European Commission

European Research Area Policy Agenda

Overview of actions for the period 2022-2024

Research and Innovation

European Research Area Policy Agenda – Overview of actions for the period 2022-2024

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EUROPEAN COMMISSION

EUROPEAN RESEARCH AREA POLICY AGENDA:

OVERVIEW OF ACTIONS FOR THE PERIOD 2022-2024

2022

Directorate-General for Research and Innovation

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INTRODUCTION

The ERA Policy Agenda sets out voluntary ERA actions for the period 2022-2024 to contribute to the priority areas defined in the Council Recommendation on a Pact for Research and Innovation in Europe (Pact for R&I).

It is a first step to addressing comprehensively the priority areas set out in the Pact for R&I. Subsequent editions of the ERA Policy Agenda will further complement these actions in the long term.

The list of actions draws mainly on the **Commission's Communication 'A new ERA for Research and Innovation' of September 2020** and on the **Council conclusions of December 2020 on the 'New European Research Area'**. It also takes into account the **Council conclusions on 'Deepening the ERA: Providing researchers with attractive and sustainable careers and working conditions and making brain circulation a reality'** of May 2021 and on the '**Global approach to Research and Innovation'** of September 2021.

The development of this list profited from the debates held in the ERA Forum for Transition, a Commission expert group, that allowed for a dedicated co-designing process between the Commission and the Member States, and close cooperation with Associated Countries, other EU bodies and R&I stakeholders.

PRIORITY AREA

DEEPENING A TRULY FUNCTIONING INTERNAL MARKET FOR KNOWLEDGE

ACTIONS

1 ENABLE THE OPEN SHARING OF KNOWLEDGE AND THE RE-USE OF RESEARCH OUTPUTS, INCLUDING THROUGH THE DEVELOPMENT OF THE EUROPEAN OPEN SCIENCE CLOUD (EOSC)

The amount of data generated or used in public-funded research and innovation (R&I) activities is growing exponentially. However, a significant part of the data never makes it to a trusted and sustainable repository, is poorly annotated or not formatted in a standardised way that supports machine readability. As a consequence, many experiments conducted on the basis of those data are considered not reproducible. Scientific data and other research digital output, such as codes and software, need to be more open, better managed, machine actionable and extensively re-used.

The **EOSC** action should enable a step change across scientific communities and research infrastructures in Europe towards open sharing, seamless access and reliable re-use of data and all other digital objects produced along the research life cycle, e.g. methods, software and publications. The ambition is to provide European researchers, innovators, companies and citizens with an accessible, trusted and open distributed environment where they can publish, find and re-use each other's data and tools for research, innovation and educational purposes, as well as access relevant services.

An EOSC Strategic Research and Innovation Agenda (SRIA) has been co-developed to set the general, specific and operational objectives and the related action areas of the EOSC European co-programmed partnership until 2030. It includes the development and deployment of EOSC foundations and federating services as well as EOSC value-added services for scientists. As part of this action, there is a commitment from the Member States, the European Commission (EC) and the EOSC association to establish a joint monitoring mechanism to collect data and benchmark contributions related to EOSC.

OUTCOMES

- Deploy Open Science principles and identify Open Science best practices
- Deploy the core components and services of EOSC and federate existing data infrastructures in Europe, working towards the interoperability of research data
- Establish a monitoring mechanism to collect data and benchmark investments, policies, digital research outputs, open science skills and infrastructure capacities related to EOSC

EOSC

The ambition of the **European Open Science Cloud (EOSC)** is to provide European researchers, innovators, companies and citizens with a federated and open multi-disciplinary environment where they can publish, find and re-use data, tools and services for research, innovation and educational purposes. The EOSC ultimately aims to develop a 'Web of FAIR Data and services' for science in Europe, upon which a wide range of value-added services can be built. These range from visualisation and analytics to long-term information preservation or the monitoring of the uptake of open science practices.

The implementation of the EOSC is based on a long-term process of alignment and coordination pursued by the European Commission (EC) since 2015 with diverse stakeholders of the European research landscape. In the initial phase of implementation (2018-2020), the EC invested around EUR 250 million to prototype components of the EOSC through calls for projects under Horizon 2020. The EC also launched an interim EOSC Governance to prepare the strategic orientations for the EOSC implementation post-2020. The current phase of implementation (2021-2030), is taking place in the context of the EOSC European co-programmed partnership and according to a Strategic Research and Innovation Agenda (SRIA), which is co-developed with the entire EOSC community. EOSC is transitioning to a more stakeholder-driven approach with a shared vision, common objectives and complementary contributions at European, national and institutional levels. A concrete co-investment (in kind and in cash) by the European Union and non-EU partners of at least EUR 1 billion is foreseen for 2021-27.

2 PROPOSE AN EU COPYRIGHT AND DATA LEGISLATIVE AND REGULATORY FRAMEWORK FIT FOR RESEARCH

A legislative and regulatory framework fit for research should enable, among other things:

- access and reuse of publicly funded R&I results, including open access;
- access and reuse of publications and data for research purposes;
- data services and infrastructures managed by/for the benefit of research stakeholders; and
- the seamless flow of research knowledge and data across the EU based on Article 179 TFEU and academic freedom.

However, barriers and challenges to these objectives exist in the EU legislative and regulatory framework. To address this situation, the Commission will analyse EU copyright and data legislation to identify existing and possible upcoming barriers and challenges.

With regard to copyright, the analysis will examine whether the relevant EU Copyright legislation (e.g. Information Society Directive, Directive on Copyright in the Digital Single Market) fosters and/or deters access and reuse of scientific publications and will examine some of the legal barriers encountered by researchers and institutions to provide open access to them (e.g. due to the copyright and licensing conditions in publishing agreements). The analysis will also look at specific initiatives to enable open access to scientific publications, including the amendments introduced by several Member States into their national copyright legislation enacting a secondary publishing right for publicly-funded scientific publications and non-legislative initiatives.

Beyond scientific publications, the analysis will also explore whether the EU Copyright legislative framework fosters and/or deters access and reuse (including open access) of data for scientific purposes. It will also examine relevant copyright and licensing initiatives that seek to foster access and reuse of publicly funded research data. With regard to the data legislation, the analysis will explore how existing legal instruments (e.g. Open Data Directive) and upcoming data legislation (e.g. Data Governance Act, Data Act, Digital Services Act) (may) impact research and research stakeholders ´ operations (e.g. access to data, research data sharing and reuse, impact on research performing organisations, research funding organisations, and research infrastructures/services).

On the basis of the copyright and data legislation analysis, the action will explore possible legislative and non-legislative measures to ensure a framework fit for research.

OUTCOMES

- Identify barriers and challenges to access and reuse of publicly funded R&I results and of publications and data for scientific purposes, and identify potential impacts on research, through an analysis of relevant provisions under EU copyright and data legislation and related regulatory frameworks, and of relevant institutional and national initiatives
- Propose legislative and non-legislative measures to improve the current EU copyright and data legislative and regulatory frameworks

3 ADVANCE TOWARDS THE REFORM THE ASSESSMENT SYSTEM FOR RESEARCH, RESEARCHERS AND INSTITUTIONS TO IMPROVE THEIR QUALITY, PERFORMANCE AND IMPACT

The way research projects, researchers, research units, and research institutions are assessed is fundamental for a well-functioning R&I system. However, the current system often uses inappropriate and narrow methods to assess the quality, performance and impact of research. The quantity of publications in journals with high Journal Impact Factor and the number of publications and citations are dominant proxies for quality, performance and impact. Some research funding and performing organisations are already taking steps for improving the way they assess their research and researchers, but progress remains slow, limited and fragmented across Europe.

This action will facilitate changes so that the quality, performance and impact of research and researchers are assessed on the basis of more appropriate criteria and processes. This also includes rewarding open science practices in terms of open collaboration and early knowledge and data sharing, leading to increased quality, efficiency and trust. A reformed system should be sufficiently flexible to accommodate the diversity of countries, disciplines, research cultures, research maturity levels, missions of institutions, and career paths.

Based on extensive consultations, a European agreement signed by individual research funding organisations, research performing organisations and national assessment agencies, as well as by their associations, willing to reform the current research assessment system would confirm the commitment of the signatories to changes. An implementation plan would be established by the signatories, including milestones and timeframes, in order to translate the commitments into effective changes. Measures for monitoring the progress made and for exchanging information would also be agreed among the signatories to ensure that commitments translate into tangible changes, and to ensure mutual learning for evidence-informed changes.

OUTCOMES

- Analysis of legal and administrative barriers at national and trans-national level for a modern research assessment system
- Create a coalition of European research funders and research performers who agree on a new approach for research assessment, following wide and inclusive consultations at European and international level
- Implementation plan of the coalition to roll-out the new approach, including pilots in different domains

4 PROMOTE ATTRACTIVE AND SUSTAINABLE RESEARCH CAREERS, BALANCED TALENT CIRCULATION AND INTERNATIONAL, TRANSDISCIPLINARY AND INTER-SECTORAL MOBILITY ACROSS THE ERA

While being at the heart of the ERA, researchers still suffer from precarious working conditions and skills mismatches that hamper inter-sectoral and inter-disciplinary mobility and a full cycle of knowledge production, circulation and valorisation. In addition, their work is not adequately recognized at societal level, and efforts are needed to achieve a balanced geographical mobility. The European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers (C&C) and its implementing mechanism Human Resources Strategy for Researchers (HRS4R), contributed towards the strengthening of the ERA and to the development of an attractive, open and sustainable European labour market for researchers. However, there is now the need for an updated framework, able to better address existing and new challenges, and for targeted actions.

A comprehensive legislative framework will be proposed that will be wider in scope than the current C&C . The new framework will aim, among others:

1. at improving working conditions of researchers;
2. strengthening skills, employability and the attractiveness of research careers;
3. promoting inter-sectoral mobility and balanced mobility between Member States;
4. addressing issues pertaining to research assessment; and
5. encouraging the full recognition of the research profession.

It will be complemented by other initiatives, including the ERA4You promoting a flow-through of talents from academia to other sectors and vice-versa, the ERA Talent Platform as the evolution of EURAXESS into a one-stop-shop for researchers, an observatory for research careers, and the European Competence Framework for Researchers to foster adequate skilling, up-skilling and re-skilling of researchers throughout their career and the visibility and recognition of researchers' competences.

OUTCOMES

- Development of a European Framework for research careers and toolbox of support measures to improve attractiveness of research careers in academia and beyond
- Launch an observatory on research careers
- Revise Charter and Code for researchers
- Set up the ERA Talent Platform as the one-stop-shop online gateway to EURAXESS services, network and portals including HRS4R, and RESAVER
- Launch the ERA4You initiative to promote talent circulation between sectors and across the EU
- Exchange of good practices with regard to R&I systems to support balanced brain circulation
- Pilot with European Universities alliances the European Framework for Research Careers

ERA Talent Platform

EURAXESS services, network and portals will be broadened into an ERA Talent Platform, an online one-stop-shop, with improved structure and governance, exploiting links to Europass, the EU platform for people to manage their learning and careers and the EURES network of European public employment services.

ERA4You

It is an umbrella policy initiative that aims to:

- enable a geographically more balanced circulation of R&I talents, strengthening retaining, attracting, and return activities through favourable working conditions and better access to mobility funding programmes;
- boost permeability and employability of R&I talents across sectors and improve interaction between ecosystem actors for training and career. development.

5 PROMOTE GENDER EQUALITY AND FOSTER INCLUSIVENESS, TAKING NOTE OF THE LJUBLJANA DECLARATION

Gender equality is a core EU value and gender mainstreaming a core EU strategy.

As underlined in the Ljubljana Declaration on Gender Equality in R&I, promoting institutional change in R&I organisations through Gender Equality Plans is one of the most significant policy instruments to achieve long-term, sustainable, advancement towards gender equality in R&I.

Yet, as the ERA Progress Report 2018 and latest She Figures clearly show, there are still persisting gender inequalities in the R&I system across Europe, and a gap persists between the adoption of policies and strategies at EU and national level and their implementation at institutional level. There is a particular need to better address gender-based violence in academic settings and to open gender equality policies to inclusiveness and intersections with other diversity categories and potential grounds for discrimination, such as ethnicity, disability or sexual orientation.

Horizon Europe is therefore strengthening gender equality provisions, and sets the requirement to have in place a Gender Equality Plan as an eligibility criterion for funding, for all public bodies, research organisations and higher education establishments from Member States and Associated Countries. Horizon Europe also offers support to strengthen the ERA objectives, including on gender equality and inclusiveness.

For gender equality the new ERA means most notably the development of inclusive gender equality plans with Member States and stakeholders, building on Horizon Europe. This inclusiveness dimension aims to better tackle intersectionality, i.e. intersections between gender and other diversity categories, as well as to take into account inclusiveness at the geographical and sectorial levels to ensure that all countries are on board and that the innovation and private sectors are also involved.

The Ljubljana Declaration defines priority areas of common action to promote gender equality and inclusiveness in the new ERA. The four outcomes proposed reflect the key priorities.

OUTCOMES

- Develop a policy coordination mechanism to support all aspects of gender equality through inclusive Gender Equality Plans and policies, and a dedicated EU network on their implementation
- Strategy to counteract gender-based violence including sexual harassment in the European R&I system and to assure gender equal and inclusive working environments through institutional change in any research funding or performing organisation
- A policy approach to inclusive gender equality, that addresses gender mainstreaming and opening to intersectionality with other diversity dimensions to advance the new ERA
- Develop principles for the integration and evaluation of the gender dimension in R&I content in cooperation with national Research Funding Organisations

Ljubljana Declaration

The Ljubljana Declaration on Gender Equality in Research and Innovation was prepared by the two Presidency Trios (DE, PT, SI and FR, CZ, SE) and presented by the Slovenian Presidency to Member States in the Competitiveness Council of 28 September 2021.

The Declaration reaffirms the commitment of the Member States and the European Commission to the implementation of gender equality and gender mainstreaming in the new ERA and outlines priority areas to be addressed to foster an inclusive ERA for all.

The priority areas underlined by the Ljubljana Declaration are the following:

- Ensure fair, open, inclusive and gender equal career paths in research, and consider intersectional perspectives on gender inequalities;
- Facilitate mutual learning opportunities through form-follows-function robust governance;
- Employ existing and newly developed tools, such as Gender Equality Plans, to facilitate systemic institutional change and remove institutional barriers;
- Address and counteract gender-based violence;
- Support active monitoring and evaluation to ensure continuous improvement;
- Leverage synergies to enhance gender equality achievements within the ERA, but also within complementary fields such as the European Higher Education Area, Cohesion policy funds, innovation ecosystems, as well as in international cooperation.
- Underpinning the above priorities and activities, fully acknowledge gender mainstreaming as a horizontal principle.

6 DEEPENING THE ERA THROUGH PROTECTING ACADEMIC FREEDOM IN EUROPE

Principles of human rights, rule of law, and democracy come under pressure, be it because autocratic and illiberal governments exercise direct control over international academic and research cooperation, or because higher education institutions and research performing organisations that are beholden to repressive governments mediate that control. Repression of free academia beyond borders endangers scholars and/ or students and induces self-censorship. It can also compromise academic administration. Risks encountered in this context crystallise as threats to the principles of academic freedom and integrity.

This action aims to roll out an action plan on academic freedom and provide guidelines on tackling R&I foreign interference. The guidelines are designed to support R&I institutions in their endeavour to protect their fundamental values by safeguarding academic freedom, integrity and institutional autonomy.

A clear set of guidelines is needed to:

1. identify countries and partner institutions where academic freedom is at risk;
2. conduct a vulnerability assessment to understand external pressures on academic freedom and integrity in the institution; and
3. to strengthen commitment to academic freedom and integrity at institutional and individual levels.

OUTCOMES

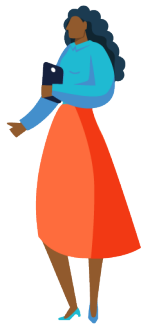
- Facilitate the development of a policy approach to safeguard the freedom of scientific research in Europe, based on the Bonn declaration on freedom of scientific research
- Support interested organisation in implementing the recommendations of the guidelines on foreign interference
- Publication of a first European monitoring report on the freedom of scientific research

7 UPGRADE EU GUIDANCE FOR A BETTER KNOWLEDGE VALORISATION

The R&I landscape has profoundly changed since the 2008 Commission Recommendation on the management of intellectual property in knowledge transfer activities. An update is needed that moves from the traditional concept of knowledge transfer to valorisation of knowledge assets, generated by different types of actors in a dynamic R&I ecosystem. New challenges have to be addressed like the increasingly complex knowledge value-chains, new market opportunities created by emerging technologies, new forms of industry-academia collaborations and involvement of citizens, as well as reciprocity in the management of intellectual property in international R&I cooperation.

The aim of the update is to achieve a common line on measures and policy instruments for improving knowledge sharing and valorisation in Europe. In addition, Codes of Practice will provide guidance for R&I practitioners on how to implement certain elements of **knowledge valorisation,** such as smart intellectual property management and standardisation for knowledge uptake.

As the European Union emerges from the coronavirus pandemic and transitions towards a green and digital economy, technology transfer and more efficient uptake of research results are key to reach the ambitious policy objectives. Lessons learned in rapid sharing and valorising results should be applied in all areas where solutions are urgently needed. A strategic approach to supporting and funding knowledge valorisation should be interlinked with research funding, equipped with corresponding resources and use a mix of instruments taking account of best practices developed across Europe.



OUTCOMES

- Develop and endorse Guiding Principles for knowledge valorisation
- Development of a Code of Practice for smart use of IP together with stakeholders
- Development of a Code of Practice for researchers on standardisation

Code of Practice for smart use of IP

The Code will provide guidance to R&I stakeholders via recommendations and practical examples on how to handle intellectual property related challenges in the current R&I ecosystem, including in the international context, as announced in the Global Approach Communication. It will encourage R&I actors to interact and exchange their experiences and examples on the smart use of IP.

Code of Practice for researchers and standardisation

The Code will describe the use of standards as a knowledge valorisation channel. Building on evidence and success factors of R&I projects, it will provide a set of recommendations on how beneficiaries of public R&I programmes can best identify opportunities and techniques to valorise their projects results through standardisation.

8 STRENGTHEN SUSTAINABILITY, ACCESSIBILITY AND RESILIENCE OF RESEARCH INFRASTRUCTURES IN THE ERA

European-level activities in the area of research infrastructures, such as the ESFRI Roadmaps and the ERIC Legal Framework, have transformed the availability of state-of-the-art facilities for scientists and innovators, reinforcing Europe's strong R&I system.

As the maturity of the research infrastructure landscape is growing, new challenges emerge. First, sustainable funding for the existing research infrastructures as well as new investments in order to maintain excellence and competitiveness of the ERA in the long term has to be ensured. Second, all researchers and innovators in Europe must have the same opportunities to access the services provided by the European infrastructures. Third, the overall impact of the investments made in research infrastructures on economy and society needs to be increased. Fourth, more targeted priority setting is needed to focus on specific scientific and political needs, taking into account the already available capacities and services, main scientific developments and key societal challenges.

This action comprises a set of activities specifically aimed at strengthening the European research infrastructure ecosystem. The framework for the next ESFRI Roadmap will be prepared, including a strategic analysis of the European research infrastructure landscape and the existing gaps as well as the implementation of the agreed research infrastructure performance monitoring methodology. To address the persisting challenges in access to European research infrastructures, new funding models will be explored and piloted. The implementation of the European Charter for Access to research infrastructures, developed in 2015, will also be analysed and its update will be prepared. All these actions will be implemented in close collaboration with the Member States, particularly through ESFRI, and a strengthened engagement with a broad range of R&I stakeholders.

The Commission will also prepare the third report on the Implementation of the ERIC Regulation, taking into account the Expert Group report published in October 2021. A permanent monitoring framework for the ERIC Regulation in collaboration with Member States and the ERIC Forum, will also be proposed.

OUTCOMES

- Strategic analysis of the European Research Infrastructure landscape
- Broader and more sustainable access for all countries to European research infrastructures and their services and revision of the European Charter of Access to Research Infrastructures
- Update of the ESFRI Roadmap and implementation of the research infrastructures performance monitoring framework
- Report on the ERIC Framework
- Increased cooperation between research infrastructures, e-infrastructures and stakeholders, including through EOSC

ERIC Framework

The European Research Infrastructure Consortium (ERIC) legal framework is a specific legal form that facilitates the establishment and operation of research infrastructures with European interest. Since the adoption of the Council Regulation on ERIC legal framework in 2009, 22 ERICs have been set-up by the Commission, most of them being research infrastructures prioritised in the ESFRI Roadmap. ERICs are now a key component of the European research infrastructure landscape. The ERIC legal framework has therefore a strong potential in strengthening the ERA and it is important to ensure its effective use.

9 PROMOTE A POSITIVE ENVIRONMENT AND LEVEL PLAYING FIELD FOR INTERNATIONAL COOPERATION BASED ON RECIPROCITY

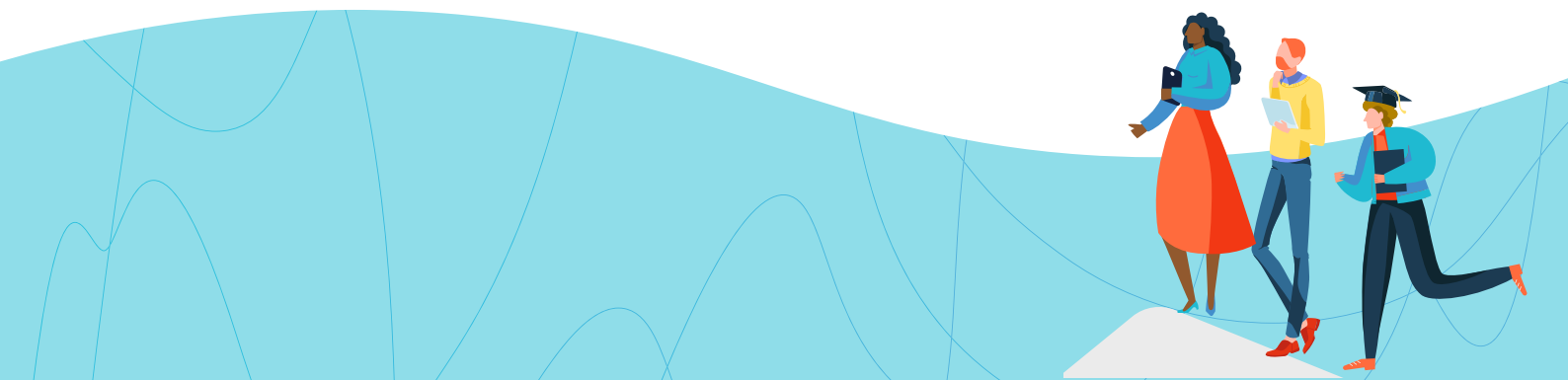
The global environment in which international R&I cooperation is taking place has greatly changed over the past decade. Geopolitical tensions are rising, and human rights and fundamental European values, such as academic freedom, are being challenged. Europe should establish its leadership on the basis of shared values and principles.

In response to current global trends, the EU will lead by example, promoting rules-based multilateralism, pursuing reciprocal openness in R&I cooperation and modulating its bilateral relations in R&I in line with European interests and values. The EU will launch a multilateral dialogue on shared values and principles for R&I at a high-level, international conference in March 2022. This approach will also be implemented through Horizon Europe (e.g. in modulated possibilities for participation depending on country/calls).

The EU should ensure that technology is developed for the benefit of individuals and societies, respecting high ethical standards, academic freedom and human rights. This is necessary, not only for the respect of European values and principles, but also to maintain the EU's strategic autonomy. It is important that the EU protects its researchers and innovation stakeholders, and that it leads by example on these matters.

OUTCOMES

- Further develop values and principles for international cooperation in R&I as set out in the **Council Conclusions on the Global approach to Research and Innovation – Europe's strategy for international cooperation in a changing world** to be promoted in multilateral dialogues with partner countries and international fora
- Launch one pilot initiative on the Team Europe approach for a specific world region and/or topic
- Develop a European Science Diplomacy Agenda
- Promote a coordinated joint approach for engagement in multilateral initiatives



PRIORITY AREA

TAKING UP TOGETHER THE CHALLENGES POSED BY THE TWIN GREEN AND DIGITAL TRANSITION, AND INCREASING SOCIETY'S PARTICIPATION IN THE ERA

ACTIONS

10 MAKE EU R&I MISSIONS AND PARTNERSHIPS KEY CONTRIBUTORS TO THE ERA

European Partnerships allow the EU to team up with public and private R&I actors to pool resources, create critical mass and align R&I agendas. Missions will develop and implement a goal-oriented approach towards solving societal challenges, with clear timelines and deliverables and a vocation to develop a coordinated approach across funding, policies and regulation. Both of these instruments will have to be implemented in a way that maximises their impact, in particular on contributing to the twin green and digital transitions.

In order to generate impact, both missions and partnerships require cooperation, coordination, alignment of agendas and outreach towards broad groups of stakeholders. They will contribute to the ERA by tackling societal challenges and key EU priorities. For European Partnerships, a new governance process (the Strategic Coordinating Process) has been set up to monitor partnership performance, develop foresight activities and discuss key policy issues. This process has to be aligned with the new ERA. . For missions, outreach to and cooperation with the national, regional and local level is vital and the ERA is the ideal vehicle to discuss, develop and implement such activities.

OUTCOMES

- Share information, create awareness and build ownership of EU R&I missions at national level, regional and community level
- Monitor the performance of partnerships and how they contribute to the new ERA and its set of values and principles (on the basis of the work of the Partnership Knowledge Hub)

European Partnerships

European Partnerships bring the European Commission and private and/or public partners together to address some of Europe's most pressing challenges through concerted research and innovation initiatives. They are a key implementation tool of Horizon Europe, and contribute significantly to achieving the EU's political priorities.

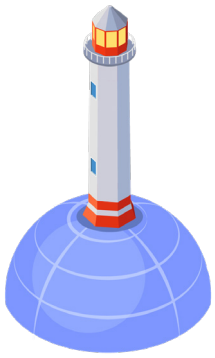
Missions in Horizon Europe

EU Missions are a new way to bring concrete solutions to some of our greatest challenges. They have ambitious goals and will deliver concrete results by 2030. They will deliver impact by putting research and innovation into a new role, combined with new forms of governance and collaboration, as well as by engaging citizens. EU Missions are a novelty of the Horizon Europe research and innovation programme for the years 2021-2027.

11 AN ERA FOR GREEN ENERGY TRANSFORMATION

EU R&I investment is still far from its 3% target. Europe is also lagging behind in translating R&I results into the economy. Therefore, the EU must prioritise investments and reforms in R&I towards the green and digital transition and boost the market uptake of R&I results into the economy, to support Europe's recovery and increase competitiveness and leadership in the global technological setting.

The EU has committed to climate neutrality by 2050, and the Commission has proposed an ambitious target of at least 55% reduction in greenhouse emissions by 2030 compared to 1990. Accelerating R&I and improving the collaboration between private and public R&I in the Member States towards early market deployment of clean technology solutions is vital for reaching these targets and provides an economic opportunity for the EU.



The Commission will work with Member States to set and implement strategic priorities that deliver on the ERA agenda, by prioritising investments in R&I, improving access to excellence, translating R&I results into the economy and deepening policies that promote the free circulation of knowledge.

OUTCOMES

- Policy approach for a cooperation framework on R&I driven safe and sustainable low-carbon energy technologies

The Strategic Energy Technology (SET) Plan is the core mechanism to engage with Member States, industry, and stakeholders on clean energy R&I-policies and programmes. Serving all parts of the EU economy, it is a platform for national energy, and climate plans (NECPs). Consequently, the SET Plan needs to evolve over time in order to align energy actors' intentions effectively, and reinforce common European goals. In this respect, it is essential for the SET Plan to be able to capitalise on potential synergies with major new developments.

The European Green Deal underlines the need for strengthening and refocusing R&I in clean energy technologies, taking into account the technological and geographic specificities of Member States. This must go hand in hand with a substantial increase in investments in R&I . The Clean Energy Transition Co-Fund, for example, which is in preparation under Horizon Europe, shows a six-fold funding commitment from Member States as compared to the Horizon 2020 ERA-Nets on energy. Based on these developments, the SET Plan's objectives and targets need to be updated in order to reflect the ambition of the European Green Deal and to navigate the clean energy transition.

- Development of a green hydrogen R&I ERA pilot action, while ensuring consistency with other related initiatives and without prejudice to the relevance of a broader hydrogen R&I policy approach

The ERA pilot action on green hydrogen is crucial to realise the European clean energy ambitions.

As part of the agenda process for this pilot action, Member States have organised a set of thematic workshops and public consultations. A structured co-creation process, jointly with the European Commission, will result in a commonly agreed Strategic Research and Innovation Agenda. In support of the envisaged outcome, the Commission focuses on a portfolio of actions at EU level, such as:

- developing a common data sharing area for hydrogen technologies, market statistics, socio-economic indicators, policy, regulations and financial support;
- a mapping of industry's needs for skills or re-skilling/upskilling linked to new hydrogen technologies; and
- establishing Open Innovation Test Beds, providing services of testing and piloting through market access for priority hydrogen technology, supported through the new Clean Hydrogen Partnership under Horizon Europe.

- ERA4FutureWork: a policy approach (at national, regional, local and EU levels) to address research and development (R&D) funding for the Future of Work

The key resource of the 21st century is human capital. Digital, green, economic and social transitions will have a great impact on how human capital is used and how it will drive the future of work. R&I across disciplines can provide robust evidence for designing future-proof policies that fully grasp the new opportunities offered by technology.

The EU has already invested close to EUR 1.9 billion in a wide range of areas pertaining to the Future of Work, including social protection and economic competitiveness, as part of its Horizon 2020 R&I programme1.

At individual Member State level, solid, recent data about public R&I investment in R&D in the Future of Work is lacking. This hampers strategic priority setting for R&D funds at all levels, including regional, national (including Recovery and Resilience Plans) and EU levels (including Horizon Europe Partnerships).

To remedy this, ERA4FutureWork is to become a convening space (in-person and virtual) to inform policies at national, regional, local and EU levels, and to discuss prioritisation of R&D funding for the Future of Work.

Outcomes should include:

(1) Strategic gap analysis of the European R&I landscape for EU priorities in the Future of Work and selection of 2-3 key priorities, by end of 2023;

(2) Focused policy dialogue between EU Member States, based on the strategic analysis.

12 ACCELERATE THE GREEN/DIGITAL TRANSITION OF EUROPE'S KEY INDUSTRIAL ECOSYSTEMS

Currently, the private sector only spends a small share of on R&I in the sectors where low-carbon technologies are needed on a large scale to reach –55% CO2 emissions by 2030 and a carbon- neutral industry by 2050. Horizon Europe and other relevant programmes, such as InvestEU, Cohesion Policy or the Innovation Fund, would not be enough to fund the R&I needed for the green and digital transitions. In order to bring about a real positive change, this must be complemented by investments from Member States.

ERA Common Industrial Technology Roadmaps will gather evidence about the state of play and the prospects for R&I development of new green technologies. The Roadmaps explore the current industry engagement in relevant R&I and the use of the existing toolboxes to leverage private investment and to increase uptake of relevant technologies at EU and national level. The evidence from the Roadmaps will facilitate identifying common action areas, including pilots, to enable faster advancements along research stages, from basic research to deployment. As a first step towards an approach to better link European R&I and industrial policy, they will provide R&I input to the 'transition pathways' for EU industrial ecosystems, strengthening also the link between Horizon Europe Partnerships and industrial policy. They will build a solid basis for a consultation process on industries' wider R&I needs.

The first two Common Industrial Technology Roadmaps are covering the decarbonisation of the energy-intensive industries ecosystem, by assessing the opportunities in the area of low-carbon industrial technologies, and the circularity of various key industrial ecosystems.

Strengthening and accelerating the transfer of R&I to the economy is crucial for the EU to remain at forefront of the green transition in industry, including digital technologies and the avoidance of EU industrial dependencies in future green markets.

1 Signature dates of projects in this analysis range from July 2014 to February 2021

OUTCOMES

- Consultation process on R&I-related needs of industries, including skilling/upskilling needs, digitalisation, R&I driven standardisation, common technology roadmaps, and research and technology infrastructures
- Develop a robust policy framework to better support fundamental research at national and European levels to generate breakthrough knowledge and innovation
- Development of a policy approach to link industrial and R&I policies, notably on how to accelerate the industrial take-up of R&I results, and launch pilots in transport and energy industrial ecosystems
- Development of industrial technology roadmaps on low carbon technologies for energy-intensive industries and on circular industrial technologies
- Development of a coordination mechanism to provide industry with the technology infrastructures needed to test, validate and upscale innovations
- Address the social adaptation of the green (and digital) transitions

13 EMPOWER HIGHER EDUCATION INSTITUTIONS TO DEVELOP IN LINE WITH THE ERA, AND IN SYNERGY WITH THE EUROPEAN EDUCATION AREA

This work is embedded in the Union's efforts to achieve the European Education Area by 2025. To fully play their role as core actors in society, universities need to be supported in their efforts to transform and drive the ongoing green and digital transitions.

The Commission is preparing a European strategy for universities as a new vision, enhanced ambition, and full commitment to empower and support the entire higher education sector across Europe. It offers new and better ways for universities to work together across borders, irrespective in which Member States they are located. It seeks to take transnational cooperation in education, R&I to a new level of intensity and scope and to develop a genuinely European dimension in higher education. It acknowledges that universities are at the centre of local innovation ecosystems, intensively collaborating with non-academic organisations.

The ERA action will be strengthened by the actions in the strategy for universities, with the aim to take a holistic approach – covering all missions of universities – in supporting institutional transformation and mainstreaming a culture of excellence in research and business creation.

OUTCOMES

- Support universities in their digital transition, including through initiatives such as Connected Universities
- Develop and adopt a policy approach to equip researchers with the skills needed for an interoperable career in academia and beyond;
- Policy approach on future EU level support for the further development of Horizon Europe institutions, including through a European Excellence Initiative and the consolidation of the European Universities Initiative

European Excellence Initiative (EEI)

The objectives of the EEI are to support the transformation and upgrading of higher education institutions through integrated collaboration between institutions and with other actors in local ecosystems, and the mainstreaming of a culture of excellence in R&I and value creation amongst higher education institutions. The initiative intends to implement actions that will (i) provide policy support for Member States to set up national excellence initiatives in support of universities through mutual learning with models of practice (pending analysis) and potentially complemented by support through a EU peer-review system, and (ii) pilot a competition-based programme co-fund approach for integrated networks of universities, aligned with Erasmus+ support for the European Universities Initiative.Firma, ut

European Universities Initiative

The **European Universities Initiative** is a new way of engaging in deep strategic collaboration between universities, adding to the diversity of collaboration models in the projects piloted by Erasmus+ and supported through Horizon 2020. The future initiative aims to move from the current project-based system to a more programmatic and sustainable approach, realising funding synergies between European (notably Erasmus+ and Horizon Europe) and national/regional programmes. In Horizon Europe, support for the European Universities Initiative will be foreseen under the WIDERA part, including through the EEI..

14 BRING SCIENCE CLOSER TO CITIZENS

To reach the ambitious targets of the European Green Deal, broad public mobilisation and engagement is required. Citizens and local communities need to be empowered and activated to take action. To create stronger public understanding, connection and engagement should be promoted through regular citizen science campaigns as well as education and training activities. New R&I solutions need to be co-designed and co-implemented together with citizens to ensure that there is societal uptake of these new solutions and approaches. . One of the main goals is to strengthen the trust in the various ways society is influenced by science and, on the other hand, how science is influenced by choices, dilemmas and responsibilities that arise in society.

OUTCOMES

- Scale-up of the Plastic Pirates – Go Europe! Initiative
- Launch the European City for Science, during the European Year for the Youth, and networking different European cities
- Feasibility analysis for a federated “EU Science Media Network” to ensure more factual journalistic reporting on science
- Propose a policy coordination mechanism on public engagement practices, including citizen involvement in scientific processes

Plastic Pirates – Go Europe! citizen science initiative

The ERA pilot Plastic Pirates – Go Europe! citizen science initiative investigates plastic pollution of rivers in Europe. The campaign involves schoolchildren as citizen scientists, providing them with sampling kits to analyse the sources and pathways of plastic pollution as well as providing didactically elaborated education material on plastic pollution. Initially launched by the Trio-Presidency Germany, Portugal and Slovenia, the initiative will now be rolled out at a European scale supporting the implementation of the Mission Restore our Ocean and Waters with a coordinated litter sampling and collection campaign in rivers, coasts and seas across the EU planned for 2022. As identified in the ERA Communication and Council Conclusions, the Plastic Pirates initiative will engage and empower young people to tackle together the challenges posed by the twin green and digital transition, and increase society’s participation in the European Research Area. With pupils and youth as the central target group, the initiative will also contribute to the European Year of Youth.

European City for Science

The overall programme consists of four main components which together shape the Leiden European City of Science in 2022:

- the European Science in the City consisting of science activities throughout the year organised around 22 main themes and related events/activities for 365 days including the initiative ‘Knowledge throughout Neighbourhoods’;
- the European Young Scientists Contest (EUCYS) targeting 14-20 year olds with a passion for STEM;
- a European contest for young and early career researchers; and
- the EuroScience Open Science Forum (ESOF).

Each component, and especially EUCYS and the European contest for young and early career researchers, will be aligned to the European Year for the Youth. During 2022, **Leiden will be a platform** on which everyone who wants to share science, knowledge, art, and skills can participate, thus establishing new connections between science and society in innovative, open, playful, and sincere ways.

PRIORITY AREA

AMPLIFYING ACCESS TO RESEARCH AND INNOVATION EXCELLENCE ACROSS THE UNION

ACTIONS

15 BUILD-UP REGIONAL AND NATIONAL R&I ECOSYSTEMS TO IMPROVE REGIONAL/NATIONAL EXCELLENCE AND COMPETITIVENESS

With the aim to improve the translation of R&I results into the economy, it is crucial to strengthen the innovation ecosystems for knowledge circulation and valorisation by establishing stronger interconnection between existing collaborative and supportive structures, engaging a diversity of stakeholders in multi-disciplinary and cross-sectorial collaborations.

The European Commission, in close collaboration with the European Committee of the Regions, the Member States and stakeholders, will conceptualise, pilot and launch the ERA Hubs across EU territory.

The ERA Hub initiative has a clear added value that originates from the development of holistic knowledge strategies at regional level, based on a close collaboration of all relevant stakeholder of the quadruple helix and a structured collaboration key regional, national and European policies and programmes that can support place based- innovation eco-system. In addition, it serves as a knowledge platform to exploit existing strengths across the national R&I system while overcoming systemic and transformational weaknesses and allows synergies between the ERA Hubs (with a rather horizontal (ERA) focus) and other EU initiatives such as the European Digital Innovation Hubs (EDIH) or the Enterprise Europe Network (EENs), world's largest support network for small and medium sized enterprises (with a more thematic focus).

OUTCOMES

- Define and pilot ERA Hubs to enable the emergence of competitive R&I ecosystems across the EU, to fill territorial gaps and to ensure easier flow of talents and investments
- Consultation process on future bilateral R&I cooperation activities to strengthen and connect R&I excellence in the ERA

ERA Hubs

ERA Hubs is an initiative that builds on the existing capacities, such as the Digital Innovation Hubs and clusters, and links to the Enterprise Europe Network and StartUpEurope, to provide an interconnected knowledge space. This will facilitate collaboration and exchange of best practices, with the incentive to maximise the value of knowledge production, circulation and use. As the ERA Hubs initiative and the ERA Hubs represent a new approach, it is important that the implementation process focuses on a building up period to allow both co-design with the Member States and local knowledge ecosystems and their actors, as well as mutual learning of what works and what needs to be developed further to ensure that the initiative can eventually create the desired impact. This also includes a close collaboration with other EU programmes and initiative to ensure a clear complementarity and effective collaboration.

16 IMPROVE EU-WIDE ACCESS TO EXCELLENCE

R&I policy can only strive towards more excellence if the full potential of scientific resources in Europe can be utilised. The EU's R&I system needs to promote a more inclusive approach in which all can participate and from which all can benefit. Thus, "Improving access to excellence" is one of the four objectives for the revitalisation of the ERA.

The Commission will create a dedicated work stream in the ERA Forum with the general objective of supporting low R&I performing countries to increase the excellence of their R&I systems. The following objectives will be pursued:

1. promote and monitor access to excellence of researchers and institutions from Widening countries with cohesion policy support;
2. support Member States to better integrate researchers in smart specialisation strategies in cooperation with industry; and
3. help designing measures to support researchers in Widening countries to improve their skills for excellence in the labour market. Member States willing to increase the performance of their R&I system towards excellence should be encouraged and supported through this measure.

OUTCOMES

- Establish a dedicated work stream in the ERA Forum to improve access to excellence;
- Design and implementation of tailor-made support to individual Member States;
- Policy approach on the potential of COST to improve access to excellence across the EU.

17 ENHANCE THE STRATEGIC CAPACITY OF EUROPE'S PUBLIC RESEARCH PERFORMING ORGANISATIONS

Research performing entities, local ecosystems and regions who are proven strong and excellent hubs in knowledge creation and innovation usually rely on a strong community of R&I managers. Science management can take many shapes: research policy advisers, research managers, financial support staff, data stewards, data analysts, specialised research infrastructure operators, knowledge transfer officers or knowledge brokers, business developers, innovation managers, etc. Laggard countries regions often lack such communities, or communities are less developed.

Aligned with the Skills Agenda's objective to act on science management, the Science Management Initiative aims at improving training and skills development of science management staff. It alsoaims to develop better R&I management capacity and guidance for researchers and innovators across the entire ERA, including laggard regions and research organisations, as well as pave the way towards institutional acknowledgement of the R&I management profession.

OUTCOME

- Implementation of a Science management Initiative, with at least 100 participating institutions across Europe

Science Management Initiative

The action intends to pilot a European network for research and innovation managers through Horizon Europe, explore European training and certification programmes, and provide policy support for Member States through mutual learning platforms on science management.

PRIORITY AREA

ADVANCING CONCERTED RESEARCH AND INNOVATION INVESTMENTS AND REFORMS

ACTIONS

18 FACILITATE A NATIONAL PROCESS OR ERA POLICY VEHICLE PREPARATION FOR IDENTIFICATION OF RUNNING OR PLANNED MEASURES CONTRIBUTING TO THE IMPLEMENTATION OF ERA

In the past, Member States and Associated Countries taking part in the ERA were required to develop National Action Plans, as part of the ERA Roadmap process agreed in 2015. Measures, actions and initiatives were set out in line with the EU common approach but also contained actions that were country and context-specific. For some ERA countries this was a helpful effort, having a positive structuring effect to achieve the ERA objectives.

Taking into account the diversity of national R&I systems, Member States can choose to develop a tailor-made national process or policy vehicle, for example in the form of a National ERA Action Plan or Roadmap in the future. This action would be on a voluntary basis and help identify running or planned measures at national or regional level considered to be best suited to contribute to the implementation of the ERA policy agenda . The action would also provide coordination between the EU and Member States on the definition and implementation of a national ERA policy approach.

OUTCOME

- Provide coordination between EU and Member States on the definition and implementation of national policy approaches supporting ERA

19 ESTABLISH AN EFFICIENT AND EFFECTIVE ERA MONITORING MECHANISM

This action will review and update the ERA monitoring system to better capture progress made towards the individual ERA priorities and inform evidence-based policy-making in the ERA.

Elements of the new monitoring will be: (1) the ERA Scoreboard/Dashboard, including indicators on the progress towards ERA; (2) an online policy platform to share qualitative information on strategies and initiatives; (3) regular policy dialogues between Member States and the Commission to share best practices and as a mutual learning exercise; (4) reporting on each Member State, which will feed into the policy dialogues, as well as a mid-term review on the implementation of the ERA policy agenda.

OUTCOMES

- Develop the online ERA policy platform with the aim to have a consistent, robust and quality tested national reporting system to feed the online policy platform, taking into account current instruments
- Develop the ERA scoreboard with the aim to monitor the progress towards ERA priorities at EU level and the progress of individual ERA actions at Member States level, taking into account current instruments

20 SUPPORT TO THE PRIORITISATION, COORDINATION AND DIRECTION OF R&I INVESTMENTS AND REFORMS

This action will assist interested Member States in voluntarily translating the R&D investment targets at national level taking into account their specificities. The main objective of this activity is to build evidence and foster debates strengthening transformative R&I policy. It also aims at maximising the impact of R&D investments directed to the green and digital transitions as well as economic recovery.

In order to implement this process, the action will:

- Provide new knowledge and evidence on the R&D investment targets and the need for directionality, duly considering existing capacities in R&I areas, domains and technologies. The action will provide solid analytical work and targeted analyses for each interested Member State.
- Contribute to the organisation of joint policy and technical discussions with Member States, experts and stakeholders to reflect on the targets and commonly agree on their specificities as well as on the process and methodology for their potential roll out at national level.
- Frame the setting up of bilateral debates with interested Member States to voluntarily translate the targets in the national contexts. This action will provide quantitative information, including from joint work and cooperation with Eurostat as well as the OECD.

OUTCOME

- Develop and promote the adoption of a policy and investment approach, through bilateral and multilateral policy dialogues in order to support interested Member States in prioritising R&I investment, including synergies between EU and national programmes and apply structural reforms

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