



Towards a European Excellence Initiative

Policy Report

*Centre for Strategy & Evaluation Services (CSES) with Tetra Tech and
Sociedade Portuguesa de Inovação (SPI)*

Independent
Expert
Report



Research and
Innovation

Towards a European Excellence Initiative

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EXECUTIVE SUMMARY

The European Commission's new European Research Area (ERA) sets out the intention to strengthen the research and innovation (R&I) dimension of universities through a comprehensive transformation agenda, empowering universities to develop in line with the ERA. In support of this agenda, the study 'Towards a European Excellence Initiative' undertook research into the state of excellence in universities in the EU, mapped Member State initiatives supporting R&I excellence in universities, and assessed EU support for excellence through the European Universities Initiative. This Policy Report presents policy lessons emerging from the research and offers recommendations relating to the design and implementation of a possible European Excellence Initiative (EEI) for the R&I dimension of universities. The report is complemented by two Analytical Reports that offer more extensive considerations of i) Member State support for excellence; and ii) EU support for excellence through European Universities.

The Policy Report contains the following:

- “Excellence in practice”: a summary of excellent research practices in universities in relation to six areas of institutional change, as well as excellent performance at national level in relation to the same areas (section 2);
- “Member State support for excellence”: showing how national or regional initiatives are promoting excellence in the R&I dimension of universities (section 3);
- “EU support for excellence through European Universities”: an assessment of EU support for institutional change promoting R&I excellence within 39 European University alliances supported by Horizon 2020 (section 4);
- Conclusions from the study and recommendations for a possible EEI (section 5).

Drawing on this evidence and findings presented in the report, the following conclusions were drawn on the R&I performance of HEIs in relation to the areas of institutional change within the ERA, as well as on current Member State and EU support for such institutional change.

- HEIs across the EU are undergoing processes of institutional transformation of their R&I dimension in line with the principles set out in the new ERA.
- In general, performance against the different areas of institutional change within the ERA is inter-related, i.e. effectiveness in one area tends to support high performance in other areas.
- The levels of performance within the areas of institutional change within the ERA reflect national policy frameworks and also the strategic commitments and choices of HEIs themselves.
- Excellent performance in challenge-led research addressing societal challenges requires a broader transformation of HEIs rather than simply the adoption of a new strand of research activity.
- Excellent performance in sharing of capacities, resources and infrastructure is often a by-product of pursuing other objectives rather than an end in itself.
- Whilst excellent performance in strengthening human capital is very strongly influenced by national contexts (not least, systems of allocating funding), there is scope for HEIs to raise their own performance within the parameters set by their national contexts.

- Excellent performance in academia-business co-operation is largely determined by the degree of clarity over the purpose of such co-operation.
- Excellent performance in mainstreaming open science is heavily influenced by choices made in relation to other institutional areas; nonetheless, progress can be made by a strategic commitment supported by practical actions.
- Excellent performance in engaging citizens in research and innovation requires a strategic commitment by HEIs and depends on the degree to which HEIs are embedded in the wider community or innovation ecosystem.
- The excellence initiatives introduced by Member States to support research excellence and the transformation of HEIs serve as exemplars that can inspire similar efforts by other Member States.
- The focus, design and scale of excellence initiatives varies across Member States, which provides an opportunity for peer support, mutual learning and exchange of best practice.
- Regardless of their level of innovation performance, all Member States feature HEIs demonstrating excellence but also weaknesses in one or more of the ERA areas of institutional change.
- The criteria and processes by which national or regional excellence initiatives select and review research activities and institutions can serve to promote or limit excellence in the areas of institutional change within the ERA.
- The experience of the European University Initiative shows the potential for transnational alliances to support the institutional transformation of HEIs in line with the ERA.
- Support for institutional transformation is more often effective where it addresses multiples areas of changes within the ERA rather than a single one.

Based on those conclusions, a number of recommendations are offered in relation to policy support for Member States and the development of a European Excellence Initiative.

- Policy support for Member States should relate to whole systems and overall approaches of Member States rather than just to specific areas of institutional change.
- Policy support should facilitate mutual learning and peer review between Member States both within and across the different categories of countries as defined by the European Innovation Scoreboard.
- Policy support should facilitate mutual learning and peer review in relation to excellence both at Member State level and institutional level.
- Any EU-level pilot action will need to promote the ERA principles as a whole, not individual ones.
- Any EU-level pilot action could test new criteria and metrics for assessing institutional performance against the ERA.
- The European Excellence Initiative should encourage and facilitate take-up and use of relevant existing EU tools.

1. INTRODUCTION

1.1 Purpose of the report

The European Commission's new European Research Area (ERA) sets out the intention to strengthen the research and innovation (R&I) dimension of universities through a comprehensive transformation agenda, empowering universities to develop in line with the ERA. More specifically, ERA Policy Agenda Action 13 aims to "raise excellence in science and value creation in Europe's university sector and increase its global competitiveness, including through a European Excellence Initiative and the consolidation of the European Universities Initiative".

In support of Action 13, the study "Towards a European Excellence Initiative" undertook research into the state of excellence in universities in the EU, mapped Member State initiatives supporting R&I excellence in universities, and assessed EU support for excellence through the European Universities Initiative. This report presents policy lessons from the research and offers recommendations relating to the design and implementation of a possible European Excellence Initiative EEI for the R&I dimension of universities.

The report contains the following:

- "Excellence in practice": a summary of excellent research practices in universities in relation to six areas of institutional change, as well as excellent performance at national level in relation to the same areas (section 2);
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- "EU support for excellence through European Universities": an assessment of EU support for institutional change promoting R&I excellence within 39 European University alliances supported by Horizon 2020 (section 4);
- Conclusions from the study and recommendations for a possible EEI (section 5).

This Policy Report is complemented by two Analytical Reports presenting the in-depth findings of the research. The first offers an "Assessment of the Horizon 2020 support to the European Universities Initiative", whilst the second offers a "Mapping and modelling of excellence initiatives in research and innovation".

1.2 Context for the report

The European Research Area (ERA) was launched in 2000 in the Commission Communication "Towards a European Research Area".¹ This defined a policy approach to carrying out research in Europe, and stressed the importance of better investment in knowledge, strengthening public research efforts, enhancing private sector research, which lags behind public sector spending. In a single market context, it also highlighted the need to strengthen support for European cooperation in research and technological development.

In 2020, the European Commission set out its new vision for the ERA in its Communication on "A new ERA for Research and Innovation". The Communication proposed a way forward to deepen the implementation of existing R&I priorities and initiatives but also to broaden the

¹ Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions - Towards a European research area, COM/2000/0006 final

ERA towards new priorities to address new challenges, such as the digital and climate transitions. Through the new ERA, the Commission intends to strengthen the R&I dimension of universities through a comprehensive transformation agenda (European Strategy for Universities) developed in synergy with the higher education dimension of the European Education Area ([EEA](#)) and with the European Higher Education Area ([EHEA](#)). It will enable shared objectives between the EU and Member States' initiatives to support higher education institutions in their efforts to transform and upgrade their education, research, innovation and service to society missions.

Implementation of the ERA is through the [ERA Policy Agenda](#) 2022-2024, which includes 20 joint voluntary ERA Actions that contribute to the ERA priorities. Action 13 is particularly addressed to universities as it involves: "Empowering Higher Education Institutions to develop in line with the ERA, and in synergy with the European Education Area". This means that HEIs are encouraged to adopt the principles outlined in the ERA Policy Agenda, which are, as explained below, closely linked to the areas of institutional change identified for HEIs. By implementing this action, the Commission and the Member States aim to:

- empower universities in Europe in their digital transition, including through initiatives such as Connected Universities;
- implement the comprehensive framework for research careers (see action 4 of the ERA Policy Agenda) in universities;
- raise excellence in science and value creation in Europe's university sector and increase its global competitiveness, including through a European Excellence Initiative (EEI) and the consolidation of the European Universities Initiative.

The proposed EEI would be envisaged to, for instance,:

- 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 an EU peer-review system;
- empower universities to develop in line with the ERA priorities, supporting and accelerating institutional change in areas identified by university sector;
- develop and test a competition-based potential joint funding approach for strategic institutional cooperation of universities, where possible aligned with Erasmus+ support for the European Universities Initiative.

2. EXCELLENCE IN PRACTICE

As noted in section 1.1, the new ERA aims to support HEIs in their efforts to transform and upgrade their education, research, innovation and service to society missions. The starting point in this respect is the ‘pursuit of excellence’, as set out in the Pact for Research and Innovation in Europe.² With that in mind, section 2.1 summarises excellent research practice in universities in relation to six areas of institutional change within the ERA, identified in previous analyses³ (see Table 2.1), whilst section 2.2 summarises excellent performance at national level in relation to the same areas.

Table 2.1: Areas of institutional change within the new ERA

Areas of institutional change (“transformation modules”)
<ul style="list-style-type: none">• Developing a common R&I agenda, more critical mass for solutions to major societal challenges, notably to the twin transitions (interpreted in this report as “research addressing societal challenges”);• Sharing of capacities, resources, and infrastructures;• Strengthening human capital, including equipping researchers with all the skills required by the labour market, and fostering balanced talent circulation;• Reinforcing academia-business cooperation, including the central role of universities in innovation ecosystems, and intersectoral mobility;• Mainstreaming open science practices and reforming research and academic career assessment systems;• Engaging citizens in research and innovation and strengthening outreach to society.

2.1 “ERA-excellent” research at institutional level

2.1.1 Research addressing societal challenges

Research and innovation are essential in addressing Europe’s key societal, ecological and economic challenges, especially in the post COVID-19 context. In this context, societal challenges can be best addressed if HEIs are transformed to become more “challenge-led” in their R&I activities. This implies revising their organisational structure, approach and working methods to become more focussed on pursuing goals and co-developing solutions with others and, where necessary, through an interdisciplinary approach. Key features of HEIs that have effectively done this are as follows.

Many HEIs have made strategic commitments to addressing societal challenges and to taking a challenge-based approach. For example, CIVIS, one of the alliances supported by the EU’s European University Initiative, highlights its priority to ‘tackle major societal

² The [Pact for Research and Innovation in Europe](#) (Council recommendation, November 2021) sets out commonly agreed values and principles, such as the pursuit of excellence, and identifies the areas where Member States will jointly develop priority actions, supporting in this way the implementation of the vision and objectives of the new ERA.

³ [Towards a 2030 vision on the future of universities in Europe](#) (2020) and [Knowledge ecosystems in the new ERA](#): areas of institutional change in research & innovation at higher education institutions in Europe (2022).

challenges of the 21st century’ and aims to develop the alliance ‘through global challenges (rather than along conventional disciplinary divides) [that] stimulates a collaborative culture and requires innovative pedagogies fostering critical thinking, adaptability, resilience and forward-looking skills’.⁴

Many HEIs include societal challenges in their strategic plans and have established strategic partnerships to support and strengthen their goals. In many cases, they are developing a joint research strategy focusing on one or various societal challenges and partnering with key actors to address these in a sustainable, long-term, trans-disciplinary way. Partnerships go beyond the traditional HEIs and research institutes, and include the business sector, the public sector and civil society organisations. Behind this extended network of partners lies the recognition that the best solutions and the most advanced knowledge require an interdisciplinary approach.

Some HEIs have made societal challenges addressed by their research a key element in their educational offer. This involves educational programmes having a clear interdisciplinary and transdisciplinary, co-creational and challenge-based approach. For example, the Learning Planet Institute (France) encourages students to focus on unsolved problems at the intersection of science or social innovation, and combine applied research with pedagogical innovation, scientific research methods and project management skills for ecological, civic and societal missions.⁵ Aalborg University (Denmark) highlights “problem orientation, collaboration, commitment and change” as their distinctive features, making the university a successful example of mission-oriented university contributing to sustainable development.⁶ Similarly, Aalto University (Finland) has a tradition of combining conventional teaching with team-based projects drawing on different disciplines to solve problems.⁷

Some HEIs are connecting their research activities to their local communities and the problems they face. Engaging in mutually beneficial collaborations often involves a personal connection and offers a visible link to the community the HEI aims to serve. For example, the transdisciplinary research strategy of the Technical University of Berlin emphasises cooperation with local citizens through workshops and dialogue to identify topics and project ideas. The University of Technology in Sydney has interdisciplinary research centres focusing on climate change, energy technology conservation and water management, which bring together government, industry and the local community around research into sustainable solutions to local and regional challenges.

Some HEIs are aligning the way they fund research with transdisciplinary, challenge-driven approaches. Transdisciplinary research typically requires more stable and reliable funding sources than other research, given that it can be “more resource-intensive, time-consuming, risky and prone to shifting goals than traditional research”.⁸ In this context, a challenge-led approach requires revised mechanisms for funding research that acknowledges the complexities of coordinating various partners from different sectors, that ensures the overall portfolio of activities proposed contributes to the overall mission and that focus on the long-term evaluation of results, monitoring their progress and contributions towards the societal mission.⁹

⁴ <https://civis.eu/storage/files/mission-statement-en.pdf>

⁵ See <https://www.learningplanetinstitute.org/en/education-2/>

⁶ <https://www.en.aau.dk/about-aau/strategy/mission-oriented-university>

⁷ See <https://www.aalto.fi/en/school-of-science>

⁸ <https://f1000research.com/articles/11-949>

⁹ https://www.ciiip.group.cam.ac.uk/reports-and-articles/challenges-challenge-led-research-and-innovation-a/download/Briefing_paper_v2.pdf

2.1.2 Sharing of capacities, resources and infrastructure

Sharing capacities, resources and infrastructure can support the collaborations and institutional specialisations required to address increasingly complex research challenges and crises,¹⁰ benefitting wider society and adding value beyond the cumulative independent capabilities of individual HEIs.^{11,12} To this end, the ERA Policy Agenda and Pact for Research and Innovation in Europe set out common value principles to make sharing of resources more straightforward. Key features of approaches to sharing are as follows.

Collaborative sharing of capacities, resources and infrastructure is often best achieved through a “whole-institution” approach. For example, the guidelines of the Indian University Grants Commission (UGC) advocate for the optimal utilisation of resources and infrastructure across all levels of HEIs. The UGC has suggested to vice-chancellors that all infrastructure, from libraries and laboratories to social spaces and university equipment should be open to researchers and students of other HEIs.¹³

Excellent performance in sharing of capacities, resources and infrastructure is often a by-product of pursuing other objectives rather than an end in itself. Those HEIs that are most effectively sharing of capacities, resources and infrastructure tend to be doing so in the context of efforts to increase challenge-led research, interdisciplinary research, internationalisation, academia-business collaboration and citizen engagement. Such sharing can be enhanced by a strategic commitment by HEIs accompanied by access policies and practical actions, such as support for researchers and departments in developing external collaborations.

Collaborative research projects are one important way in which HEIs can share resources, with researchers often already engaged in exchanges of ideas and projects, and collaborating on research papers through informal and extant professional networks. These relationships can however be encouraged and formed in a deeper way with institutional support and focus. For example, the Oxford-Cambridge ARC (Advanced Research Computing) and the Wellcome Trust Sanger Institute, affiliated with both universities, have collaborated as leading centres for research in the field of genetics and genomics in recent years.

Collaborative investment in research infrastructure can be a crucial way for scientific research and specialisation to be advanced among HEIs and in regions that would otherwise lack sufficient funding mechanisms or capital. Collaborative funding of an independent research infrastructure facility by eight countries has proved successful in the case of Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME).¹⁴ SESAME is a cooperative venture by scientists and governments of the region set up on the model of CERN (European Organization for Nuclear Research) and has the form of an autonomous intergovernmental organisation. This collaborative scientific venture points to a way for multinational collaboration between countries (specifically Israel and Palestine) that would not otherwise be possible through direct relationships due to political tensions and national restrictions.

Joint doctoral programmes can be an effective way of sharing resources. They can offer researchers the opportunity to pursue interdisciplinary research that draws on the

¹⁰ *Addressing societal challenges using transdisciplinary research* (2020). OECD Science, Technology and Industry Policy Papers 88.

¹¹ https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/our-digital-future/european-research-area_en

¹² <https://erasmus-plus.ec.europa.eu/programme-guide/part-b/key-action-2/capacity-building-higher-education>

¹³ [HEIs need to be proactive in sharing their resources for optimal utilisation - Times of India \(indiatimes.com\)](https://timesofindia.com)

¹⁴ [SESAME | Synchrotron-light for Experimental Science and Applications in the Middle East](https://www.sesame-synchrotron.org)

complementary expertise of multiple institutions, provide access to a wider range resources, the opportunity to work with faculty members from those institutions, and a strong network of alumni. For example, such benefits can be observed in the Open-Oxford-Cambridge Doctoral Training, which also fosters positive attitudes to resource-sharing that can endure throughout researcher careers.¹⁵

2.1.3 Strengthening human capital

Researchers, particularly early-career researchers, very often experience precarious employment, aggravated by a dependency on short-lived, project-based research funding, resulting in many of the most talented opting to work outside HEIs. Retaining talent is aggravated by imbalances between the number of PhD graduates and the number of tenure track positions in the public science systems and by insufficient training and career development in academia. Whilst HEIs remain constrained by the criteria set by research funders, which too often focus on quantitative indicators related to publication, many are transforming the ways in which they recognise, reward and support researchers. Key features of excellence in strengthening human capital in research are as follows.

A better environment for researchers to operate and develop their careers can be fostered by a strategic commitment to responsible use of metrics and the application of a broader set of criteria to evaluate and reward researcher performance. For example, HEIs that have signed the San Francisco Declaration on Research Assessment (DORA) commit themselves to not using journal-based metrics as a surrogate measure of the quality of individual research articles, to assess an individual scientist's contributions, or in hiring, promotion, or funding decisions.¹⁶ Instead, they commit to being explicit about the criteria used to make hiring, tenure, and promotion decisions and to considering the value and impact of all research outputs (including datasets and software) in addition to research publications and considering a broad range of impact measures including qualitative indicators of research impact, such as influence on policy and practice.

Some HEIs are transforming their research assessment and reward systems and thus going beyond merely making a declaration in line with the DORA or the Leiden Manifesto. For example, Ghent University (Belgium) overhauled its recruitment and career progression model for professorial staff in 2018 in order to remove the heavy focus on quantitative measurement. University College London (UCL) introduced its Academic Careers Framework in 2018 to support every type of academic career path. In respect of research, it aims to encompass all aspects of the creation and application of new knowledge and takes account of the specificities of each discipline.

HEIs are increasingly reforming their broader human resources strategy, in many cases in line with the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers (the Charter and Code). More than 700 HEIs and research organisations have received the EU's HRS4R Excellence in Human Resource Support for Research Award. Action taken in this context includes embedding action plans for the reform of HR practices into the overall policy or strategy of the institution, as well as forming steering groups comprising senior management to drive the process of HR reform.

Some HEIs are introducing Open, Transparent and Merit-based Recruitment (OTM-R) practices and reforming doctoral programmes to improve the skills, training and career development offered to researchers. For example, the OTM-R policy of Waterford Institute of Technology (Ireland) stipulates that staff making recruitment decisions will receive training every three years, including unconscious bias awareness and interview skills techniques training. OTM-R requirements are set out at each step, including pre-recruitment

¹⁵ [About | Open-Oxford-Cambridge AHRC Doctoral Training Partnership \(oocdtp.ac.uk\)](https://oocdtp.ac.uk)

¹⁶ <https://sfdora.org/>

(position approval, job description, person specification), recruitment (pre-screening, shortlisting, candidate interview pack, interview process), appointment (pre-employment checks) and contracting (employment contracts and permits, hosting agreements and appeals mechanism).¹⁷

2.1.4 Reinforcing academia-business co-operation

The new ERA recognises the importance of academia-business co-operation within innovation ecosystems for knowledge circulation and valorisation. Universities develop research talent for all sectors, develop and bring new technologies to the market, improve public services, and address societal challenges. To fulfil these diverse functions, universities need to interact with industry and business, the public sector, and the non-profit sector. Consequently, the conceptualisation of academia-business collaboration has moved from a triple helix model of innovation¹⁸ to a quadruple and quintuple helix model, encompassing a strong societal focus.^{19, 20} In this context, key features of excellence in academia-business co-operation in research are as follows.

Excellent performance in academia-business co-operation is in part determined by the degree of clarity over the purpose of such co-operation. Co-operation can support academic research as evidenced, for example, by high rates of professional publications or co-publications with industrial partners. Alternatively, HEIs can serve as “suppliers” of research to industry for which they receive income. In other cases, co-operation with other sectors could be focussed on benefits to researchers (and students), for example, through enriching doctoral programmes, supporting researcher mobility and employability or enriching the educational offer. The most intensive and fruitful co-operation is perhaps where academia and business share a challenge-led research agenda to develop new solutions to societal challenges and/or create new intellectual property with potential for commercial exploitation.

Excellence in academia-business collaborations often involves patent development, commercialisation of intellectual property rights and the transfer of knowledge and technology. This can result in the development of new products and services. Subsequently and simultaneously, these collaborations have also been found to have increased productivity and efficiency²¹ as well as supporting job creation and economic growth.²²

Excellence in academia-business collaboration typically features clarity about the ownership and usage-rights of any outputs. Agreeing these arrangements can be a lengthy process and present a significant barrier to research, inhibiting timely access to funding. To address this, the University of Heidelberg defines three clear categories of research relationship: co-operative research, contract research and scientific service. These categories allow clear communication and contractual terms with research partners.

¹⁷ https://www.wit.ie/research/our_research/otmr

¹⁸ Etzkowitz, H. and Leydesdorff, L. (2000). The dynamics of innovation: from National Systems and “Mode 2” to a Triple Helix of university–industry–government relations. *Research policy*, 29(2), 109-123

¹⁹ Schütz, F., Heidingsfelder, M.L. and Schraudner, M. (2019). Co-shaping the Future in Quadruple Helix Innovation Systems: Uncovering Public Preferences toward Participatory Research and Innovation. *She Ji: The Journal of Design, Economics, and Innovation*, 5(2), 128-146

²⁰ Hasche, N., Höglund, L. and Linton, G., (2019). Quadruple helix as a network of relationships: creating value within a Swedish regional innovation system. *Journal of Small Business & Entrepreneurship*, 1-22.

²¹ Verspagen, B. (2010). The Impact of University-Industry Collaboration on Innovation

²² Audretsch, D. and Keilbach, M. (2008) University-Industry Relations: A Review of the Literature from the Past Decade, *Journal of Management*; Allen, C., Clark, P. and Wright, P. (2010) Academia-Industry Collaboration: An Overview of Research on Inter-Organizational Research Collaboration, *Journal of Management*

Excellence in academia-business collaboration can be supported by dedicated offices within the HEIs. Such intermediaries can help overcome any mismatch between traditional university organisational structures and the needs and preferences of industry partners and ensure effective communication between the partners. For example, CERN has developed two main channels for the development and oversight of projects and results. An Industrial Liaison Officer Forum provides advice on doing business with CERN and supports firms in their local regions, whilst a Knowledge Transfer Forum oversees the transfer of CERN's knowledge to science, technology and industry partners.

Strategies for supporting entrepreneurship can play a role in fostering inter-sectoral mobility and effective collaborations between academia and business. For example, the University Innovation Alliance (UIA), a partnership of 11 large public research universities in the USA, operates key entrepreneurship programmes. The Industry Internship Programme provides students with paid internships at leading companies in different industries,, whilst the Entrepreneurship Ecosystem Development Programme provides students with mentorship, funding, and networking opportunities to help them start their own businesses.

The **EU has made significant efforts to support and encourage deeper collaboration** between academia and business. Most notably, Horizon Europe and Horizon 2020 have provided funding for "Research and Innovation Staff Exchange" (RISE) projects to foster collaboration and knowledge transfer and "Fast Track to Innovation" (FTI) scheme aims to accelerate the development of new products, services and processes. Furthermore, the EU encourages partnerships between academia and business through initiatives such as those operated by the European Research Council (ERC), which provides funding for basic research projects, and those operated by the European Innovation Council (EIC), which provides support for high-risk, high-reward innovation projects.

2.1.5 Mainstreaming open science practices

The new ERA reiterates the need to make research and innovation systems more efficient and creative and to reinforce trust in science by promoting access to open, free of charge, re-usable scientific information.²³ Open science refers to research practices based on the principles of openness and transparency. It contributes to making research results and data reusable, reproducible, facilitates peer scrutiny and quality, and makes research and innovation overall more efficient. In this context, key features of excellence in open science are as follows.

Some HEIs have integrated an open science policy in their mission statements and strategic plan. Such strategic plans can involve setting guidelines and protocols within all faculties on the type of research data which should be made available for reuse, like guidelines on how to handle sensitive data, IP rights, setting standards to FAIR & open data (e.g. a mandatory archiving period at the University), and ensuring that infrastructures are aligned with FAIR data principles, and develop and implement policies for FAIR data management and training.

Some HEIs incentivise and reward open science practices by reforming their research evaluation. This includes criteria for recruitment, career advancement, academic unit performance evaluation, funding decisions, etc. This can include following guidance set out by the Metric Tide, FAIR principles for data sharing, the Leiden Manifesto for research metrics, Science Europe Position Statement on Research Information Systems, and the

²³ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A new ERA for Research and Innovation; COM/2020/628 final.

NISO Altmetrics Data Code of Conduct which includes key principles for good practices in the use of bibliometrics.²⁴

Some HEIs encourage their researchers to publish research results and data in Open Access. Options include services such as Elsevier or Springer, Open Access repositories such as OpenAire, OpenDOAR, ROAR, arXiv.org, Polish CEON, Most Wiedzy, and Open Access platforms such as the European Science Cloud. Researchers also have the option to publish research results or data under one of the Creative Commons Licenses, which enables the free distribution of an otherwise copyright work. At the institutional level, Open Access policy include elements such as copyrights and intellectual property provisions, preservation, unique researcher identifiers, Open Access books and Open Access archival, provisions for specific disciplines and open research protocols. Some HEIs use European level initiatives such as Plan S and OA2020. In order to support the acquisition of editorship in Open Access journals, the Maritime University of Szczecin has set up a publication fund and offers grants for Open Access to research publications.

Many HEIs have established the infrastructure necessary for open access to research publications. According to the 2020-2021 EUA Open Science Survey, 90% of HEIs had established their own or participated in a shared repository, whilst 66% hosted journals or publishing platforms. Open access infrastructure includes HEIs' own institutional publication servers or using existing open science initiatives such as Open Access, Open Data, CC licensing, to share primary and secondary publications through their websites. Some universities have their own journal accessible in open access. However, the OECD points out that data repositories need to be actively promoted at the institutional level to achieve impact.²⁵

Some HEIs provide information and training resources on open science to varying degrees. Information and training researchers and support staff is particularly important to overcome the tension between IPR and open science. Especially training senior researchers, who can serve as multipliers and catalyst of change may achieve a high impact. Training other categories of researchers support staff is also crucial. These include a wide range of information, from data management to ethical and legal aspects (IPR, open access and FAIR and open data, as well as scholarly communication and dissemination, societal engagement). Such training offer includes online resource, online modules, repositories of Open Access Journals, guidelines on how to use altmetrics and enhance the visibility of research and promoting open science to the purpose of public engagement by assisting researchers in communicating their research to the wider public.

2.1.6 Engaging citizens in research and innovation

Citizen engagement refers to the mutually beneficial relationship between academia and the wider community, understood as encompassing local, national and global individuals and associations committed to social, economic, political and cultural development.²⁶ In the context of the EU Missions, this relates to mobilising citizens around common goals and offering meaningful opportunities to participate in change, advance human knowledge and

²⁴ See <http://www.leidenmanifesto.org/> and Bibliometrics: The Leiden Manifesto for research metrics, Diana Hicks, Paul Wouters, Ludo Waltman, Sarah de Rijcke & Ismael Rafols

²⁵ <https://www.oecd-ilibrary.org/docserver/81a9dcf0-en.pdf?expires=1675696383&id=id&accname=quest&checksum=F8953528C491E76C8F69470E4AF0263D>

²⁶ See, for example, the definition by Dublin City University: <https://www.dcu.ie/civic-engagement/what-civic-engagement#:~:text=Civic%20engagement%20is%20best%20defined,economic%2C%20political%20and%20cultural%20development>.

accelerate the transformation of societies.²⁷ At institutional level, HEIs are incorporating some of these practices into their approach to research and innovation.

Many HEIs are embedding public engagement in their institutional mission and strategy. For these HEIs, their goal is to offer students and staff a truly transformative and participatory experience that combines knowledge with action.²⁸ However, institutional transformation is needed for civic engagement to form a central part of a university's mission. In line with this, the National Co-ordinating Centre for Public Engagement (UK) defines four features of an “engaged university”: public engagement with research, engaged teaching, knowledge exchange and social responsibility.²⁹

The academic and research missions of some HEIs are built around the needs of the community. This is underpinned by the belief that universities are “anchor institutions” whose identity is inextricably linked to their location. In that regard, their education and research focus is increasingly targeted at the local needs, based on evidence and building on the university's strengths and its competitive advantage. In doing so, the university needs to define a set of priorities that it aims to address, aligned with its own individual strengths, aligning their resources with local authorities and other partners.

HEIs develop mutually beneficial partnerships with local communities, business and government to maximise their local impact. The result is a powerful partnership between key actors on equal footing that helps to improve the socioeconomic status of the local communities. While such partnerships require for stakeholders involved to invest time into developing it, there is the recognition that it is of strategic value and that it will bring mutual benefits in the long-term. Each collaboration has its own features and delivers a set of initiatives, including commercially useful insights to businesses, thereby amplifying growth, innovation and productivity in regional economies.³⁰

Citizen engagement can take place through various channels, including consultations and workshops. Seeking community input aims both to engage citizens in science and also to raise public awareness on the role of science in society and political decision-making. It can take place in the context of an educational or research programme, or inform other university activities. For example, the European Digital University engages citizens on the themes of “cybersecurity” and “culture and heritage” through various channels in order to address citizens' expectations and fears concerning digitalisation and capture the views of the wider population.³¹ The Technical University of Berlin, recognising that developing such consultation channels often requires dedicated resources³², has a dedicated team in charge of organising consultation workshops and dialogues to identify topics and project ideas together with the community.³³

At a more operational level, **HEIs actively create the structures to support and recognise students, staff and representatives of the public that engage in community-based research, experiential community-based learning and volunteering activities as forms of civic engagement.** Universities need to, on the one hand, create the opportunities for students and staff to get involved in civic initiatives and on the other create the incentives for them to do so. For example, one way of supporting these initiatives could be by recognising

²⁷ https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/eu-missions-citizen-engagement-activities_en

²⁸ <https://www.ucc.ie/en/civic/governance/acivicallyengageduniversity/>

²⁹ <https://www.publicengagement.ac.uk/about-engagement/what-does-engaged-university-look>

³⁰ <https://upp-foundation.org/wp-content/uploads/2019/02/Civic-University-Commission-Final-Report.pdf>

³¹ <https://educalliance.eu/research/>

³² <https://www.publicengagement.ac.uk/about-engagement/what-does-engaged-university-look>

³³ [https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/STP/GSF\(2020\)4/FINAL&dclLanguage=En](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/STP/GSF(2020)4/FINAL&dclLanguage=En)

its value within recruitment, workload plans and performance reviews.³⁴ Other examples include supporting campus-community volunteering opportunities and offering capacity building training to higher education staff and community partners.³⁵

Excellent citizen engagement typically requires HEIs to transform their systems of recognising and rewarding research performance and allocating research funding. As noted earlier, the narrow focus of performance metrics on a few quantitative indicators, often linked to publication in high profile journals risks disincentivising researchers' efforts to engage citizens. Such a transformation may need to take into account the longer timescales for the impact of citizen engagement to manifest itself and thus become measurable.

2.2 “ERA-excellent” performance at national level

Whilst the focus of Action 13 of the ERA Policy Agenda is on the transformation of HEIs, institutional performance depends heavily on the wider national context. Thus, Action 13 envisages support for Member States to promote institutional transformation in line with the ERA. With this in mind, this sub-section summarises the performance of Member States based on evidence from U-Multirank, Leiden Rankings, Horizon 2020 dashboard data and the HRS4R dashboard. Member States are categorised by their current research and innovation strength as determined by the 2022 European Innovation Scoreboard (EIS):

- Innovation Leaders: Sweden, Finland, Denmark, the Netherlands, Belgium
- Strong Innovators: Ireland, Luxembourg, Austria, Germany, Cyprus, France
- Moderate Innovators: Estonia, Slovenia, Czechia, Italy, Spain, Portugal, Malta, Lithuania, Greece
- Emerging Innovators: Hungary, Croatia, Slovakia, Poland, Latvia, Bulgaria, Romania.³⁶

HEIs in Member States categorised as Innovation Leaders and Strong Innovators generally manifest the highest levels of performance against the ERA areas of institutional change. According to the U-Multirank data, HEIs in Sweden, Finland and the Netherlands” demonstrate excellence in relation to “International orientation, collaborative publication and high proportion of foreign doctoral candidates. Amongst the Strong Innovators, France features HEIs that perform well in terms of student mobility and international orientation, whilst Ireland, Luxembourg and Cyprus are recognised in for their public-private collaborations in research output. Ireland also features strong capacity for training and human resource support for researchers.

Despite their strong overall performance, Member States categorised as Innovation Leaders and Strong Innovators still feature room for improvement in certain areas, which could be served by a European Excellence Initiative. For example, knowledge transfer is identified as a significant weakness in Sweden, Finland, the Netherlands (Innovation Leaders), as well as Austria, France and Germany (Strong Innovators). This is despite Austria and Germany featuring strong engagement of HEIs with industry and collaborative research among leading specialist HEIs in specific fields. Some Innovation Leaders and Strong Innovators also feature considerable scope for improvements in

³⁴ <https://www.publicengagement.ac.uk/about-engagement/what-does-engaged-university-look>

³⁵ <https://www.dcu.ie/civic-engagement/news/2020/dec/minister-education-and-skills-mr-ruairi-quinn-td-officially-launches>

³⁶ [European innovation scoreboard \(europa.eu\)](https://european-innovation-scoreboard.europa.eu)

researcher career development. Cyprus and Luxembourg appear to be restricted in their capacity to invest or attract public and private research funding.

Several Member States categorised as Moderate Innovators or Emerging Innovators feature HEIs that demonstrate high levels of performance within the areas of institutional change within the ERA. For example, some feature HEIs that perform highly against metrics related to gender equality amongst researchers or interdisciplinary publications. Similarly, the regional engagement of Spain's HEIs tends to be reasonably high. In some cases, these areas of high performance reflect a broader policy effort at national level, whilst in other cases, it reflects the efforts of individual HEIs.

Member States categorised as Moderate Innovators feature a need for better knowledge transfer and academia-business collaboration. In response to this, Spain, and to a lesser extent Czechia, Estonia and Malta have employed strategic policy towards implementing particularly strong digital education and infrastructure, facilitating the potential for innovative enterprises through citizen engagement and collaboration, as also noted in the EIS. Portugal likewise has strong research capacity with government support for business R&I. In Italy, very strong research capability in U-Multirank data, is complemented by EIS' recognition of government support for business R&I.

Despite their categorisation as "Emerging Innovators", HEIs in Poland and Romania perform very well in challenge-led approaches, such as gender representation and outward-looking research. The U-Multirank data shows that gender representation in research and the likelihood of advanced training being completed by non-male researchers is strong among HEIs at technical and medical-oriented universities in Poland. Likewise, Romania's pedagogical support for researchers, coupled with strong opportunities for internships presents a solid foundation for building a potential pipeline for excellent practices, particularly citizen engagement, collaborative research and career development.

3. MEMBER STATES SUPPORT FOR EXCELLENCE

As noted in section 1.1, the proposed European Excellence Initiative could inter alia include providing 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 an EU peer-review system.

To support the design of such policy support, this section shows how current national or regional initiatives are promoting excellence in the R&I dimension of universities. It describes the distribution, delivery mechanisms and focus of excellence initiatives, as well as an extrapolation of models of excellence initiatives. A more detailed mapping and analysis of excellence initiatives is provided in the Analytical Report published as part of this study.³⁷

3.1 What are excellence initiatives?

Excellence initiatives aim at successful institutional transformation and, where necessary, upgrading existing higher education institutions in an accelerated fashion through large injections of additional funding by a national government. They focus on governance – managerial innovations, strategic planning, benchmarking – and on mainstreaming a culture of excellence.

Existing excellence initiatives are focussed upon the attainment of high renown and high quality of research within national and international contexts. They seek to establish or enhance, and track effectively, HEI competitiveness through processes of benchmarking and the provision of performance-related funding for innovative research, governance and collaboration. Typically, excellence initiatives are managed by national research councils, government education or research ministries, or a managing body representative of both. As such, the considerable scale and duration of funding for excellence initiatives falls almost exclusively upon government finances, allowing in some cases for the alignment of research investments with policy priorities.

Despite some common overarching elements, there is no uniform structure to excellence initiatives. Dependant, in part, upon their regional, national and international contexts, initiatives can operate within narrow research fields or seek to promote knowledge ecosystems across broader thematic areas, such as regional economic development, social cohesion or employment. Likewise, in determining the definition of research excellence, the varying relevance of research context, metrics and ‘alt-metrics’, such as public engagement, industrial partnerships or inter-institutional collaborations, play a role in outlining the nuanced criteria upon which objectives are outlined and the successes of participating institutions are assessed.

3.2 What models of national and excellence initiative are in operation?

Based on an analysis of 50 initiatives in the EU Member States and other countries, the table below presents an extrapolation of six different models of excellence initiative. Whilst the models are distinct, they are not necessarily mutually exclusive; some EIs may be of more than one type. Of the types, the first two are the most common and most relevant to the areas of institutional change promoted by the new ERA (Support for centres of excellence, Support for transformation of HEIs), whilst the third is potentially most far-reaching (Frameworks for assessing and rewarding research performance). The sub-sections that follow provide summaries of the six models.

³⁷ CSES (2023), Mapping and modelling of excellence initiatives in research and innovation: Analytical Report prepared within the study “Towards a European Excellence initiative”.

Table 3.1: Models of excellence initiatives

Excellence initiatives
<ul style="list-style-type: none">• Supporting Centres of excellence• Supporting the transformation of HEIs• Frameworks for assessing and rewarding research performance• Specific research projects• Prioritising the commercialisation of research results• Supporting individual researchers

3.2.1 Initiatives supporting centres of excellence

Key features of initiatives supporting centres of excellence
<ul style="list-style-type: none">• Specialisms in multidisciplinary fields• Research of international significance• Collaboration within the HE sector and with other sectors• Significant autonomy in the use of funding• Funding via competitive calls, separate from core funding• Long-term funding of 5-15 years

Initiatives supporting centres of excellence (CoEs) often provide a broad package of support, which almost always focus on a specific research field and aim to extend ongoing research activities which are already regarded as at a leading level. Some EIs supporting CoEs are very clearly focussed on basic and/or applied research. Others EIs support applied research, whilst some specifically promote the exploitation (including commercial exploitation) of research outputs, including through the development of spin-off enterprises. There is often a significant improvement in research infrastructure. Support for CoEs is generally offered in the context of wider national strategies. These can relate to research and innovation, smart specialisation or competitiveness strategies, or regional development strategies (in the context of EU Cohesion Policy).

Core objectives of such initiatives can include:

- **Specialisation:** almost by definition, CoEs specialise in a particular field. This may reflect a recognition that the scope of research in individual HEIs has frequently been too broad meaning that specialist expertise is spread too thinly.

- **Aggregation of research expertise and capacity** in the relevant specialism from multiple HEIs, as well as from public and private sector partners in other sectors.
- **Internationalisation:** support typically enables HEIs to undertake research of international significance, for example, as evidenced through citation in top international publications. Support is often intended to internationalise those HEIs whose international dimension may have been quite limited to date.
- **Broader transformation of HEIs:** where HEIs have modest research capacity, the establishment of CoEs can be part of a broader transformation of the host institution.
- **Territorial integration:** where HEIs are supporting national policies around smart specialisation, competitiveness or regional development, support for CoEs is intended to embed HEIs in local and regional research and innovation ecosystems.

Centres of excellence take multiple forms. Very often, they are separate legal entities established by a partnership of HEIs and sometimes involving public or private sector bodies. Some CoEs are hosted and led by a single HEI or co-led by multiple HEIs in the same region. Others are led by consortia of HEIs and research institutions, which creates critical mass in the relevant specialism. Where the CoE is focused on research leading to commercial benefits, regional competitiveness or social impacts, they may feature common leadership of a consortium between HEIs and industry partners. Less commonly, initiatives may support CoEs set up by business-led consortia; in these cases, the aim is to encourage business investment in R&I and synergies with HEIs.

CoEs are generally intended to bring about long-term impact, as well as short-term research outputs. There is recognition that establishing the governance and operational arrangements, implementing activities and generating capacity for ground-breaking research will take time. For that reason, CoEs, once approved, generally receive long-term funding for 4-6 years duration with some also receiving a second tranche of similar duration. Some HEIs allocate funding via a staged approach, whereby applicants receive an initial allocation of seed funding to take forward their proposal, followed by more substantial funding to establish the CoE.

3.2.2 Initiatives supporting the transformation of HEIs

Key features of initiatives supporting the transformation of HEIs
<ul style="list-style-type: none"> • Promoting institutional transformation of HEIs towards research excellence • Broader package of support beyond funding for research • Support to design and implement development plans for R&D • Promotion of internationalisation • Merging HEIs or establishing multidisciplinary HEIs • Capacity building and reforms • Enhancing international competitiveness by strengthening top-level research

These EIs provide a variety of support to HEIs or consortia beyond the funding of research, often including capacity building, internationalisation, and support for strategic, long-term development to fulfil R&I potential. Support can be specifically focus on developing long-term strategies (potentially in specific research fields) to enhance top-level research. Alternatively, it can be focused on internal reform, for example, through improving staff policy, university governance and systems to monitor researcher career progress. In some cases, support directly helps HEIs deal with new or changing regulatory environments. Typically, the overall objective is to strengthen the competitiveness of the R&I sector in the country by increasing the number of excellent HEIs of international reputation, thereby increasing their visibility and ability to attract research talent. In some cases, national excellence initiatives also support the transformation of public and private research organisations, technology transfer organisations and private companies, as well as HEIs.

Core objectives of such initiatives can include:

- **Capacity building of researchers and staff.** This can includes professional development of staff but also education for graduate and post-graduate students. Indeed, the link between education and research can be essential for the long-term, as exemplified in the support for education of research-based training.
- **Collaboration as means of internationalisation.** The establishment of strategic partnerships with international HEIs and research organisations serve as important instruments for intensive scientific cooperation, international cooperation and visibility. Some EIs are institutionalised in the form of partnership agreements or protocols of cooperation and centre around specific themes.
- **Capacity to transfer knowledge to the economy.** Some initiatives focus on the transfer of applied research to the economy and the creation of knowledge with potential in terms of production of applicable results. For that purpose, such EIs help equip materially and technically new research teams, for example with the acquisition of laboratory and information equipment to expand the capacity of R&D or by improving existing equipment or technology in use. The modernisation and development of the infrastructure and technological facilities can be complemented by an emphasis on academia-business connection (Portugal, France).
- **Long-term strategy for top-level research.** At a more strategic level, some EIs recognise the importance of planning ahead and developing a sustainable vision on which to continue developing R&D. This may be through institutional partnerships but also through long-term strategies to consistently expand the institution's top-level research and improve career paths for researchers.

3.2.3 Frameworks for assessing and rewarding research performance

Key features of frameworks for assessing and rewarding research performance

- Support growth and competitiveness across all HEIs regardless of current size, impact or capacity;
- Transparent and objective system for assessing HEIs
- Enables accurate benchmarking of progress
- Use of peer assessment and alternative metrics
- Long-term institutional strategies for excellence
- Encourages cultural change (e.g. equality, diversity, inclusion)
- Enables sharing and replication of excellence

Frameworks are a fairly recent and evolving approach to research funding. They operate as a systematic and comprehensive process for assessing and rewarding research performance of HEIs. This approach is used by authorities responsible for the allocation of state funding of R&I, for the block funding for research over longer periods. The focus of this approach is to allow for institutional and cultural change across HEIs through the development and implementation of a clear strategic vision, and to encourage specialisation and positive R&I eco-systems. It does by rewarding HEIs through an assessment process which considers a broad range of relevant parameters including not only to bibliographic research impact but also social responsibility and the implementation (and development) and best practices in research and institutional management.

The core objectives of such frameworks can include:

- Support growth and competitiveness of all HEIs regardless of size, impact or capacity;
- Develop a transparent and objective assessment system for HEIs to allow accurate benchmarking of progress, typically recognising the importance of peer assessment and alternative metrics;
- Encourage HEIs to develop and implement long-term strategies for excellence;
- Make cultural changes to the research environment, in line with United Nations' Sustainable Development Goals and principled approaches of fairness, equality, diversity and inclusion;
- Share and replicate and best practices and excellence across HEIs and partner institutions regionally, nationally and internationally.

The framework approach assesses research performance in the broadest and most open sense. Block funding for research and for HEIs or departments is typically allocated on the merits and specifications of their research and related activities, but also relative to the situational advantages and capacities of HEIs. Similarly, assessment of research impacts,

led by the qualitative expertise of review panels is key to the quantification of data and allocation of resources. Subsequently, these frameworks provide feedback and guidance not only to subject institutions on the strengths and weaknesses of their research, and on ways to improve the quality and impact of their research in the future, but to the state structures and funding bodies that utilise the framework to better understand the levels of funding required.

Frameworks provide a robust and detailed methodological approach to the assessment process for research departments and institutions across the country. These involve expert peer review of the research quality and bibliometric impact of research, social relevance, viability and strategic policies at the institutional or departmental level. The peer assessment utilised leading international experts with an understanding of the national research context ensures a high standard of relevant and appropriate feedback, as well as the development of comprehensive outward-looking global benchmarking. The process also recognises fair representation of gender (and sometimes other measures related to diversity) in line with best practices and strategic missions towards socially-representative and fair opportunity research cultures.

The timeline for assessments of research funding allocation for project-based applications can vary depending and is more flexible to align with the needs of researchers and new forthcoming proposals and innovation ideas. However, institutional level funding, the vast majority of the block allocations that are made, are set out more rigidly over longer strategic implementation periods.

3.2.4 Initiatives supporting research projects promoting scientific breakthroughs or addressing societal challenges

Key features of initiatives supporting specific research projects

- Support for ground-breaking research
- Mission-focussed research addressing societal challenges
- Supporting national government policy objectives
- Limited emphasis on institutional transformation of recipients
- Encouragement for interdisciplinarity research approaches
- Collaboration with other sectors and international partners.
- Support for individual researchers/Principal Investigators or organisations, including but not limited to HEIs

One of the more traditional ways in which EIs operate is to support specific research projects, undertaken either by individual HEIs or by national or international consortia of HEIs and potentially other types of organisations. However, some EIs are providing new and innovative forms of support for research projects. These EIs may offer limited emphasis on transforming the recipients, whether they be HEIs or other bodies. Instead, the focus is on supporting excellent research projects that address societal challenges.

A key feature of such initiatives is that they tend to support innovative projects that might not be supported by other funding instruments, the aim being to achieve scientific breakthroughs or develop new solutions to societal problems. Projects are often required to address themes relevant to national policy objectives. However, within the parameters of those themes, a “bottom-up” approach is typically adopted, whereby applicants are encouraged to propose their own innovative approach to addressing the challenges in question. Whilst the main focus of this type of EIs is on scientific breakthroughs rather than the transformation of HEIs, there is nonetheless an intention that the research will achieve ancillary objectives, such as fostering international collaborations.

The core features of such initiatives can include:

- Formation of new research centres focussed on particular specialisms; in some cases, as a separate legal entity;
- Multidisciplinary approach;
- Pooling expertise from multiple partners;
- Overseen by a broader partnership involving academia, business and other sectors;
- Long-term funding of at least four years (usually longer);
- Considerable share of funding provided by industry partners;
- Implementation of “own” research agenda;
- Focus on ground-breaking research leading to concrete solutions;
- Commercial exploitation of research results and new intellectual property;
- Research taking place in the context of broader collaboration between academia and business, e.g. industrial placements.

3.2.5 Initiatives prioritising the commercialisation of research results

Key features of initiatives prioritising the commercialisation of research results

- Formation of new research centres focussed on particular specialisms
- Often establishing a separate legal entity
- Multidisciplinary approach
- Pooling expertise from multiple partners
- Partnership including academia, business and other sectors
- Long-term funding of at least four years (usually longer)

Key features of initiatives prioritising the commercialisation of research results

- Considerable share of funding provided by industry partners
- Implementation of “own” research agenda
- Ground-breaking research leading to concrete solutions
- Commercial exploitation of results and IPR
- Research in the context of broader collaboration between academia and business

One of the objectives of the new ERA is translating R&I results into the economy in order to support the competitiveness of European industry. Here, the Commission highlights that industrial leadership will rely more than before on pushing further the frontiers of science, mastering deep technologies, and combining digital, physical and biological innovations.³⁸

In this context, several EIs support HEIs to collaborate with the business sector in undertaking research that can generate results with the potential for commercialisation and economic exploitation. These are one specific form of broader co-operation between academia and business.

Initiatives of this type of have been shown to foster extensive collaboration between academia, industry and other sectors had been fostered. This collaboration very often results in the creation of new intellectual property, which has then been taken forward by the research and development functions of the participating companies. Some EIs have also been successful in stimulating spin-off enterprises. At the same time, the limits to commercial exploitation of research results should be noted. Most often, the EIs have supported the development of patents, prototypes, new technologies, etc. rather than final products. Thus, companies participating in or linked to supported projects or partnerships typically have to develop research outputs further in-house before they can be launched as marketable products and services. Moreover, the beneficiaries of EIs have to take into account EU state aid rules when undertaking research with potential commercial benefit.

3.2.6 Initiatives supporting individual researchers

Key features of initiatives supporting individual researchers

- Funding awarded for research led by named individuals
- Some target experienced researchers of proven high calibre
- Some target early career researchers
- Individuals are typically hosted or employed by an HEI, research organisation or private sector employer
- Independence of the Principal Investigator

³⁸ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A new ERA for Research and Innovation; COM/2020/628

Key features of initiatives supporting individual researchers

- Research projects tend to be innovative or high-risk
- Research often focussed on societal or economic impact
- Higher value and longer duration than traditional scholarships and bursary schemes
- Indirect support for researcher careers through better research opportunities and better possibilities to access international programmes (rather than direct support, such as training or reform of career assessment)

Some EIs provide grants directly to individual researchers, albeit hosted by an HEI or other body. They typically involve a degree of innovation or high risk, which distinguishes them from “traditional” scholarship and bursary schemes support individual researchers without focussing on the kinds of transformation promoted by the ERA. However, most EIs support researchers as part of a wider package of support for research excellence (as evidenced in the five other models described above) rather than as the sole or primary aim.

EIs supporting individual researchers may support experienced Principal Investigators or early-career researchers or both. Those supporting experienced Principal Investigators tend to focus more on stimulating ground-breaking research and place less emphasis on supporting the career of the researcher. In contrast, EIs supporting early-career researchers aim both to support the career development of the researcher and to support research leading to breakthroughs and the development of new solutions to societal challenges or business needs. Such programmes go beyond traditional bursary and scholarship schemes by offering more stable employment conditions for researchers. Funding offered by EIs supporting Principal Investigators tends to be of higher value and longer duration than funding offered by early-career researchers, given the greater emphasis on stimulating ground-breaking research.

3.3 How do initiatives select and review excellence?

Through their evaluation criteria and peer review systems, EIs articulate particular concepts of excellence, which then drive the allocation of funding and thus institutional practice in research and innovation. Whilst these concepts vary, a number of common features of selection can be identified.

- **Credibility and the capability of the applicants:** EIs typically assess the capability, relevance and experience of both the research team and the applicants institution(s). Criteria relating to individual researchers tend to be more consistent, i.e. based on publications and bibliometric indices, previous grants obtained and the results of such research. Scientific and institutional achievements are often assessed using international standards and current rankings, and in some cases the extent to which research-oriented teaching is implemented,
- **Adequacy and the feasibility of the project:** this typically considers the quality and quantity of human resources, as well as timescale and budget.
- **Nature, scope, volume, coherence and effectiveness of cooperation with project partners.** As many EIs aim to foster cooperation in research, either among HEIs or with the non-academic sector, funding bodies may be interested in the methods of organising research activities and cooperation between the partners, including across disciplines and at the international level (if relevant).

- **Broader strategy for institutional transformation:** in some cases, funding bodies assess the coherence and the effectiveness of the broader strategy for transformation, covering issues such as the cooperation structure, added value of the proposed measures for each applicant university and for the consortium as a whole, the strategic orientation and long-term sustainability of the consortium's governance, capacity for innovation, long-term capacity for institutional renewal, and attraction of world-leading researchers through a joint (if appropriate) strategy of appointment and recruitment as well as staff development.
- **Excellence of the research project(s):** EIs supporting research projects typically include evaluation criteria assessing the presentation of the project, such as the research question, research hypothesis, objectives and methodology. EIs promoting excellence in institutional development, such as the creation of Centres of Excellence, tend to assess the concept, the planned programme, the supporting structures, and the long-term development plan. Applicants often had to demonstrate the relevance, the novelty and the potential for ground-breaking results and impact.

In addition to these generic criteria, some EIs explicitly include the specific areas of institutional change highlighted by the ERA.

- **Research addressing societal challenges:** where relevant, EIs generally require applicants to present a dissemination plan with the view to evaluating the quality of the knowledge transfer. In some cases, applicants have to demonstrate the societal relevance and applicability of the planned outputs, or the extent to which their project aligned with national strategies.
- **Researcher skills, training and career development:** selection criteria sometimes promote institutional change of this type by recognising outstanding training for PhD and Postdoctoral researchers or the recruitment of PhD students to carry out research. Some EIs also recognising the targeted promotion of young talent and the support of early career researchers and their academic independence, as well as gender equality and equal opportunities in general.
- **Academia-business cooperation:** several EIs include criteria relate to the development prospects of sustainable cooperation between university and non-university research entities. This can include efforts to strengthen industry/private sector through collaborative efforts with the public research organisations, by enabling the transfer of research findings and know-how to the private sector and by stimulating entrepreneurial activities within the public research institutions.
- **Mainstreaming open science practices:** some EIs have incorporated the DORA declaration into their selection criteria by taking into account types of research outputs beyond traditional bibliometrics and requiring applicants to generate Open Access outputs and respect FAIR principles in the implementation of their activities.
- **Engaging citizens in research and innovation:** tin a few cases, the EI selection process involves an assessment of plans for knowledge transfer and communication to the broader public. However, these have tended to be the exception, with most EIs tending not to include selection criteria related to this area of institutional change.
- **Sharing capacities, resources and infrastructures:** some EIs include "structure management" as one evaluation criterion, whilst others recognise the quality of physical research facilities or a commitment to modernise equipment.

3.4 Distribution of excellence initiatives across the EU

Amongst the EIs analysed by the study, some patterns emerge in their distribution across the EU.

- **The most common delivery mechanism is grants for partnerships or collaborative alliances.** This is very often a requirement of EIs supporting centres of excellence, which typically feature some kind of partnership or consortium approach. Less commonly, EIs provide grants for specific projects, institutions or individual researchers. However, where assessment frameworks are used, these are the most comprehensive, as they tend to apply across all HEIs involved in research.
- **The vast majority of EIs address multiple ERA principles.** The research identified that 20 initiatives correspond to two ERA principles, while 14 initiatives correspond to three principles. In total, 34 initiatives are associated to two or three ERA principles. The remaining initiatives are distributed as follows: four initiatives are associated to one ERA principle, seven to four principles, three to five principles, and two to all the ERA principles.
- **Research addressing societal challenges is the ERA principle most commonly addressed by excellence initiatives.** Whilst most EIs address multiple ERA principles, this suggests that national governments not only see the potential for research activities of HEIs to address societal challenges – and thus contribute to national policy objectives – but also the need for HEIs in general to be transformed in this way.
- **Open science and citizen engagement are primarily prioritised by those Member States categorised as Innovation Leaders.** This suggests that national policymakers perhaps see these ERA principles as secondary to other principles. Indeed, EIs in countries featuring HEIs with less R&I capacity tend to promote the specialisation, aggregation and internationalisation of the sector. Once progress has been against these objectives (and HEIs have thus reached a certain level of capacity), it may be that policymakers are more open to prioritising support for open science and citizen engagement.
- **The promotion of collaboration with other sectors is important to Member States at levels of innovation performance, but particularly the Emerging Innovators and Moderate Innovators.** To a certain extent, it may be that EIs in such countries are “pump-priming” such collaboration from a relatively low level. In contrast, cross-sector collaboration may already be more developed in the Innovation Leaders and Strong Innovators; whilst it remains essential to R&I, it perhaps does not require the same level of prioritisation being already embedded in HEIs’ strategies, processes and cultures.
- **EU funding is often crucial to the implementation of EIs in Member States categorised as Moderate Innovators and Emerging Innovators.** Such countries tend to receive more funding from EU Structural Funds than other countries. In some cases, they prioritise the transformation of the R&I dimension of their HEIs as part of broader regional development and competitiveness strategies.
- **Member States categorised as Innovation Leaders and Strong Innovators have a longer history of investing in R&D and promoting excellence in the same excellence initiatives.** EIs in some of these countries date back to the early 2000s or even the 1990s, whereas, among the Emerging Innovators, no such initiatives were noted before 2015.

4. EU SUPPORT FOR RAISING R&I EXCELLENCE THROUGH EUROPEAN UNIVERSITIES

The European University Initiative (EUI) supports the emergence of “European Universities” consisting of alliances of universities and higher education institutions (HEIs) drawn from different geographical areas of the European Union, sometimes also including associate partners from beyond its borders.³⁹ Calls for proposals under Erasmus+ were launched in 2019 and 2020, which results in 41 alliances receiving funding to develop systemic and sustainable cooperation between their members, focused on education objectives such as joint degrees and enabling mobility within alliances for both staff and students.

Building on this and following calls for proposals under Horizon 2020 ‘Science with and for Society’ (SwafS) in 2019 and 2020, EU grants of up to EUR 2 million were offered to 39 of the 41 European University alliances to implement institutional changes that would develop their research and innovation capabilities, as individual HEIs and collectively as alliances. The funding supported the development and implementation of joint strategies and action plans, where possible in connection with other EU or national funding sources. The capabilities targeted by the funding related to six ‘transformational modules’ (TMs).

The experience of the Horizon 2020 support for institutional transformation can inform future programme initiatives as part of the transformation agenda under the ERA, potentially leading to a joint funding approach for strategic institutional cooperation of universities, as far as possible aligned with Erasmus+ support for the EUI. The Commission is currently testing a competition for funding institutional change in alliances of HEIs along ERA priorities as well as joint research activities under a ‘European excellence initiative’ call in Horizon Europe WIDERA, with a centre of gravity on widening countries.

With this in mind, this section summarises the activities undertaken by the alliances with the support for Horizon 2020 and impacts arising from those activities. A more detailed analysis of the support is provided in the Analytical Report published as part of this study.⁴⁰

4.1 Activities

Activities funded by the grants related to six ‘transformational modules’, as described in the sub-sections that follow.

4.1.1 TM1: Developing shared R&I strategies and roadmaps

This TM involved alliances of HEIs working to develop a common research and innovation agenda, identifying specific topics for collaboration along with accompanying action plans to put these strategies into practice. The evaluation found that a substantial majority of HEIs have made progress on both an overall R&I strategy and in subsequent and related R&I activities as a result of their participation in an alliance.

Around two thirds of HEIs in these European University alliances responding to the online survey have developed an R&I strategy (67%), with nearly all of these (65%) also having developed this with other alliance members, often involving external stakeholders though with different degrees of intensity. These R&I strategies have allowed alliance members to make

³⁹ The term ‘alliance’ is used throughout this report as a shorthand denomination for ‘European University’.

⁴⁰ Tetra Tech with CSES (2023), Assessment of the Horizon 2020 support to the European University Initiative:

Analytical report prepared within the study “Towards a European Excellence Initiative

further significant advances including developing new partnerships, initiating R&I activities and making new applications for funding or resources.

Engaging researchers in capacity-building projects has often been a challenge. However, the evaluation has identified various examples of good practice. A common theme in all these examples is linking the development of joint research strategies with funding opportunities for researchers, or at least the future prospect of such opportunities.

4.1.2 TM2: Sharing capacity, infrastructure and resources

Sharing infrastructure and resources within alliances covers both large-scale infrastructure such as instruments or laboratories, research services and human resources including research support staff. Survey results on TM2 indicate good progress in this area stemming from the HEIs participation in an alliance, especially regarding the development of plans with other universities on sharing research infrastructure.

However, the evidence suggests this progress reflects an initial approach to collaboration up to this point (e.g. granting access to HEIs respective research infrastructure) rather than a more ambitious approach entailing a strategic assessment of requirements across the alliance. The latter could involve, for instance, some members specialising only in particular assets and relying on other members HEIs to provide other infrastructure (rather than investing in this themselves) – but this has not yet materialised in any alliance.

4.1.3 *TM3: Strengthening researchers' careers, including through gender equality plans*

TM3 focuses on the aim of nurturing and rewarding research talent and giving researchers the opportunity to pursue career paths across their alliance. The survey results indicate collaboration has had a significant positive influence in developing an HR strategy, developing equality, diversity and inclusion plans and helping revise frameworks for research assessment for around a third of all participating HEIs, and has provided lesser (but still valuable) support to around another half. The results also suggest participation in an alliance has at times added value in helping develop support structures for female researchers – but only for a small number of participating HEIs.

4.1.4 TM4: Reinforcing cooperation in R&I with other sectors

TM4 aims to help alliances reinforce cooperation with non-academic sectors, especially academia-business collaboration, and to promote the use of academic outputs for the benefit of society.

There is good evidence that the R&I grants have helped to enhance cooperation between universities and wider innovation ecosystems, though the scale of impact from this is not easy to judge. Examples include initiating or enhancing cooperation with national, regional, and local authorities, extending cooperation to R&I in the context of existing city twinning arrangements, and strengthening relations with businesses and other stakeholders through new advisory boards with business expertise. Several alliances have also created new tools to support such cooperation, including databases of external partners and researchers and other IT applications that promote interaction among innovation system stakeholders.

4.1.5 TM5: Transition to knowledge- and digitally-driven HEIs conducting open science

TM5 aims to support alliances in moving towards a more open and collaborative way of undertaking research and sharing findings, including by developing and implementing strategies for open access and research data management. The evidence indicates the funding has supported substantial progress across different capabilities relating to open science and digital transformation. For instance, nearly all alliance members have already developed or are developing an open science policy for research outputs. Again, the benefits

have been most significant for around a third of alliance members, with a further half indicating collaboration has been valuable although not transformative.

4.1.6 TM6: Embedding citizens and society in R&I

TM6 aims to ensure that academic work is publicly engaged, and that research is socially accountable and acceptable, increasing its potential to address societal needs. Survey results indicate that the HEIs responding to the survey have made significant progress in a range of areas relevant to TM6, with many having either created an institutional arrangement to support engagement with citizens or end-users or started to develop one.

4.2 Impacts

As noted earlier, the aim of the Horizon 2020 funding for the alliances was to support institutional transformation in line with the ERA. Whilst the level of funding is low compared to the ambitions of the initiative, the evidence demonstrates some transformational impact for the supported alliances and their members.

Around one third of alliance members reported that the Horizon 2020 funding had the potential to promote significant transformation, if activities are continued. On average, 33% of the 117 survey respondents said R&I collaboration within their alliance has helped their HEI advance ‘very significantly’ or ‘quite significantly’ (the figures range from 28% to 37% for different transformational modules). The most significant areas of impact (for which more than 50% of HEIs reported that collaboration was “very significant” or “quite significant”) were: inventories and plans for sharing infrastructure, new partnerships for R&I, new funding applications, entrepreneurial skills training, initiatives to support engagement with citizens, an over-arching R&I strategy, activities to transfer academic knowledge into policy making, and open science skills training.

HEIs with well-developed R&I capacities and in strong national policy contexts tended to gain least benefit from the Horizon 2020 funding in terms of institutional transformation. Around half of alliance members reported that the funding had helped their own efforts but was not likely to be transformational. For around one tenth of HEIs, participation in an alliance was making only a limited contribution to their efforts to enhance R&I capabilities. These HEI still gained benefits from participating but those benefits were concentrated in only a small number of TMs. These two groups, particularly the latter, tended to be institutions whose own strategies and national policy contexts had already created a significant impetus towards developing R&I capabilities

An important caveat is that for a substantial proportion of cases outputs from collaborative work are still in development rather than complete. This underlines that important progress has been made, but also that alliances are still in the early stages of the transformative process. Where advances have been made, these can best therefore be understood as providing good foundations for future transformation. For instance, while there are examples of alliance members obtaining new research funding as a result of collaboration, this is not yet widespread across all alliances.

EU funding has supported transformation of HEIs in all countries, but has been most effective in countries with lower levels of R&I intensity. Indeed, transformational benefits of the funding have been greatest for HEIs in countries classified as Widening Countries under Horizon 2020.⁴¹ In comparison, some 30% of HEIs in the non-Widening Countries reported that collaboration helped them quite significantly or very significantly. Thus, the

⁴¹ Widening countries are those with low participation rates in the EU Framework Programmes for Research and Innovation (Horizon Europe, Horizon 2020 and their predecessors).

Horizon 2020 funding has promoted excellence but has had a greater impact on objectives related to “widening”.

Evidence from the research suggests that alliances that adopt a broad transformation agenda advanced further in developing their R&I capabilities than those that focus on one particular area of transformation. The experience of alliances thus suggests that performance against the different areas of institutional change within the ERA is inter-related, i.e. effectiveness in one area tends to support high performance in other areas. In this sense, the ERA principles are inseparable and together form a coherent whole.

Notwithstanding this, a specific focus on “sharing capacity, infrastructure and resources” (TM2) can prove effective for alliances. Of the HEIs whose alliance had adopted a specific focus on this TM2, 46% reported that collaboration had helped them advance “very significantly” or “quite significantly”, compared to 27% of non-thematic alliances. The reasons for this are not very clear, but it may be that focusing on a few thematic areas increases the relevance of other alliance members’ infrastructure and resources. It may also be the case that HEIs with well-developed R&I capabilities can still gain considerable benefits from sharing capacity, infrastructure and resources, such as efficiency savings from economies of scale or synergies arising from complementary expertise.

Smaller HEIs benefit substantially more from collaboration than larger ones. This was the case for TM1: Shared R&I strategies, TM3: Strengthening human capital, TM4: Co-operation with other sectors and TM5: Knowledge- and digitally-driven HEIs/open science (but not for TM2: Sharing capacity, infrastructure, resources, or for TM6: Embedding citizens and society).

Support for institutional transformation can enhance cooperation between HEIs and their wider innovation ecosystems. Whilst the main focus of the EU funding was on collaboration within the alliance, the evidence shows that the resulting institutional transformation also helps HEIs to collaborate outside the alliance. Reported benefits include enhanced cooperation with national, regional, and local authorities, extending cooperation to R&I in the context of existing city twinning arrangements, and strengthening relations with businesses and other stakeholders through new advisory boards with business expertise. Several alliances have also created new tools to support such cooperation, including databases of external partners and researchers and other IT applications that promote interaction among innovation system stakeholders.

The pilot nature of EU support has meant that most benefits arise only to those HEIs within the supported alliances with only limited impacts on the wider HE sector. For example, there are no significant signs that the funding has yet had any impact on R&I policy more widely. Of course, this was to be expected given the levels of funding available and the small proportion of Europe’s HEIs that were involved. Nonetheless, there is increasing awareness of and interest to participate in alliances, as evidenced by the expansion of the existing alliances (i.e. new members) and the growing number of applications and alliances. Moreover, this interest has been supported by some instances of Member States providing some additional funding to their own universities to participate in alliances (often for the education and R&I elements together).

The experience of alliances demonstrates the long timescales required for institutional transformation to fulfil its potential, given the inherent challenges involved. These include the need for commitment at levels to cultural and institutional transformation, as well as for longer-term, secure funding. In the transnational context, collaboration faces the challenges posed by different systems, legal and regulatory contexts, national policy objectives and language barriers. Moreover, the potential for transformation has been weakened by the siloed nature of the two main funding streams (Erasmus+ and Horizon), and the different administrative rules and timescales associated with each.

5. Conclusions and recommendations

Drawing on this evidence and findings presented in this report, this section offers conclusions on the R&I performance of HEIs in relation to the areas of institutional change within the ERA, as well as on current Member State and EU support for such institutional change. Based on those conclusions, we then offer some recommendations to inform the design of a possible future European Excellence Initiative (EEI).

5.1 Conclusions

- 1. HEIs across the EU are undergoing processes of institutional transformation of their R&I dimension in line with the principles set out in the new ERA.** This process of transformation is necessary for them to address the challenges they face and for them to play their part in addressing the deep societal, ecological and economic challenges facing Europe
- 2. In general, performance against the different areas of institutional change within the ERA is inter-related, i.e. effectiveness in one area tends to support high performance in other areas.** In this sense, the ERA principles are inseparable and together form a coherent whole. For example, the extent to which open science is practised and collaborations are undertaken with other sectors depends in part on the metrics and criteria by which researchers are assessed and rewarded. Similarly, citizen engagement and broader societal engagement tends to be more meaningful and effective when undertaken in the context of challenge-led research addressing societal challenges.
- 3. The levels of performance within the areas of institutional change within the ERA reflects national policy frameworks but also the strategic commitments and choices of HEIs themselves.** Clearly, some national contexts are more favourable than others in terms of support offered by national policies, systems of research funding and assessment and excellence initiatives, as well as the supportiveness of the innovation ecosystem. Nonetheless, whatever their national context, HEIs can raise their performance against the areas of institutional change within the ERA by making strategic commitments accompanied by concrete actions.
- 4. Excellent performance in challenge-led research addressing societal challenges requires a broader transformation of HEIs rather than simply the adoption of a new strand of research activity.** This implies HEIs being open to revising their organisational structure, approach and working methods to become more focused on pursuing goals and co-developing solutions.
- 5. Excellent performance in sharing of capacities, resources and infrastructure is often a by-product of pursuing other objectives rather than an end in itself.** Those HEIs that are most effectively sharing of capacities, resources and infrastructure tend to be doing so in the context of efforts to increase challenge-led research, interdisciplinary research, internationalisation, academia-business collaboration and citizen engagement. The pursuit of such objectives typically requires and involves the sharing of capacities, resources and infrastructure as a matter of course. Nonetheless, sharing can be enhanced by a strategic commitment by HEIs accompanied by access policies and practical actions, such as support for researchers and departments in developing external collaborations.
- 6. Whilst excellent performance in strengthening human capital is very strongly influenced by national contexts (not least, systems of allocating funding), there is scope for HEIs to raise their own performance within the parameters set by**

their national contexts. A better environment for researchers to operate and develop their careers can be introduced by a strategic commitment to more responsible use of metrics and the application of a broader set of criteria to evaluate and reward researcher performance. Such strategic commitments should be accompanied by appropriate actions, such as training and support for employability and career development. Reform of human resource strategies in line with the European Charter and Code can play a key role here.

7. **Excellent performance in academia-business co-operation is largely determined by the degree of clarity over the purpose of such co-operation.** The quantitative and qualitative data show that such co-operation can take very different forms that contribute to different objectives. Co-operation can support academic research as evidenced, for example, in high rates of professional publications or co-publications with industrial partners. Alternatively, HEIs can serve as “suppliers” of research to industry for which they receive income. In other cases, co-operation with other sectors could be focussed on benefits to researchers (and students), for example, through enriching doctoral programmes, supporting researcher mobility and employability or enriching the educational offer. Finally, the most intensive and fruitful co-operation is perhaps where academia and business share a challenge-led research agenda to develop new solutions to societal challenges and/or create new intellectual property with potential for commercial exploitation.
8. **Excellent performance in mainstreaming open science is heavily influenced by choices made in relation to other institutional areas; nonetheless, progress can be made by a strategic commitment supported by practical actions.** Most notably, where HEIs prioritise research for or with industry or other research leading to results with potential for commercial exploitation, the need to protect intellectual property may influence the importance placed on open science practices. Similarly, where HEIs pursue funding streams that reward narrow quantitative metrics relating to publications, they might not be incentivised to practice open science. Nonetheless, whatever the context, the mainstreaming of open science can be enhanced by HEIs choosing to make a strategic commitment and undertaking supporting actions, such as providing information and training for staff or operating repositories that are available to wider audiences.
9. **Excellent performance in engaging citizens in research and innovation requires a strategic commitment by HEIs and depends on the degree to which HEIs are embedded in the wider community or innovation ecosystem.** There are instances of ad hoc research projects that effectively engage citizens. However, more commonly, effective engagement takes place where HEIs have embedded public engagement in their institutional mission and strategy and built their institutional mission around the needs of the community (or communities) that they see themselves as serving (whether local, regional, sectoral, or other). Citizen engagement can enhance research but is typically most effective where it provides mutual benefit and where it also features in an HEI’s broader mission, including education.
10. **The excellence initiatives introduced by Member States to support research excellence and the transformation of HEIs serve as exemplars that can inspire similar efforts by other Member States.**

These include:

- Support for centres of excellence based on specialisation, aggregation of expertise and capacity, internationalisation, and in some cases, transformation of HEIs with modest research capacity, and integration into local, regional or sectoral ecosystems.

- Initiatives promoting institutional transformation of HEIs and including a broader package of support beyond funding for research, such as promotion of internationalisation, capacity building and enhancing international competitiveness
 - Frameworks for assessing and rewarding research performance, which operate as a systematic and comprehensive process for assessing and rewarding research performance of HEIs and provide a robust and detailed methodological approach to the assessment process for research departments and institutions across the country.
 - Initiatives supporting research projects promoting scientific breakthroughs or addressing societal challenges, particularly through interdisciplinarity approaches and collaboration with other sectors and international partners.
 - Initiatives prioritising the commercialisation of research results, which foster extensive collaboration between academia, industry and other sectors and very often result in new intellectual property, which can then be taken forward by the research and development functions of the participating companies.
 - Initiatives supporting individual researchers, which differ from traditional bursary or scholarship schemes by their degree of innovation or high risk, their focus on research leading to breakthroughs and the development of new solutions to societal challenges or business needs, and their provision of more stable employment conditions and career development opportunities, particularly for early-career researchers.
11. **The focus, design and scale of excellence initiatives varies across Member States, which provides an opportunity for peer support, mutual learning and exchange of best practice.** Member States with the strongest innovation performance tend to have the longest-established and best-funded EIs, often focussed on the very highest-performing HEIs. In contrast, Member States with weaker innovation performance tend to focus on building capacity and internationalisation of their HEIs, often from a lower base and are more dependent on EU funding, such as from the Structural Funds. This diversity of EIs makes it possible for Member States to learn from experiences elsewhere and support each other to mutual benefit.
 12. **Regardless of their level of innovation performance, all Member States feature HEIs demonstrating excellence but also weaknesses in one or more of the ERA areas of institutional change.** This suggests a need for EU-level policy support for Member States to set up or strengthen national excellence initiatives.
 13. **The criteria and processes by which national or regional excellence initiatives (EIs) select and review research activities and institutions can serve to promote or limit excellence in the areas of institutional change within the ERA.** Whilst the criteria and processes vary widely in line with the diversity of EIs, mainstreaming open science practices and citizen engagement tend to feature only in EIs that specifically promote them, rather than being mainstreamed across most or all EIs. In contrast, better support for researcher careers and co-operation with other sectors tend to be more routinely included (although not universally), even in EIs that that are not primarily focussed on these areas.
 14. **The experience of the European University Initiative shows the potential for transnational alliances to support the institutional transformation of HEIs in line with the ERA.** Although impact has been uneven, the majority of HEIs

participating in the alliances supported by Horizon 2020 report positive benefits in relation to at least one and very often multiple areas of institutional change.

15. **Support for institutional transformation is more often effective where it addresses multiples areas of changes within the ERA rather than a single one.** The experience of the European University Initiative - and the stronger performance of alliances that did not limit themselves to one area of institutional change - reinforces the point made above that the ERA principles are inseparable and together form a coherent whole.

5.2 Recommendations

Based on the conclusions just presented and the evidence and findings presented in the previous sections, a number of recommendations are offered in relation to policy support for Member States and the development of a European Excellence Initiative.

1. **Policy support for Member States should relate to whole systems and overall approaches of Member States rather than just to specific areas of institutional change.** To a large extent, the ERA principles are collectively coherent and inseparable from each other; effective performance in area tends to influence and depend on effective performance in other areas. Thus, policy support will be most effective if it enables Member States to transform their policy frameworks and instruments across all areas of the ERA, not just individual ones.
2. **Policy support should facilitate mutual learning and peer review between Member States both within and across the different EIS categories.** As shown, countries within the same EIS categories often share some similarities in terms of the strengths and weaknesses of their national innovation ecosystems and the performance of their HEIs. Thus, mutual learning between Member States in the same EIS category can help them address common challenges and share solutions that are likely to work in their own particular context. At the same time, there is scope for mutual learning between Member States in different EIS categories, as there can be pockets of excellence in all countries (even in the Emerging Innovators) from which all can learn. Moreover, some aspects of excellence will have universal applicability and thus merit sharing between all or most Member States.
3. **Policy support should facilitate mutual learning and peer review in relation to excellence both at Member State level and institutional level.** As shown in this report, the national policy and R&I ecosystem context largely sets the parameters as to the levels of excellence that will be possible for HEIs. Nonetheless, the choices made by individual HEIs in terms of strategy and actions can serve to raise their performance within those parameters. Thus policy support and mutual learning should look to identify and disseminate good practice at both levels.
4. **Any EU-level pilot action will need to promote the ERA principles as a whole, not individual ones.** Again, as noted above, to a large extent the ERA principles are collectively coherent and inseparable from each other. Thus, an EU pilot action will be most effective in promoting and disseminating excellence at individual level if HEIs (and alliances thereof) are supported to transform themselves in line with all principles through strategic commitments and practical actions.
5. **Any EU-level pilot action could test new criteria and metrics for assessing institutional performance against the ERA.** The research for this study has shown that existing quantitative metrics are helpful but do not adequately cover all areas of

institutional change within the ERA. Thus a new framework could be tested, perhaps mirroring the mechanism used to monitor Member State performance against the ERA.

6. **The European Excellence Initiative should encourage and facilitate take-up and use of relevant existing EU tools.** Whilst the ERA provides greater coherence by bringing together all the areas of institutional change, a number of tools already exist at EU level to support transformation in the individual areas. Thus, both the policy support mechanism and the pilot action could, amongst other objectives, encourage and facilitate take-up and use of tools such as the European Open Science Cloud, the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers, and the HRS4R Excellence in Human Resource Support for Research Award.

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The new European Research Area sets out the intention to strengthen the research and innovation (R&I) dimension of universities through a comprehensive transformation agenda, empowering universities to develop in line with the ERA. In support of this agenda, the study 'Towards a European Excellence Initiative' undertook research into the state of excellence in universities in the EU, mapped Member State initiatives supporting R&I excellence in universities, and assessed EU support for excellence through the European Universities Initiative. This report presents policy lessons emerging from the research and offers recommendations relating to the design and implementation of a possible European Excellence Initiative for the R&I dimension of universities.

Studies and reports

