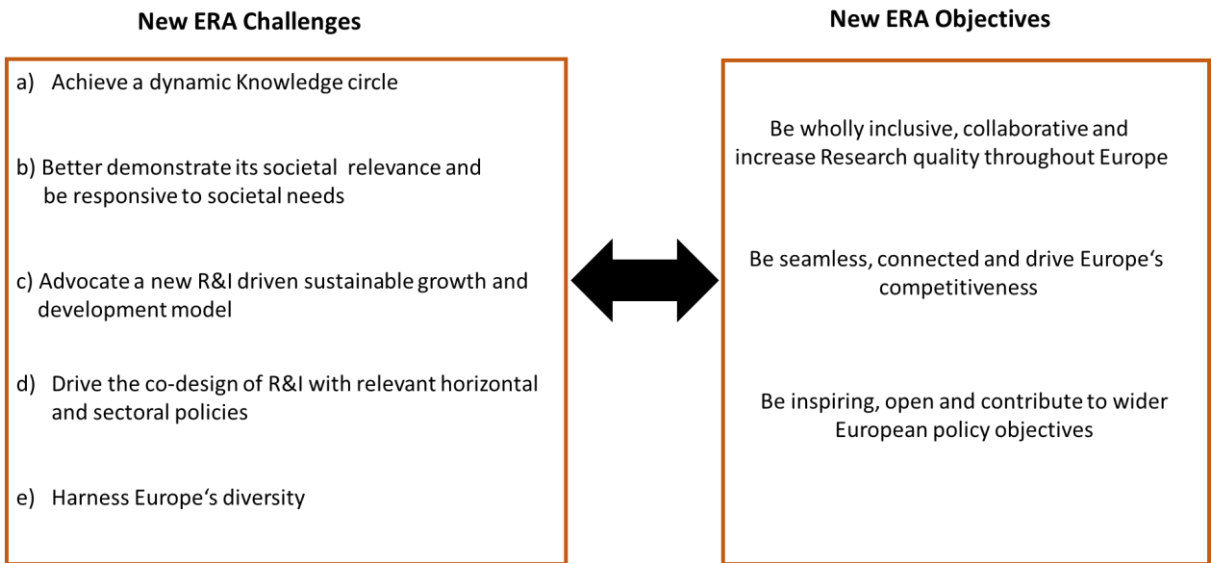


Figure 1: Relationship between ERA challenges and the new ERA objectives.

3.2.1 Be inclusive and collaborative, and increase research quality throughout Europe

The design and implementation of research-based knowledge policies at all levels should deliver on the desired dynamic knowledge circle. Research quality towards scientific excellence through European-wide collaboration is at the heart of this objective. These key goals can only be achieved if the principles of inclusiveness, openness, brain circulation and integrity are respected in the design and implementation of research-based knowledge policies. Freedom of science and the instrumental role of curiosity-driven research are the very foundations of research quality and scientific excellence.

As expressly stated in the recommendations (deliverable 1), inclusiveness must be based on a broad understanding and applies with regard to geography (within Europe and the world), culture, people (including gender equality and minority integration) and institutions from academia, RTOs and industry as well as from the public sector and society.

The principle of openness comprises several dimensions. The main manifestation is the many new opportunities offered and challenges posed by the Open Science and Open Innovation approaches for more and better collaborative links within the research-based knowledge circle and for a new quality of research processes, outputs and data, including how research careers are evaluated.

Brain circulation requires a functional and easy mobility framework for knowledge producers.

The principle of integrity is essential to achieve the desired societal recognition and support for the value of research-based knowledge.

3.2.2 Be seamless and connected, and drive Europe's competitiveness

This objective addresses another set of the challenges and dimensions of change that were identified in the new ERA narrative. This objective refers mainly to the effective functioning of the research-based knowledge circle. The main emphasis is on the multi-level dimension of the ERA, notably the desired multi-level steering framework that should ensure more and better opportunities for the seamless production, circulation and use of knowledge.

A seamless research-based knowledge area is widely accepted as a pre-condition for a more effective and impactful contribution of R&I to a new sustainable growth model and, thus, to Europe's long-term competitiveness.

This improved seamlessness comprises several dimensions:

- A first dimension refers to improved interoperability of transnational cooperation between the different and diverse national, including regional, R&I systems in Europe. This will improve the working conditions of the ERA's main constituencies, notably researchers, innovators, industry and research-funding and research-performing organisations. Obviously, the research-based knowledge-related policies and funding programmes, in particular Horizon Europe, will play an instrumental role.
- A second dimension refers to better and more integrated policy planning and implementation with other horizontal policy fields that shape the everyday life of Europe's

knowledge producers and users, such as education policy, labour and employment policy, social and pension policy, as well as regional and industrial policies.

- The third dimension refers to better recognition of the pivotal role of skills development for a functioning seamlessness, in particular with respect to the higher education sector. A particular focus on the exploitation of the potential synergies between the ERA and the higher education sector, in particular the EHEA, is required.

3.2.3 Be inspiring and open, and contribute to wider European policy objectives

This objective addresses the set of challenges and dimensions of change that refer to the relationship between the knowledge circle and wider society (see deliverable 1 ‘ERA narrative’).

Again, this objective encompasses several dimensions:

- The first dimension refers to the desired smart directionality that aims to ensure the right balance, in terms of investments and political attention, between curiosity-driven research-based knowledge production and the desired directionality for knowledge production, circulation and use targeting societal needs, in particular aimed at meeting the SDGs.
- The second dimension refers to the need to co-design, co-create and co-implement effective and empowering research-based knowledge actions jointly with sectoral policies, including energy, health, transport, environment and agricultural policies, among others.
- A third dimension refers to new opportunities for participatory interaction with wider society stemming from novel Open Science and Open Innovation practices. This objective can only be achieved if there is a growing awareness and support from society of the potential of R&I to improve the daily life of citizens. Consequently, this objective also calls for new, inspiring and empowering ways to improve visibility and better communicate how R&I can improve the quality of life of European citizens. ERA policy tools, such as ‘ERA lighthouses’, could be considered for this purpose.

4. Rationale for the selection of the ERA priorities

Four new priorities have been selected after an intensive discussion within the Working Group, taking fully into account the valuable inputs and contributions of the ERA groups and ERA stakeholders. The detail already provided on the priorities in section 2 of this deliverable, particularly through the suggested potential areas for intervention, obviates the need for further elaboration.

In contrast to the overarching nature of the ERA objectives, the priorities provide a clear focus for subsequent policy action and provide clear guidance for potential intervention areas to improve the functioning of the ERA. The proposed ERA priorities should be subject to regular re-evaluation and be readjusted when a goal has been sufficiently achieved or in light of changes to the political environment that may justify a new focus. Intervention areas within each priority should, in principle, be time-bound and adapted as necessary to reflect changes to the political challenges and goals.

The number of ERA priorities was expressly kept low to make it easier to communicate the key areas of focus to policy-makers, ERA stakeholders and wider society, as well as to discuss the ERA governance planned for 2021.

Figure 2 illustrates the relationship between the ERA challenges, the ERA objectives and the ERA priorities.



Figure 2: Relationship between the new ERA challenges, objectives and priorities.

The ERA priorities were selected based on the criteria described below.

4.1 Relevance & impact – ERA priorities with a purpose

Relevance: The new rationale for ERA priorities should shift the focus from R&I-related reform requirements to a more forward-looking target-oriented approach. To ensure the relevance of the ERA priorities, they should visibly link to ongoing overriding strategic processes at national, EU and global level, for example the UN Sustainable Development Goals and the EU Leaders' Agenda, as well as national strategies such as digital transformation, innovation and education. A close link to the goals of the EU-Framework Programme for R&I is a prerequisite. The link to

broader strategic processes will enhance visibility and help position the ERA as a core component of EU policy.

Impact: The choice of new ERA priorities should focus on areas where improvements with direct impact ‘on the ground’ can be achieved. The core target groups of the ERA are knowledge producers and users. This involves, for instance, improving framework conditions for researchers and innovators, cutting red tape for institutions, or encouraging citizen engagement. The impact of the ERA can be increased through realistic and achievable goals for the coming decade. Over-ambitious and unrealistic aims are bound to fail and risk discouraging participating actors. For a successful future ERA, realistic and concrete actions will keep the momentum going and ensure long-term commitment to this common endeavour.

4.2 Effectiveness and efficiency – impactful design of ERA priorities

Effectiveness: A limited set of strategic priorities will allow for an effective targeted approach that remains flexible enough to react to long-term developments and various paths of implementation. More overarching and outward-oriented priorities allow for inspiring and empowering communication of the relevance of the ERA.

Efficiency: Simplification of the EU R&I landscape has been a major pursuit during the last decade. Fewer, and more strategic, priorities than the current six can link several more specific aspects (and respective instruments) that are closely related to one another but have, so far, been mostly treated separately, such as ‘gender’, ‘brain circulation’ and ‘human resources’, all of which affect the opportunities for the individual researcher within the ERA. Integrating these sub-goals into a single priority will allow synergies to be identified and efficiencies to be enhanced.

4.3 Consistency and coherence – a close link to the new ERA narrative

Consistency: The ERA narrative sets out a new vision for the ERA post-2020. A first core criterion for the definition of ERA priorities is the consistency of the priorities with the ambitions of the new ERA narrative. The priorities, as intervention areas for ERA action, should be fully in line with the new paradigm.²²

Coherence: The four ERA priorities combined should cover all the essential issues of the new ERA paradigm that require further work in order for a coherent strategic approach to be achieved. They must of course include all the aspects of the ERA that were defined in the EU Treaty (see Articles 179 and 181 TFEU). Looking back, it is worth noting that the 2012 ERA priorities covered important goals for the achievement of what was then defined as a fully coherent European Research Area. The core elements of the current ERA priorities should therefore be incorporated within the new structure as appropriate.

²² See Annex I.