euacde COUNCIL FOR DOCTORAL EDUCATION

Doctoral collaboration with society

Drivers, success factors and ways forward

EUA-CDE Thematic Peer Group Report

Chair: Jari Hämäläinen, Lappeenranta–Lahti University of Technology, Finland

Coordinators: Simon Marti & Ana-Maria Peneoasu

June 2026

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Foreword

Doctoral education across Europe is undergoing a significant transformation. Universities are increasingly expected not only to advance excellent research and train highly skilled researchers, but also to contribute more visibly to societal development and economic renewal. This Thematic Peer Group report, "Doctoral collaboration with society", responds directly to these expectations and to the evolving role of doctoral education in Europe.

The work of the 2025–2026 European University Association Council for Doctoral Education (EUA-CDE) Thematic Peer Group is grounded in a shared understanding that doctoral education is fundamentally research-based and anchored in academic freedom, while simultaneously embedded in a broader societal ecosystem. Across Europe, doctoral candidates pursue careers beyond academia, and collaboration with public authorities, industry, non-profit organisations and other actors has become a normal feature of doctoral education.

At the same time, it is essential to reaffirm what defines doctoral education. It can be understood as building on three interconnected layers. At its core lies knowledge of the discipline, ensuring deep expertise and scientific contribution in a field. This is complemented by researcher skills, such as research methodology and ethics. A third layer, transferable skills, supports doctoral candidates in applying their expertise across contexts, including collaboration, leadership and project management.

Numerous themes discussed in this report align closely with national doctoral education initiatives and good practices at universities of TPG members. The report emphasises the importance of cooperation and interaction, flexible doctoral pathways, high quality supervision and predictable structures that support timely completion and researcher well-being. These principles are not country specific but reflect broader challenges and provide useful reference points for institutional development across diverse higher education systems.

A central message emerging from this report is that collaboration beyond academia takes multiple forms. These include joint supervisions, internships, mentoring, shared research infrastructures and long-term strategic partnerships. Successful collaboration requires clarity of roles, realistic expectations and trust between partners. Above all, doctoral candidates must remain at the centre of these arrangements. Collaboration should strengthen their research, broaden their competences and support diverse career trajectories. The report also highlights the growing importance of supervision and institutional support structures. Collaborative doctoral projects place new expectations on supervisors and universities alike. Institutions must recognise and resource this work appropriately, and ensure that supervision teams are balanced and competent. In addition, when a major part of research is conducted outside of a university, doctoral candidates need to be provided with sustained access to the academic community.

As chair of the Thematic Peer Group, I would like to thank all members, contributors and the EUA-CDE Secretariat for their openness, commitment and willingness to share experiences, challenges and good practices. The diversity of institutional and national contexts represented in the group has been a particular strength. We hope that this report will support universities in developing doctoral education that is academically rigorous, socially engaged and responsive to the evolving needs of Europe and its societies.

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1 Introduction

1.1 Context and objectives of this Thematic Peer Group

This report covers the work and expertise of the 2025–2026 EUA-CDE Thematic Peer Group (TPG) on "Building bridges beyond academia". The focus of the TPG was to explore the topic of doctoral collaboration with societal actors. Specifically, it examined the ways doctoral candidates and doctoral education engage with partners beyond academia to co-create knowledge and increase the societal relevance and impact of the doctorate. The report includes the results of related recent EUA-CDE workstreams: the findings on collaboration with society of the two 2025 EUA-CDE survey reports and the results of breakout sessions on collaborative doctorates and European funding programmes during the 2026 EUA-CDE Thematic Workshop in Liège. The survey and the Thematic Workshop provide evidence from the wider European doctoral education community that complements the in-depth perspectives of the TPG members. Thus, the report gives a comprehensive overview of doctoral collaboration with society. As the TPG members are doctoral education leaders at universities, the university perspective is most clearly reflected in this report. However, the TPG also included perspectives of doctoral candidates and societal partners, as representatives of both groups were invited to presentations and discussions. In the case of societal actors, a stakeholder survey provided additional insights.

The activities of the TPG build on previous EUA work on collaborative doctorates in the scope of the DOC-CAREERS projects I and II and the respective reports published in 2009 and 2015.[1] Circumstances have changed since these projects were carried out, given that collaboration with societal partners at doctoral level is more widespread and established today. This offers the opportunity to validate earlier findings and complement them with the insights gained in the context of the TPG. This TPG expanded the scope beyond "industrial doctorates" with the private sector, as was the main focus of the DOC-CAREERS projects. The work of the TPG was open to different forms of collaboration, including collaborative doctorates, mentorships, internships or networking opportunities for doctoral candidates, with a variety of societal partners. The topic of this TPG report also relates to a 2023 OECD report on diverse career pathways for doctoral and postdoctoral researchers.[2] Similarly, two reports published in 2024 and 2026 by CESAER focus on industrial doctorates in engineering fields.[3]

In addition to an expanded scope, two main aspects have changed since the last EUA projects were conducted on the topic. First, while it was already an objective in the early 2000s to initiate more collaboration with society and to catch up with

1 Borrell-Damian, L., 2009, 'Collaborative doctoral education. University-industry partnerships for enhancing knowledge exchange', DOC-CAREERS project (EUA publications, Brussels) and Borrell-Damian, L., Morais, R., & Smith, J., 2015, 'Collaborative doctoral education in Europe: Research partnerships and employability for researchers', report on DOC-CAREERS II project (European University Association, Brussels).

2 OECD, 2023, 'Promoting diverse career pathways for doctoral and postdoctoral researchers', *OECD Science, Technology and Industry Policy Papers, No. 158 (Paris)*.

3 CESAER, 2024, 'Models of engagement for PhDs with non-academic partners' and CESAER, 2026, 'Industrial doctorates: Strengthening Europe's research–industry talent pipelines. Evidence and recommendations from CESAER's 2024–2025 workstream on industrial doctorates. Report dated 31 March 2026'. There is also a wealth of additional scientific literature, which was not systematically reviewed by the TPG due to the practical approach of the work.

other parts of the world where these collaborations were more widespread, the current policy context provides new reasons for increased collaboration with society. Today, it is a key priority at European level to revitalise Europe's economic competitiveness in the world.[4] There is also evidence that Europe needs to revitalise not only competitiveness, but also public–private research and development (R&D) collaboration as such. For instance, in Finland, public–private R&D collaboration used to be one of the strongholds of the research and innovation system but in recent years, it has substantially decreased, according to an EU report.[5] This and similar developments in Europe lead to a renewed interest in and opportunities for closer collaboration between universities and society.[6] As the 2025 EUA-CDE survey shows, universities across Europe estimate that doctoral research and talent already contribute substantially to Europe's competitiveness. However, the findings also indicate that more could be done.

Second, while 20 years ago an estimated 50% of doctoral graduates pursued careers outside academia, the 2025 EUA-CDE survey estimates that this number is now over 70%. This highlights the growing importance of the non-academic career pathway for doctoral education.[7] Already the Salzburg Principles included guidance on the need to prepare doctoral candidates for a labour market that is wider than academia. This advice has become increasingly relevant. At the same time, as this report indicates, universities are navigating a complex environment in terms of collaboration with societal partners. They often need to find a balance between tailor-made solutions and standardised practices that allow scale – and between bottom-up and top-down approaches. There are varieties of initiatives at European and national level that focus on supporting universities in this work. As the report shows, these initiatives also need to strike a balance between creating incentives for collaboration and being overly rigid.

The TPG discussed multiple collaborative models between universities, doctoral candidates and societal partners. These range from doctorates that mainly take place in an academic environment, with occasional exposure to societal partners, to models where doctoral candidates are already working in a non-academic organisation when they start their collaborative doctorate. In this case, they combine their doctoral research at the organisation with doctoral studies and supervision at a university. In the case of collaborative doctorates, it can depend on the sectors of the collaboration partners – a company, public institution or non-governmental organisation (NGO) – and on each individual partner in these sectors whether supervision works well or how smoothly collaboration develops over the course of the collaborative doctorate. Doctoral candidates in a collaborative doctorate navigate the two different environments of a university and a societal partner. They balance their doctoral research and publications with doctoral studies requirements and their role in a real-life work environment.

The EUA-CDE Thematic Peer Groups give members the opportunity to share expertise and experience and to learn from each other. The objective of the TPG report is to provide the wider doctoral education community with insights and good practice examples that can support their institutional initiatives in the area of societal engagement at doctoral level and enhance the preparation of doctoral candidates for labour market opportunities beyond academia.

4 Draghi, M., 2024, 'The future of European competitiveness' (Publications Office of the European Union, Luxembourg), pp. 28–32, and Letta, E., 2024, 'Much more than a market. Speed, security, solidarity. Empowering the Single Market to deliver a sustainable future and prosperity for all EU Citizens' (Brussels), p 7. and: European Commission, 2025a, 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. A Competitiveness Compass for the EU' (Brussels).

5 European Commission Directorate-General for Research and Innovation, 2025, 'Support to Finland on improving R&D collaboration between research organisations and the private sector. Final report' (Brussels), p. 13.

6 Claeys-Kulik, A.-L., Jørgensen, T.E., & Kukuruza, L., 2025, 'Universities and competitiveness. A big picture view on the EU's new policy paradigm and the implications for universities' (European University Association, Brussels), pp. 7–8 and Marti, S., & Peneoasu, A.-M., 2026, 'Policies in doctoral education: navigating geopolitical change and technological acceleration while advancing Europe's society and competitiveness', EUA-CDE 2025 survey report, part II (Geneva), p 27-29.

7 Marti, S., & Peneoasu, A.-M., 2025, 'Doctoral education in Europe today: Enhanced structures and practices for the European knowledge society', EUA-CDE 2025 survey report, part I (Geneva), p. 36.

1.2 TPG methodology

This TPG was constituted following a call for participation in summer 2024, inviting EUA-CDE members to submit applications based on their experiences. The selection of TPG members was determined by their level of tangible experience with the topic, to ensure a balance between sharing experience and learning from each other.[8] EUA-CDE Thematic Peer Groups typically try to include a diversity of university types and professional backgrounds among members. Geographical diversity across Europe is also an objective when TPGs are formed. However, as its composition indicates, interest in this TPG topic was particularly strong in northwestern Europe.

The TPG meetings included peer-learning discussions among group members and exchanges of experiences. Group members focused on their institution's interaction with societal partners. They reflected on the challenges in partnering with these actors and on strategies to overcome possible obstacles. TPG members also took stock of the forms of interaction with societal actors and suggested ways to optimise these partnerships. Between February 2025 and February 2026, the TPG members met during three structured two-day meetings that covered the following topics.

First TPG meeting hosted by OsloMet University (Norway): definition of the scope and work methods of the TPG, identification of drivers for doctoral collaboration, categorisation of societal collaboration partners and of different ways of collaborating. Preparation of stakeholder survey.

Second TPG meeting hosted by EUA Brussels office (Belgium): identification of challenges and success factors for doctoral collaboration. Presentations by and exchanges with societal partners involved in doctoral collaboration and with the Marie Skłodowska-Curie Actions (MSCA) unit of the European Commission on industrial doctorates. Presentation and discussion of institutional good practices of TPG members. Presentation of first stakeholder survey results.

Third TPG meeting hosted by Dublin City University (DCU, Ireland): reflection on ways forward for different stages and actors in doctoral collaborations. Reflection on previous studies on doctoral collaboration with society, especially the 2015 EUA report. Presentations by and exchanges with doctoral candidates in collaborative doctorates and with an expert on the transition to industry regarding hurdles and opportunities for careers beyond academia. Presentation and discussion of institutional good practices of TPG members.

These meetings were complemented by work on the TPG stakeholder survey, which was designed with TPG members to assess the perspectives of their doctoral collaboration partners. In addition, TPG members reflected on, documented and presented their good practices in collaborating with societal partners and selected national initiatives to include in the annex of this report.

The TPG's work focused on three steps: identifying and collecting empirical evidence on the abovementioned topics, discussing and complementing these results based on TPG members' experiences, and contextualising and assessing the findings. As a principle, the main objective of the TPG was not to identify the "best" way of doctoral collaboration. Instead – in the sense of the third Salzburg Principle – the aim was to determine a range of ways forward that have been identified as successful.[9]

8 The list of TPG participants is included in annex 2 of this report.

9 Koch Christensen, K., 2005, 'Bologna seminar. Doctoral programmes for the European knowledge society, Salzburg, 3–5 February 2005. General Rapporteur's Report Professor Kirsti Koch Christensen, Rector of the University of Bergen, Norway'.

The TPG stakeholder survey was open between 7 July and 31 October 2025 and was conducted on a Qualtrics platform. The questionnaire included nine questions. These were primarily multiple-choice questions, with one or multi-option responses, and open-ended questions. The TPG stakeholder survey received 63 valid responses from societal actors in 11 European countries who collaborated – or currently collaborate – with TPG members' universities at doctoral level. Societal actors from Austria, Belgium, Finland, Georgia, Germany, Ireland, Norway, Portugal, Spain, Sweden and Ukraine participated in the survey.

In addition, five experts representing societal partners and the European Commission's MSCA unit, as well as three doctoral candidates involved in collaborative doctorates, were invited to present and discuss their perspectives and experiences. The presentations of the experts from society and the European Commission helped put the discussions in the TPG into context. The presentations of doctoral candidates and an expert on transition to careers beyond academia were included in the report to complement the university perspective. The EUA-CDE Secretariat also conducted an interview with an additional doctoral candidate who is pursuing a collaborative doctorate with a societal partner.

As this TPG was prepared at the same time as the 2025 EUA-CDE survey, it was possible to include questions that were relevant to the work of the TPG. Thus, the qualitative in-depth work and findings from the TPG could be combined with more general quantitative results covering the experiences of 217 universities across Europe. The methodology of the two 2025 survey reports is included in the respective reports.[10]

Regarding terminology, the terms "participants", "respondents", "doctoral education leaders", "universities" and "institutions" are used synonymously to refer to the universities that participated in the 2025 EUA-CDE survey. Similarly, for "non-academic" partners in doctoral collaboration, the terms "societal partners", (societal) "stakeholder" or "actor" are used interchangeably. They include actors from the private sector, such as small and medium enterprises (SMEs) or multinationals, non-governmental organisations or public institutions like government institutions, municipalities, museums or hospitals.

10 Marti, S., & Peneoasu, A.-M., 2025, 'Doctoral education in Europe today: Enhanced structures and practices for the European knowledge society', EUA-CDE 2025 survey report, part I (Geneva) and Marti, S., & Peneoasu, A.-M., 2026, 'Policies in doctoral education: navigating geopolitical change and technological acceleration while advancing Europe's society and competitiveness', EUA-CDE 2025 survey report, part II, Geneva.

2 Universities and doctoral candidates collaborating with society

2.1 Drivers of doctoral collaboration with societal partners

The Salzburg Principles of 2005 identified the labour market outside academia as key for doctoral graduates and therefore attributed great importance to increased offers of transferable skills and intersectoral mobility opportunities for doctoral candidates.[11] The 2009 report on the EUA-led DOC-CAREERS I project highlighted the importance of Salzburg-aligned reforms, with the creation of doctoral programmes and schools seeking to offer greater critical mass, enhanced supervision and widened employment opportunities for doctorate holders in public and private sectors.[12] One main rationale for increased engagement of universities with societal partners that was mentioned in 2009 is closely related to today's policy context on improving Europe's competitiveness. It was stated: "Universities are seen increasingly as playing a pivotal role in strengthening the economic competitiveness of Europe as a global region, based on the knowledge and skills these institutions generate."[13]

However, as noted in the 2015 report of the DOC-CAREERS II project, obstacles remained: "European investment in training of young researchers as future researchers, entrepreneurs and employees to meet the economic and societal challenges facing us remains weak compared to other global regions."[14] According to the experiences of TPG members, collaboration with societal partners has increased in Europe in the last ten years. In addition, the "Align, act, accelerate" report, developed by an independent expert group chaired by former Portuguese Minister of Science, Technology and Higher Education, Manuel Heitor, recommended that MSCA industrial doctorates (and postdoctoral fellowships) should be enhanced and expanded.[15]

Similarly, the 2025 EUA-CDE survey report shows that university leaders think that doctorates already contribute in a significant way to advancing European society and competitiveness. However, they still see opportunities to foster stronger ties with actors beyond academia at doctoral level. They also think that doctoral education could play a bigger role in contributing to Europe's competitiveness if programmes did more to prepare doctoral candidates for careers outside the

11 Koch Christensen, K., 2005, 'Bologna seminar. Doctoral programmes for the European knowledge society, Salzburg, 3–5 February 2005. General Rapporteur's Report Professor Kirsti Koch Christensen, Rector of the University of Bergen, Norway', pp. 2–3.
12 Borrell-Damian, L., 2009, 'Collaborative doctoral education. University–industry partnerships for enhancing knowledge exchange', DOC-CAREERS project (EUA publications, Brussels), p. 4.
13 Ibid., p. 10.
14 Borrell-Damian, L., Morais, R., & Smith, J., 2015, 'Collaborative doctoral education in Europe: Research partnerships and employability for researchers: Report on DOC-CAREERS II project' (European University Association, Brussels), p. 6.
15 European Commission, 2024, 'Align, act, accelerate – Research, technology and innovation to boost European competitiveness' (Publications Office of the European Union, Luxembourg), p. 54.

academic sector.[16] Similarly, a report published by EUA in October 2025 also mentions additional opportunities for universities to make a greater contribution to Europe's competitiveness and outlines the framework conditions required for this.[17]

Today's strategic policy rationale for doctoral collaboration with societal partners remains similar to that described in the early 2000s. However, discussions in the TPG identified a broad range of drivers at institutional level – and from societal partners as well as related to public policies – that explain in a bottom-up and more tangible way why collaboration with societal actors is important and beneficial for all actors involved in doctoral education: it offers valuable opportunities for universities, societal stakeholders and doctoral candidates to enhance their expertise and research-based innovation.

The drivers for universities to engage in doctoral collaboration with societal actors that were identified by the TPG members can be grouped into eleven broad categories.

1. **Access to data and infrastructure:** collaboration is beneficial for universities' doctoral candidates to gain access to data, (research) infrastructure, equipment and expertise in sectors that are not accessible to universities in other ways. For example, collaboration with a pharmaceutical company or a public institution can offer access to unique datasets. Similarly, collaborations with hospitals provide access to patients and clinical environments, which is invaluable for biomedical research and innovation. In some areas, particularly in fast-moving and emerging technologies, such as artificial intelligence (AI) and other information and communications technologies, industry typically is more advanced than universities in terms of infrastructure or processes. Engagement with such partners allows doctoral candidates and supervisors to remain at the cutting edge of developments.

2. **Demand from societal actors** to collaborate with universities and doctoral candidates: actors in the private, non-profit or public sectors approach universities, supervisors or future doctoral candidates to propose collaborative doctorates or other doctoral collaboration activities.

3. **Funding:** collaboration with societal actors can unlock additional funding sources. Collaborative doctorates funded (or co-funded) by a societal partner contribute to strengthening the research intensity of a university.

4. **Synergies and research innovation:** collaborative doctorates can lead to new research questions and scientific approaches, and typically to wider interdisciplinarity, through the co-creation of research topics and the competences and expertise of societal partners. Thus, collaborations can further enhance doctoral research and a university's research activity overall. In addition, partnerships with the non-academic sector ensure that research agendas remain responsive to societal developments. Collaboration enables the transfer of ideas, challenges and questions from society to academia. As a result, research questions are more likely to address current economic, technological and societal needs.

5. **Enhanced labour market opportunities:** societal engagement at doctoral level, including through mentoring, internships and collaborative doctorates, creates opportunities for doctoral candidates and potential future employers to get to know each other. It leads to more realistic expectations and knowledge of the labour market for doctoral candidates and insights into doctoral research for employers. This makes it easier for doctorate holders to enter the labour market and for employers to attract future employees, thus enhancing the labour market for all parties. Closer cooperation between academia and societal partners at doctoral level can also strengthen regional research and innovation (R&I) ecosystems, with positive outcomes for the attraction and retention of research talent. Collaborative arrangements often include networking opportunities, internships or placements, which allow candidates to acquire practical experience before entering the labour market. Such arrangements foster mobility between sectors and contribute directly to employability. Notably, on many occasions, it is the future doctoral candidate who initiates a collaborative doctorate or other doctoral collaboration activities.

16 Marti, S., & Peneoasu, A.-M., 2025, 'Doctoral education in Europe today: Enhanced structures and practices for the European knowledge society. EUA-CDE 2025 survey report, part I' (Geneva), p. 47.

17 Claeys-Kulik, A.-L., Jørgensen, T.E., & Kukuruza, L., 2025, 'Universities and competitiveness. A big picture view on the EU's new policy paradigm and the implications for universities' (European University Association, Brussels), pp. 28–30.

6. **Networking and expertise:** similar and interrelated to the enhancement of regional R&I ecosystems, collaboration with societal partners at doctoral level creates networks between the experts who are involved and leadership. This may occur, for instance, via external supervisors' or mentors' contributions to doctoral education and, in turn, through university supervisors' advice and expertise for societal partners. This enhancement of academic and societal networks can have positive effects for future collaborations between universities and their societal partners.

7. **Increased real-world impact and universities' third mission:** doctoral collaboration with societal partners helps bridge research and practice, enabling early-career researchers to contribute to the translation of research into innovation. The results can generate licensing revenue from intellectual property rights for researchers and/or universities and societal actors. The experience is enriching and meaningful for doctoral candidates, supervisors and all parties involved. These effects strengthen the regional economy and enhance the public good.

8. **Improved public perception of science:** public opinion of research tends to be more favourable when scientific work is perceived as relevant and useful for society. By bridging the gap between theoretical inquiry and practical application, joint partnerships demonstrate the tangible benefits of research for society.

9. **Return on investment for doctoral candidates and attractiveness of doctoral programmes:** by showcasing their collaboration with societal actors, universities can demonstrate to future doctoral candidates the tangible impact of doctoral research. Highlighting that a doctoral degree opens multiple career paths shows the value of doctoral programmes for a labour market that is wider than academia. Doctoral education represents a significant investment of time and resources for candidates, universities and funders. Institutions therefore seek to demonstrate that this investment brings clear benefits, both in terms of individual career outcomes and broader societal impact. When employers recognise and reward the advanced competences developed during a doctorate, the overall added value of doctoral education becomes more evident.

10. **Enhanced institutional prestige:** the reputation of a university is closely linked to the achievements of its doctoral alumni. Doctoral graduates who pursue successful careers beyond academia become ambassadors for their institution. Their professional visibility enhances the institution's prestige and may lead to new partnerships that can potentially fund new research.

11. **Public policy incentives:** finally, and linked to the political rational for collaboration between academia and society at doctoral level, public research funding policies can incentivise collaboration. Given the broad opportunities for collaboration with societal actors, these investments can enhance or enable collaboration with SMEs, NGOs and smaller public institutions that might otherwise not be possible, thus enabling the doctorate to contribute to the public good. The good practices and national initiatives presented by TPG members in the annex offer insights into examples of such policy incentives offered by governments or by national research funding institutions. An example of the former is the policy of the Belgian region of Flanders to support and incentivise collaboration with societal partners.[18] As the overview of good practices and national initiatives shows, there are specific national funding schemes to support collaborative doctorates in Finland, Ireland, Norway, Portugal and the UK.

18 Cf. University of Hasselt in the 'Good practices provided by TPG members' annex.

2.2 Diversity of societal partners for impactful doctoral collaboration

By definition, doctorates constitute original research. The new knowledge that is created can be of great value to sectors of society and the economy. As seen above, many motivations drive collaboration with societal partners at doctoral level. These collaborations include a combination of advantages that are specific to doctoral collaborations, such as the knowledge and curiosity-driven research of a doctoral candidate, supported by a university and the supervisors, combined with the resources of the collaboration partner, which can include data, infrastructure and expertise that are not available to doctoral candidates who conduct their research exclusively in academia. This win-win combination can continue to yield benefits long after the doctorate when the new knowledge is valorised – and especially when the doctoral graduate continues their career – in academia or in other sectors of society. Thus, collaborative doctorates can offer immense opportunities and benefits for the societal partners and for society in general.

There is evidence that the competences of doctoral graduates are in high demand in society. OECD data shows that doctoral graduates perform well on the labour market overall, with on average higher employment rates and remuneration than graduates of master's programmes.[19] The OECD "Education at a Glance 2025" report states: "Although earnings might not be the sole factor in driving individuals' decisions to pursue a doctorate and might not represent a positive rate of return on investment in all cases, this premium underscores the value attributed by the labour market to advanced research skills in some fields."[20] Studies emphasise the importance of exposure to society during the doctorate itself: doctoral candidates who, for instance, were exposed to the private sector during their doctorate are more likely to pursue a career in the labour market beyond academia.[21]

As the 2025 EUA-CDE survey results indicate, most participating universities are collaborating with partners outside academia at doctoral level. In European R&I policy, industrial doctorates and the related collaboration with private sector partners are the best-known examples. However, the survey results show that almost the same share of universities collaborate with public sector stakeholders (88%) as with private sector partners (92%). In addition, more than two thirds (68%) of universities indicated that they work with the non-profit sector and 62% stated that they collaborate with international organisations.[22] Only 2% of respondents indicated that they are neither collaborating with stakeholders nor planning to do so in the future. While this survey question provides a general overview of the type of external actors universities are working with at doctoral level, it does not give information on the intensity of the collaboration in each sector.

The evidence provided by TPG members confirms the broad categories of sectors that are relevant for doctoral collaboration. It underscores that collaboration goes beyond the private sector to include public sector entities such as ministries, sub-national governments, cities and municipalities, public research centres, museums, hospitals and schools. In the private sector, collaboration is most widespread and systematic with larger companies that have R&D departments, especially in the pharmaceutical and technology sectors. TPG members also highlighted the important relative impact doctoral collaboration can have in SMEs, NGOs and smaller public institutions. However, these smaller entities typically face financial constraints and might not always have the in-house research capacity to co-supervise a doctoral candidate. At the same time, TPG members view collaboration with them as potentially more impactful than for instance with larger companies. This is because one doctoral candidate can make a greater relative contribution in a small entity than would be the case in a large multinational company.

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19 OECD, 2025, 'Education at a Glance 2025: OECD Indicators' (OECD Publishing, Paris), pp. 80 and 84.

20 Ibid., p. 84.

21 Boman, J., Barrioluengo, M.S., & van der Weijden, I., 2025, 'Determinants of the career pathways of doctorate holders: Evidence from eight European universities', *High Educ. and Skakni, I., Kereselidze, N., Parmentier, M., Delobbe, N., & Inouye, K., 2025, 'PhD graduates pursuing careers beyond academia: A scoping review', Higher Education Research & Development, p. 10.*

22 Respondents were able to choose all the answers that apply.

Similarly to the public sector, TPG members view the non-profit sector as an important category for doctoral collaboration, a fact that is also supported by the 2025 EUA-CDE survey results. The non-profit sector includes a variety of actors that require specialised expertise. Examples include professional societies, for instance, in the pharmaceutical field, associations and interest groups such as labour unions, think tanks, and other not-for profit organisations. Furthermore, as shown in the 2025 EUA-CDE survey, doctoral collaboration is meaningful with international organisations, such as UN programmes or international NGOs that require specialised knowledge and can provide access to data and fieldwork not otherwise accessible to academic research.

2.3 Forms of doctoral collaboration

Doctoral collaboration between universities and societal actors can take different forms, depending on the level of intensity and integration. These can range from less intensive collaborations, such as guest lectures, mentoring and internships, to more structured collaboration, such as co-supervision or joint research activities, and collaborative doctorates, which typically represent the most intensive and complex form of engagement. In practice, institutions often combine these forms or move from lighter to more intensive forms of collaboration over time.

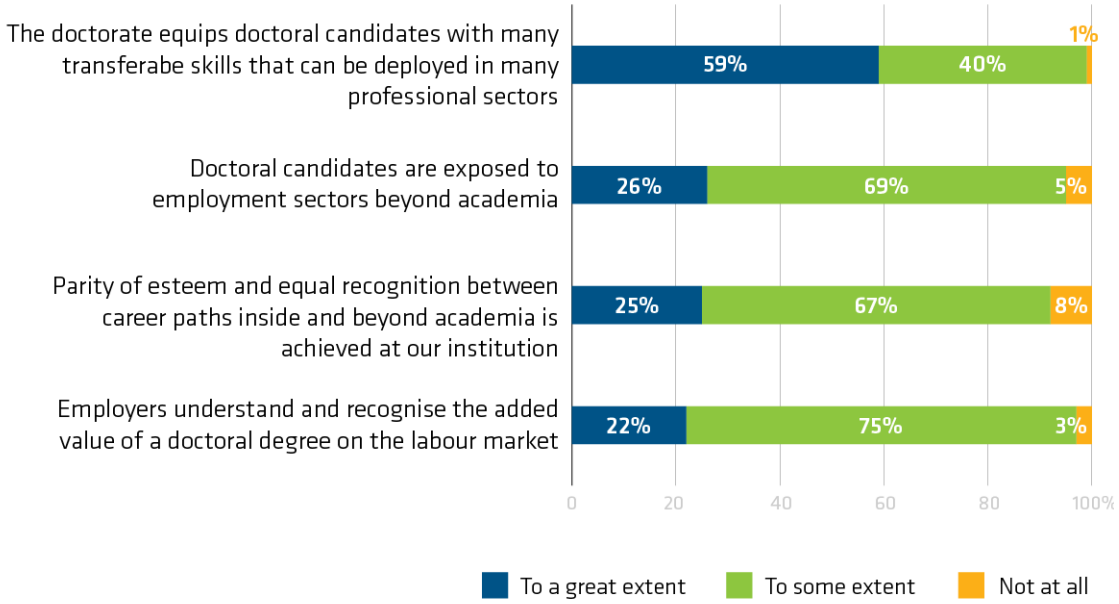
The 2025 EUA-CDE survey results provide a broad overview of how universities work with societal partners in one of the closest forms of partnerships: collaborative doctorates.[23] The survey results show that the most widespread form, indicated by almost three quarters of respondents (72%), is the collaborative doctorate with the partner from outside academia involved in the supervision. Two thirds of universities (66%) specified that they co-fund collaborative doctorates with the actor from outside academia. A slightly smaller number (60%) reported that they offer collaborative doctorates that are fully funded by the actor from outside academia. Almost one in five universities (19%) stated that they offer collaborative doctorates in which the actor from outside academia is involved in neither funding nor supervision. Universities could select all the options that apply. Thus, universities typically pursue different forms of collaboration with societal partners simultaneously. However, the data does not provide information on how frequent these collaborations are compared with fully academic doctorates.

Of the participating universities, 95% reported that their doctoral candidates are "to a great extent" or "to some extent" exposed to employment sectors beyond academia. Overall, 26% of institutions indicated that their doctoral candidates are "to a great extent" exposed to employment sectors beyond academia, while this is the case "to some extent" for 69% of universities. The level of exposure to sectors beyond academia is similar to the assessment of how employers value the doctorate. The 2025 EUA-CDE survey shows that only 22% of the universities reported that employers understand and recognise the added value of the doctorate to a great extent. In all, 59% of universities indicated that their doctoral candidates are equipped to a great extent with transferable skills that can be used in many professional sectors. While 25% of institutions considered that parity of esteem and equal recognition between careers inside and beyond academia is to a great extent achieved, 67% saw it as to some extent achieved and 8% not at all achieved.

23 Marti, S., & Peneoasu, A.-M., 2025, 'Doctoral education in Europe today: Enhanced structures and practices for the European knowledge society. EUA-CDE 2025 survey report, part I' (Geneva), p. 24.

Figure 1: To what extent do the following statements apply from the perspective of your institution? (2025 EUA-CDE survey report, part I) [24]

Number of respondents: 210/217-216/217



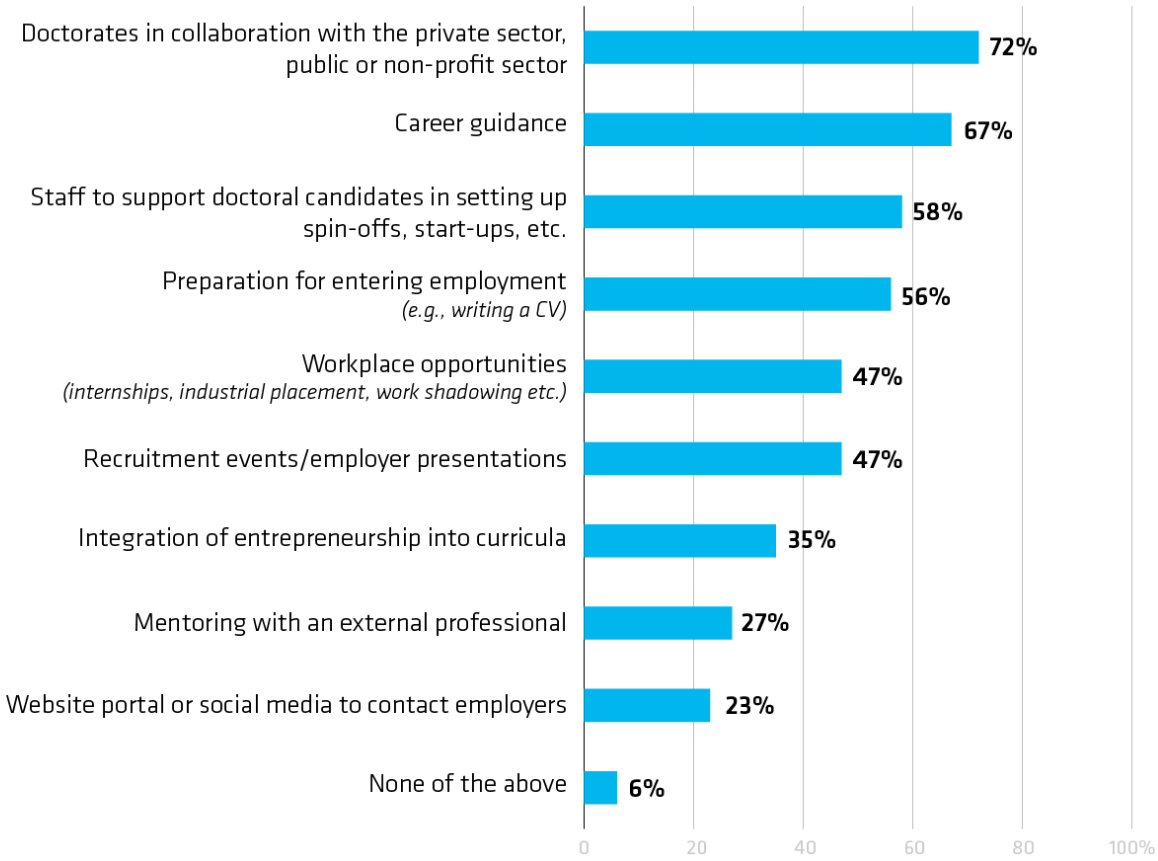
While most universities work with societal actors at doctoral level, the 2025 EUA-CDE survey also asked universities whether they offer specific measures to promote the employment of doctoral candidates outside of academia. Doctorates in collaboration with private, public or non-profit institutions, offered by 72% of institutions, is the most widespread way that universities support the employment of doctoral candidates outside of academia.[25] This is followed by career guidance (67%) and by offering specific staff to support doctoral candidates in setting up spin-offs or start-ups (58%). Just under half, 47% of respondents, indicated that their university provides workplace opportunities such as internships, placements or job shadowing. Similarly, 47% offer recruitment events and employer presentations. While 35% integrate entrepreneurship into their curricula, initiatives like mentoring opportunities with an external professional or a specific website portal that could facilitate contact between doctoral candidates and employers rank lower, with 27% and 23% of the respondents selecting these options.

24 Marti, S., & Peneoasu, A.-M., 2025, 'Doctoral education in Europe today: Enhanced structures and practices for the European knowledge society. EUA-CDE 2025 survey report, part I' (Geneva), pp. 28–29.

25 Many collaborative doctorates are funded by national programmes, for instance the 'Conventions industrielles de formation par la recherche' (Cifre), which has been funded by the French Ministry for Higher Education since 1981. See: https://www.enseignementsup-recherche.gouv.fr/fr/les-cifre-46510 (accessed in April 2026).

Figure 2: Does your institution provide any of the following to promote the employment of doctoral candidates outside academia? Select all that apply (2025 EUA-CDE survey report, part I)[26]

Number of respondents: 217/217



A key recommendation of the Salzburg Principles was to prepare doctoral candidates for a labour market that is wider than academia.[27] The 2022 Vision for the Future of Doctoral Education in Europe emphasises that "transversal skills should not be seen as an add-on but as a key element of the doctorate, maintaining the essential role of original research as the key feature of doctoral education".[28] In the 2025 EUA-CDE survey, all respondents indicated that their institution is offering transversal skills courses to doctoral candidates, a share that was just below half of respondents in 2005/2006.[29] However, the survey results also show that universities offer a great variety of transferable skills. Most offer courses that include genuinely transferable generic skills of equal, if not more, use for career trajectories beyond academia. However, such courses are offered by significantly fewer universities than those providing research-related courses that are at the core of an academic career pathway.[30]

26 Marti, S., & Peneoasu, A.-M., 2025, 'Doctoral education in Europe today: Enhanced structures and practices for the European knowledge society. EUA-CDE 2025 survey report, part I' (Geneva), pp. 41–42.
27 Koch Christensen, K., 2005, 'Bologna seminar. Doctoral programmes for the European knowledge society. Salzburg, 3–5 February 2005. General Rapporteur's Report Professor Kirsti Koch Christensen, Rector of the University of Bergen, Norway'.
28 EUA-CDE, 2022, 'Building the Foundations of Research. A Vision for the Future of Doctoral Education in Europe' (Geneva), p. 12.
29 Marti, S., & Peneoasu, A.-M., 2025, 'Doctoral education in Europe today: Enhanced structures and practices for the European knowledge society. EUA-CDE 2025 survey report, part I' (Geneva), p. 38.
30 Ibid. pp. 39–40, 46.

The 2025 EUA-CDE survey also looked at how universities are supporting spin-offs, entrepreneurship or other types of valorisation of research at doctoral level. The most widespread approach is to offer courses on entrepreneurship, innovation management, intellectual property rights, pre-seed or seed funding opportunities. This option was selected by more than two thirds of respondents. More than half of the responding universities support entrepreneurship by creating networking opportunities with relevant actors, while half of the respondents indicated that they support entrepreneurship by promoting collaborative doctorates with actors from outside academia. Almost one fifth of universities reported the existence of a tradition of spin-offs created by doctoral candidates. At just 3% of the participating institutions, spin-offs and entrepreneurship are not encouraged. Universities could select all options that apply.

At the heart of successful collaborations between universities and societal actors lies intersectoral mobility. This means that researchers can transition between sectors, from academia to industry, public administration or the non-profit sector, and vice versa. By enabling doctoral candidates to apply their expertise in diverse contexts, intersectoral mobility enriches their professional skill sets, while supporting the exchange of knowledge and expertise between sectors.[31] When doctoral candidates move between sectors, they gain not only technical expertise, but also insight into the distinct cultures, languages and operational practices of each environment. This deepens mutual respect and trust, which are essential foundations of effective and innovative collaboration, producing outcomes that are not only scientifically robust, but also societally relevant.[32] The 2025 survey looked at mechanisms for making intersectoral mobility relevant at doctoral level. More than half of respondents indicated that their institution equally promotes careers inside and outside academia. Furthermore, in almost half of universities, intersectoral mobility is seen positively, even if it is perceived as being difficult to implement. At almost one third of responding universities, mobility between sectors is actively promoted, for instance by encouraging the admission of doctoral candidates with work experience. Another strategy for enhancing this type of mobility is hiring academic staff with relevant work experience beyond academia, a practice that is in place at 18% of participating universities. Respondents could select all options that apply.

The TPG members provided detailed examples of how collaboration with societal partners can be structured in practice. The good practices of TPG members, which are described in the annex of this report, illustrate that collaborative doctorates play an important role at most of the participating universities. However, as shown above, many universities offer doctoral candidates also alternative opportunities to connect and engage with external sectors through job shadowing, internships and mentorship initiatives, to gain experience while sharing expertise. Given the importance of funding, especially in the case of collaborative doctorates, the good practices reveal that public policies can play a crucial role. This is particularly true of funding for collaborative doctorates with societal actors that might have limited financial resources, such as NGOs or SMEs.

Of key relevance is how collaboration with societal partners can be started. Institutional networks and informal collaborations built on professors' (supervisors') connections with external partners have the potential to create structured partnerships at doctoral level. Similarly, as shown in more detail in section 2.4, networks of future doctoral candidates with societal actors potentially play an important role that should not be underestimated in starting doctoral collaborations. Agreements formalise collaborations between universities and societal partners. Once a collaboration has been set up and concrete ways of working together have been defined, joint supervision schemes with the societal partner are seen as beneficial by TPG members. Supervision on the side of the societal partner is regulated differently in each country, and is not always permitted by universities. However, societal partner counterparts still play an important mentoring role, which can include supporting career planning. Notably, "mentoring" has a different meaning here. In countries (or universities) where external supervisors on the side of the societal partner are not accepted, experts who support doctoral candidates are often called "mentors", even if they are de facto supervising. Thus, "mentoring" as used in this report can have two meanings.

31 Hristov, H., Slavcheva, M., Jonkers, K., & Szkuta, K., 2016, 'Intersectoral mobility and knowledge transfer. Preliminary evidence of the impact of intersectoral mobility policy instruments' (Joint Research Centre, Brussels), p. 5.

32 Borrell-Damian, L., Morais, R., & Smith, J., 2015, 'Collaborative doctoral education in Europe: Research partnerships and employability for researchers: Report on DOC-CAREERS II project' (European University Association, Brussels), p. 55.

Several TPG members showcased programmes at their universities that provide various approaches to collaboration with societal actors. These include career support or matchmaking services, mentoring, job shadowing, temporary research placements and collaborative doctorates.

The Leuphana University of Lüneburg's graduate school has a Leadership in Society and Business certificate programme (one year, up to 15 participants from all disciplines) that supports doctoral candidates and postdoctoral researchers in preparing for career paths beyond academia.[33] A key success factor is the programme's participant-centred design. Through a combination of structured self-reflection exercises, intensive peer exchange, and thematic workshops led by individuals with academic backgrounds and practical, experience-based knowledge, participants explore individual career goals and start working on their first steps in this direction.

Similarly, Munster Technological University (MTU) in Ireland puts collaboration beyond academia at the centre of its doctoral strategy, and positions research as a driver of regional, national and international impact. MTU's tripartite-designed doctoral work placement model allows doctoral candidates to undertake structured placements of at least 12 weeks with enterprise partners that are aligned with their research. It combines a certain scale, as it is a programme, with flexible formats (remote and hybrid options) and case-by-case intellectual property arrangements managed through the university's Technology Transfer Office.[34]

Often, these initiatives are supported by government or national research council funding schemes. A key example is the Norwegian Centres for Research-based Innovation (SFI) scheme, funded by the Research Council of Norway (RCN). The Norwegian University of Science and Technology (NTNU) considers this scheme of high strategic importance. The first centres were established in 2007 for a period of eight years, and the most recent centres were awarded in 2025. In addition to the SFI centres, RCN funds Centres for Environment-Friendly Energy Research, AI Centres and Centres for Quantum Technology Research – all of which require substantial collaboration with industry partners.[35] These centres prioritise researcher training as part of their missions and have funded several hundreds of doctoral candidates in Norway over the years. Schemes such as the SFI centres benefit individual doctoral candidates, universities, industry partners and society as a whole.

Another Norwegian example highlighted by OsloMet is the "Public Sector PhD" and "Industrial PhD" schemes funded by the RCN.[36] A Public Sector or Industrial PhD project is a collaboration between three parties: the public body/private firm, a degree-conferring university or university college, and the candidate. It is the public or private entity that applies to RCN for support. A similar funding instrument is offered in Portugal.[37]

2.4 The experience of doctoral candidates and reflections on transitioning beyond academia

As the categorisation of doctoral collaborations shows, there is a great diversity of approaches at universities in Europe. Categories of doctoral collaboration range from career support, mentoring and networking opportunities for doctoral candidates to collaborative doctoral projects with societal actors. In the case of the latter, several examples in TPG members' good practices indicate that collaborative doctorates are typically initiated by supervisors or by societal actors, especially larger companies. Furthermore, doctoral candidates are often hired once the topic of the collaborative doctorate has been developed.[38] Depending on the strategy and institutional resources, universities promote these collaborations or support

33 Cf. Leuphana University Lüneburg in the 'Good practices provided by TPG members' annex.
34 Cf. Munster Technological University in the 'Good practices provided by TPG members' annex.
35 Cf. Norwegian University of Science and Technology in the 'Good practices provided by TPG members' annex.
36 Cf. OsloMet in the 'Good practices provided by TPG members' annex.
37 Cf. National initiative of Portugal in the 'Good practices provided by TPG members' annex.
38 Cf. German Council of University Faculties in Engineering and Informatics (4ING)in the 'Good practices provided by TPG members' annex.

them to various degrees. Similarly, public policy initiatives, typically by public funding organisations at national or European level, seek to incentivise these collaborations. Several TPG members showcased their institutional initiatives and programmes to offer doctoral candidates exposure to societal partner organisations or companies, or to provide doctoral candidates with the opportunity to conduct research with industry. These examples include the abovementioned Centres for Research-based Innovation, funded by the RCN, and similar initiatives. Some of them, such as the case of the University of South-Eastern Norway, start before the doctorate and also offer industry master's degrees.[39] In addition, the RCN funds national research schools to raise the level of activity and capacity in doctoral education in Norway.

This TPG also wanted to shed light on collaborative doctorates from the perspective of doctoral candidates, to learn from their first-hand experience of collaboration with societal actors. Three doctoral candidates who met the TPG and one additional candidate who was interviewed by the EUA-CDE Secretariat presented their experiences of a collaborative doctorate. They identified challenges and reflected on crucial success factors. These four short case studies and a fifth contribution – reflections on the challenging transition phase for career pathways beyond academia – provide additional insights from the perspective of the early-career researcher.

Collaborative doctorate at DCU with a public entity, funded by Research Ireland

A doctoral candidate at Dublin City University (DCU) is undertaking a collaborative doctorate with a public institution as a partner. Funding is provided by Research Ireland, with a contribution from the public institution. The research aims to build a supportive legal and policy framework for Irish social enterprise. The doctoral candidate has collaborated with the public institution in a variety of ways during the course of the project. This collaborative arrangement has given the candidate real-world experience and contextual knowledge of the social enterprise landscape.

The doctoral candidate outlined some challenges encountered during the research project. One challenge was encountered at the beginning of the doctorate, when there was a change of enterprise mentor on the partner entity side. This created some uncertainty and the challenge of building new relationships. The candidate highlighted the importance of clarity on the operationalisation of the collaboration and noted clear differences between the perspectives of academia and the societal actor. While academia has a strong focus on research output, societal actors are more focused on value for money. The candidate identified scope for two-way understanding and learning in relationships and collaborations of this nature.

Furthermore, the doctoral candidate highlighted the importance of supervisor or institutional support on the university side as a crucial link between doctoral researchers and partner organisations. The candidate suggested that there should be incentives or recognition for supervisors who are willing to undertake the additional pastoral, support and administrative elements of these collaborative relationships. The doctoral researcher considered that academic institutions must support supervisors who take on collaborative doctorates if these relationships are to flourish and become more common. An additional lacuna recognised by the doctoral candidate is the apparent lack of awareness in organisations outside academia of the potential benefits of collaborative doctorates. Awareness of the existence of and benefits of such relationships appears to be much stronger within universities.

Collaborative doctorate at the Royal College of Surgeons with Beaumont Hospital, funded by Research Ireland

Similarly, a doctoral candidate who pursued a collaborative doctorate at Beaumont Hospital, Dublin, was also funded by Research Ireland through an employment-based arrangement. The funding supported her doctoral research while she remained employed at the hospital, and her research was coordinated alongside her employment. Beaumont Hospital supported her by facilitating access to relevant operational data and providing workplace support, along with academic supervision from the hospital and the university. She had two supervisors at the hospital and two at the university. The objective of the doctorate was to examine established policies and practices in the management of healthcare-associated infections, to identify areas for enhancement.

39 Cf. Norwegian University of Science and Technology and the University of South-Eastern Norway in the 'Good practices provided by TPG members' annex.

She identified several challenges related to her employment-based doctorate, including balancing work and research, and managing competing demands and timelines. She noted the importance of maintaining a strong support network, which included patients and their relatives working with her as advisors.

In her view, a key success factor of her collaborative doctorate was her professional experience and knowledge, as well as the financial and professional support, and the recognition of the value of her research. She was able to complete her doctorate in three years.

Collaborative doctorate at DCU with Boston Scientific

A second doctoral candidate at DCU already had a successful nine-year career at Boston Scientific when he started his collaborative doctorate in medical technology, pursuing research on improving cardiac therapy. The collaborative doctorate was based on a research agreement between DCU and Boston Scientific put in place eight years before. The doctoral project started on the doctoral candidate's initiative. When he saw the opportunity, he reached out to a professor he knew. In his experience, the doctoral candidate acted as an integrator, translating academic insight into industry-relevant solutions, while maintaining scientific rigour. His work with Boston Scientific allowed for research with a line of sight to patient impact, which was very rewarding (but could be distracting) and accelerated professional maturity. Another rewarding aspect was that his work exposed him to problems that genuinely require solutions.

He viewed early alignment of expectations as a key success factor of his collaborative doctorate. Following on from the upfront conversations with Boston Scientific and DCU, things developed very organically. He perceived it as a success factor that he was fully funded internally by Boston Scientific, essentially doing his job and wrapping his doctoral research around it. Another important factor was strong supervisor communication.

He viewed his experience as the future of doctoral education and thinks that collaborative doctorates are going to play an increasing role at Boston Scientific. However, it is important to have a societal partner with the capacity to safeguard scientific rigour. In this sense, it is important for doctoral candidates to be selective in choosing an industrial partner. Another success factor was the right balance between openness and protection of core intellectual property rights. Asked about the added value of the doctorate, he mentioned that he will not formally use the doctoral title. However, the doctorate will help him to manage projects or to participate in bigger projects.

Collaborative doctorate at OsloMet with a public institution, funded by the Research Council of Norway

A doctoral candidate at OsloMet interviewed by EUA-CDE is funded by the Public Sector PhD, a RCN scheme. The candidate remains employed by her original employer (in this case a municipality) for the duration of four years. She receives a salary from her employer, which is reimbursed 75% by RCN. The remaining 25% is funded by the employer. She spends some of her working time at her original workplace, and some time at the university. She is investigating what happens in public services for children, youth and families when they work together across their boundaries.

Advantages of this setting are that the doctoral candidate knows the project well from inside the workplace. Thus, the interviewee could pursue a doctorate, on her initiative, together with her employer. As collaborative doctorates are not well known in this context, it was helpful for her to receive guidance from alumni of the same programme. She stated that, although the collaborative doctorate took place at her original workplace, it gave her insights into her work that she would not have had otherwise. However, she also considers that there are benefits the other way round: the insights from practice are advancing her research field. This is further accentuated by the fact that candidates from the field have a lot of practical experience on a specific topic. Often the research conducted in this field, outside of collaborative doctorates, does not address real problems. In addition to the knowledge and expertise at her workplace, it was helpful for her to have access to data and to have a longitudinal focus group accompanying her work. After graduating, the interviewee does not plan to scale the hierarchy in municipal administration, but is instead interested in an expert career combined with teaching at university, ideally with her time split equally between both activities.

She thinks that more exchanges with other doctoral candidates in similar fields and programmes would be helpful. She was sometimes out of the loop of information on university activities, due to IT-related issues with including people from outside the university in the regular communication with doctoral candidates. In addition, candidates in collaborative doctorates are sometimes seen as external, and therefore may not be included in internal seminars or invited to join social events. However, this is now changing, as the issue has been addressed more explicitly. Furthermore, she thinks the application of research results should be better planned from the outset.

Reflections on the transition of early-career researchers to careers beyond academia

Mikey Creane, Translational Research Manager at HAON Life Science and Chair of the Board of the International Consortium of Research Staff Associations (ICoRSA), also met the TPG to share his reflections on transitioning beyond academia to industry and the key lessons he has learnt along the way.

He emphasised the importance of early-career researchers identifying the type of industry they wish to enter. From there, he recommended applying a set of guiding principles: understand your underlying motivations, define a clear vision for where you aim to be in 5–10 years, and assess whether necessary skills and knowledge are currently in place to achieve that vision. He also highlighted the value of engaging with mentors throughout this journey and joining professional societies to build a strong professional network. Dr Creane stressed that the decision to join industry should not simply be viewed as choosing a job, but rather as choosing an environment. It is this environment, he noted, that ultimately shapes an early-career researcher's learning experiences in industry. He outlined how early-stage/start-up companies, growing medium-sized organisations and established companies each offer opportunities to develop different skill sets. While experience in each setting is valuable, it may also limit development in other areas. So it is important to think about what an early-career researcher wants to gain from the experience, based on the career stage. He further highlighted that "soft skills" remain one of the most significant gaps among early-career researchers entering the industrial workforce. Examples include understanding that scientific curiosity does not always align with organisational priorities or resource constraints, the ability to adapt quickly in ambiguous situations while staying aligned with long-term company goals, and demonstrating a strong team-oriented mindset.

Dr Creane acknowledged that there is still a gap between learning soft skills and understanding how to effectively integrate them with technical expertise during training.[40] He noted that while some of these approaches may be too specialised for university-wide implementation, they could be effectively delivered at the departmental level. He also highlighted the benefit of joint academic–industry appointments in universities to support the teaching of industry-relevant skills. Many academic lecturers, having trained exclusively within university environments, may find it challenging to teach the skills required in industry without direct experience. In this context, universities can also better leverage their alumni networks to connect doctoral candidates with professionals in research-related careers and provide insight into the labour market for early-career researchers.

In closing, Dr Creane emphasised that early-career researchers must take ownership of their own career development. While universities can provide guidance and training, individuals need to be proactive, self-aware and accountable for their own growth.[41]

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40 He referred to a recent publication by his colleagues at the International Society for Cell and Gene Therapy (Hanley et al., 2026, 'Advanced therapies require soft skills: insights from a National Academies Working Group', Cytotherapy.), which outlines practical approaches for integrating technical and soft skills into training programmes.

41 Cf. https://icorsa.org/ for further information.

3 The perspective of the societal partner

3.1 Rationale and ways for societal actors to collaborate with doctoral researchers and universities

Over the course of the last two decades, collaboration with non-academic sectors has become increasingly common at European universities, including at doctoral level – a development already referenced in the Salzburg Principles.[42] Several studies, in addition to those undertaken by EUA, have explored the significant role that these partnerships play in doctoral education.[43] Engaging with stakeholders across various sectors (government, business, the social and cultural sector, non-profit, etc.) plays a pivotal role in co-creating scientific knowledge, disseminating it and translating scientific results into practical applications for society. These mutual collaborations are recognised as drivers of innovation, entrepreneurship and creativity.

To reflect both sides of doctoral collaboration partnerships, the EUA-CDE Secretariat and TPG members drafted a survey in summer 2025 targeting societal stakeholders with whom TPG members collaborated or were planning to establish partnerships. The survey questionnaire received responses from 63 societal actors. The majority (56%) of the societal partners collaborating with TPG members' universities at doctoral level represent the private sector, followed by the public sector (24% of respondents) and the non-profit sector (11%). The option "other sector" was selected by 6% of the participants, while only 3% mentioned that their organisation is international.

Three out of five respondents indicated that their organisation has an ongoing doctoral-level collaboration on a regular basis, while 30% mentioned that their organisation collaborates only occasionally with universities on individual projects. Only one participant (1.5%) did not currently collaborate with a university at doctoral level and was not planning to start a new doctoral collaboration.

The survey also highlights the different forms of collaboration that are typical for external stakeholders when they engage with universities. The most widespread form is the hosting of doctoral candidates through internships, job shadowing or placements (54%). More structured types of collaboration such as collaborative doctorates funded by third parties (52%), collaborative doctorates co-funded with the university partner (38%) or collaborative doctorates fully funded by their organisation (32%) are also widespread. Other frequent forms include societal actors' participation in supervisory committees (40%), advisory roles in university bodies and support for doctoral career development initiatives (both selected by 32% of the respondents). Survey respondents were invited to select all the answers that apply.

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42 Koch Christensen, K., 2005, 'Bologna seminar. Doctoral programmes for the European knowledge society. Salzburg, 3–5 February 2005, General Rapporteur's Report Professor Kirsti Koch Christensen, Rector of the University of Bergen, Norway'.

43 Skakni, I., Kereselidze, N., Parmentier, M., Delobbe, N., & Inouye, K., 2025, 'PhD graduates pursuing careers beyond academia: A scoping review', *Higher Education Research & Development and Mortier, A., Levecque, K., & Wille, L., 2023, 'Does intersectoral collaboration during the PhD play a role for careers after the PhD?', ECOOM Ghent University Briefs.*

Figure 3: What is the status of your organisation's collaboration with universities at doctoral level?
Number of respondents: 63/63

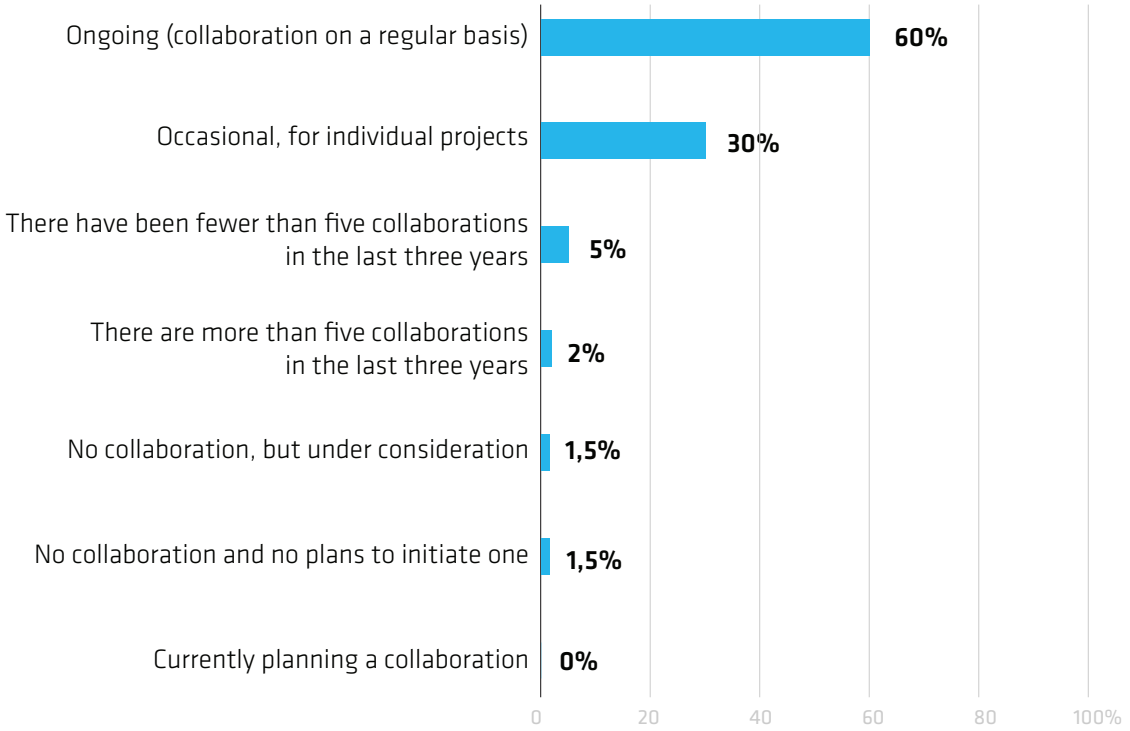
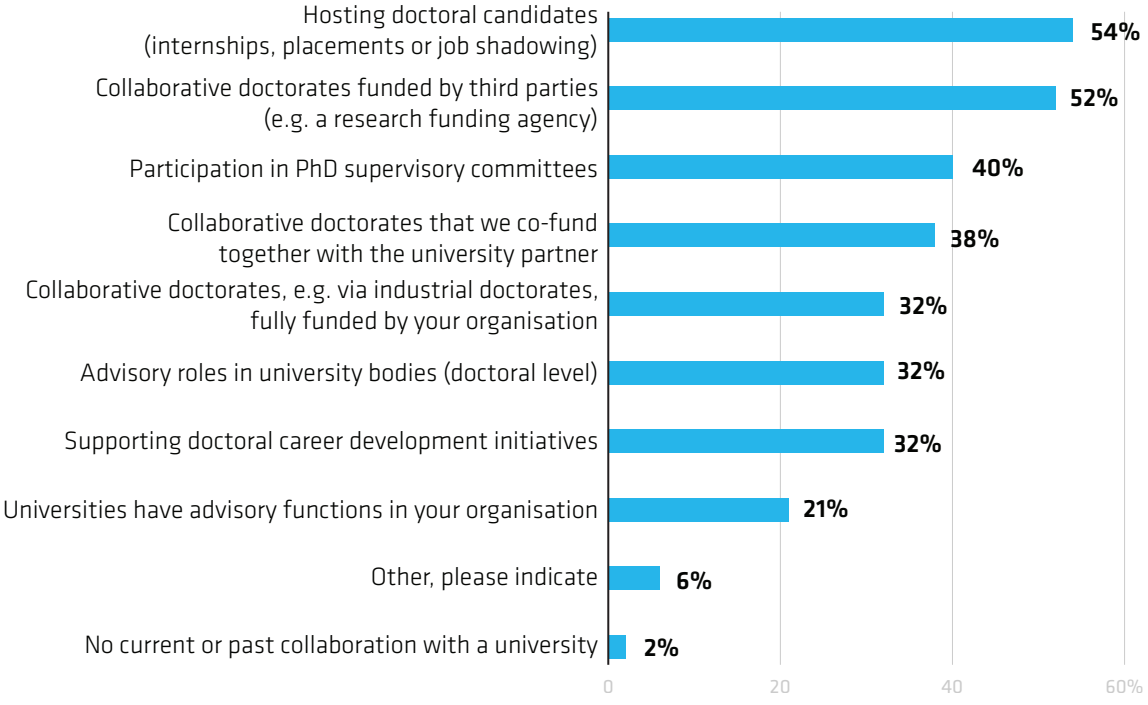


Figure 4: What forms of collaboration are typical at your organisation when engaging with universities at doctoral level? Select all that apply.
Number of respondents: 63/63



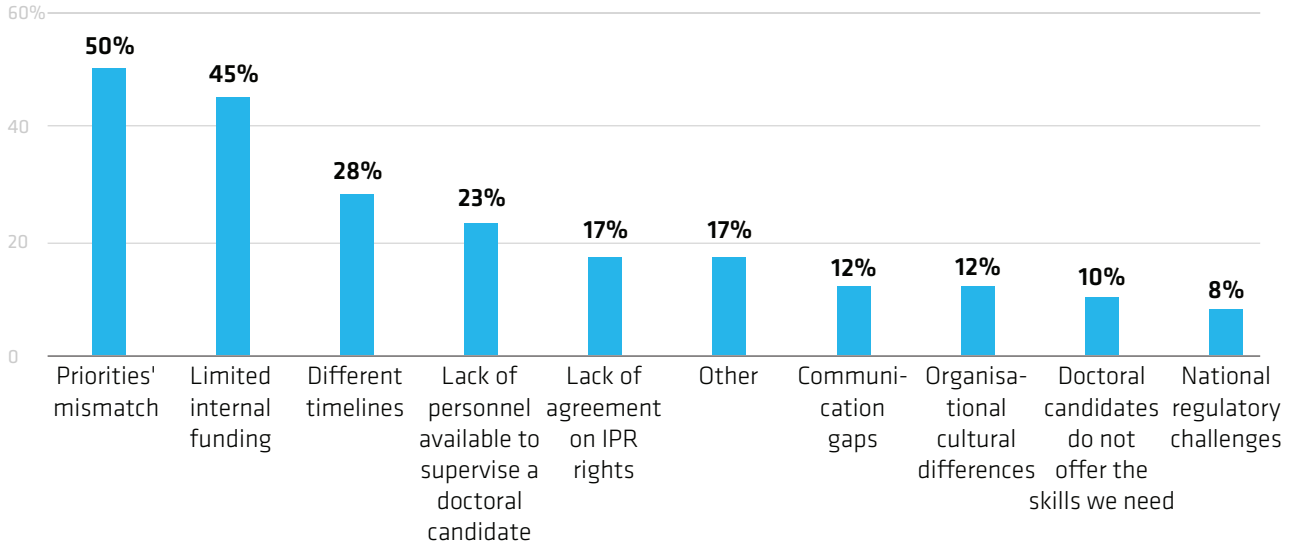
In an open question, respondents were asked about the key factors that in their experience already promote a successful doctoral collaboration. They mentioned the following aspects the most frequently.

- **Funding opportunities**, which can be provided through different schemes, are considered a central factor as they provide the structural framework that makes collaboration between the academic and non-academic sector feasible.
- **Shared goals and interests.** Societal partners are particularly committed when there is a common motivation to translate research findings into practical applications, products or services. A clear understanding of how the doctoral project contributes to scientific advancement and innovation fosters a long-term partnership.
- **Co-supervision with the academic supervisor** plays a critical role in bridging the academic and non-academic worlds. Effective collaboration requires structured supervision by both academics and experienced professionals at the partner organisation. Organisational commitment is seen as an equally important factor. Leadership support from both sides shows that the doctoral collaboration is valued strategically. In addition, allowing sufficient time, resources and infrastructure for staff and doctoral candidates ensures that the partnership is actively supported.
- **Strong networks**, both personal and institutional and prior collaboration experiences significantly enhance the collaboration potential by building trust and familiarity with the working styles and practices of all partners.
- **Doctoral candidates' motivation** is another key factor. From the external stakeholder perspective, candidates who are interested in applied research and who appreciate working across sectors contribute significantly to successful collaboration. More broadly, **interpersonal trust and continuous communication underpin all these structural factors**. Open and respectful exchanges foster transparency and help reduce misunderstandings, while trust enables expectations to be aligned and challenges addressed. Dialogue and openness towards different institutional logics is also important. Academia and stakeholder organisations often operate under distinct structures, rules, timelines and reward systems. Respondents believe that successful collaboration therefore requires mutual recognition of these differences and a willingness to understand alternative perspectives.
- **Alignment between the doctoral candidate's skills and the organisation's needs**: careful selection of candidates whose expertise and competences fit the company's research focus increases efficiency and satisfaction.

Understanding what makes collaboration work at the doctoral level also raises the opposite question: what are the main barriers to successful cooperation? When asked to select the main barriers, half of the respondents indicated a mismatch of priorities between partners, followed by limited internal funding at their organisation (45%). More than a quarter of respondents (28%) pointed to the existence of different timelines between the academic and non-academic world, while 23% highlighted a lack of available staff to supervise a doctoral candidate as one of the key obstacles. A lack of agreement on intellectual property rights was mentioned by a lower number of respondents (17%). Finally, national regulatory challenges was only mentioned by 8%.

Figure 5: From your organisation's perspective, what are the main barriers to successful doctoral-level collaboration with universities? Select all that apply.

Number of respondents: 60/63



In an open question, respondents were asked for recommendations on how to foster collaboration with universities. The most common points that were mentioned are given below.

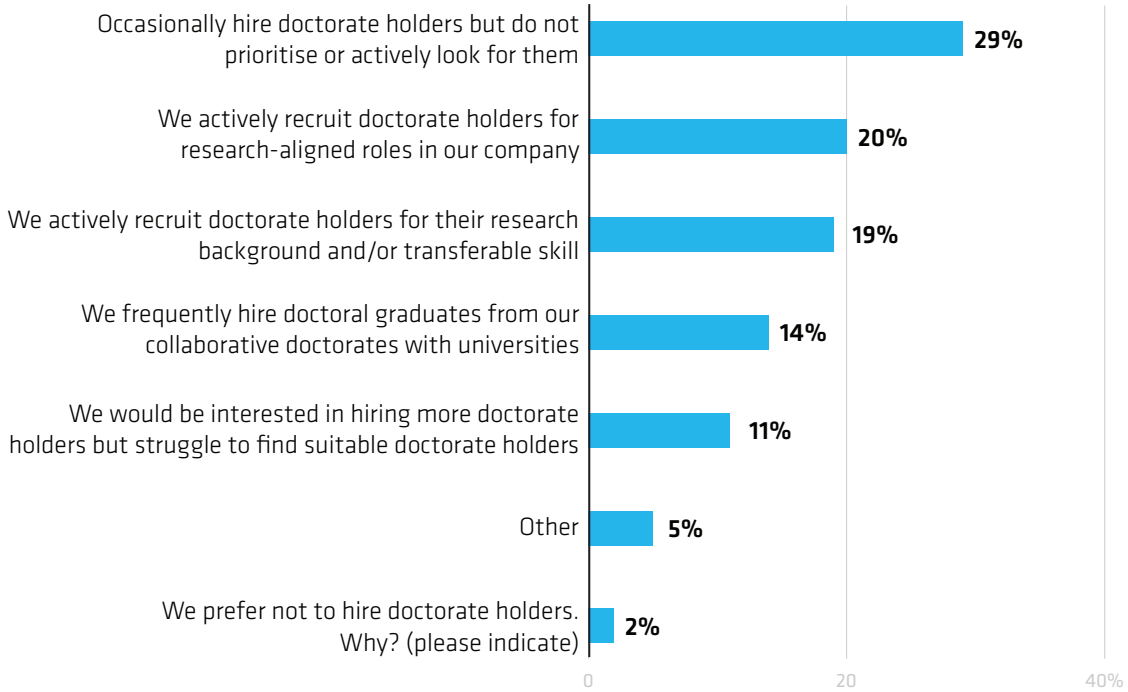
- **Sustainable funding and co-funding models:** expanding access to external funding programmes, such as Horizon Europe and developing internal funding schemes can significantly lower financial barriers for collaboration. In addition, attracting public funding that is allocated to collaborative doctoral projects would further incentivise partners to engage in long-term cooperation.
- **Clear communication and structured dialogue between the partners:** clear and accessible channels for exchanging information, expectations and strategic priorities and regular meetings at operational and leadership levels can ensure alignment and address challenges at an earlier stage.
- **Greater integration of applied-oriented elements into doctoral education** can further enhance collaboration. This could be done, for instance, by incorporating real-life case studies, company-led seminars and applied research modules into doctoral programmes. In particular, early-stage integration is particularly beneficial: engaging societal actors at the beginning of the doctorate through seminars, guest lectures or mentors can foster cross-sector collaboration.
- **Joint research and internship programmes** that address societal needs can help strengthen ties.
- **Clear frameworks and standards**, especially for supervision, intellectual property and publication rights are important to prevent conflicts and clarify expectations.
- **Building structured and long-term partnerships** is another key recommendation. Respondents mentioned the need to establish formal cooperation agreements and long-term collaboration frameworks aligned with academic and non-academic interests as a way to foster continuity and stability.

- **Adequate availability of staff and clearly defined roles** are practical, crucial conditions from the perspective of external stakeholders. Both universities and societal organisations should allocate sufficient personnel to manage these partnerships, supervise candidates and coordinate activities.
- **Reducing bureaucracy and increasing institutional flexibility**, particularly at the university level, can significantly improve collaboration according to the survey respondents. Streamlined administrative procedures can make cooperation more responsive to non-academic timelines.

3.2 Doctoral talent for the advancement of society

The second part of this survey focused on the employment prospects of doctoral candidates and questions related to the transition to the labour market beyond academia. Survey respondents were asked to provide their views on the extent to which their organisation actively looks for doctorate holders when hiring new talent. Slightly less than one in three survey respondents reported that their organisation hires doctorate holders occasionally, without prioritising or actively looking for them. A smaller number, 20% and 19% respectively, specified that doctorate holders are actively recruited by their organisation either for research-aligned roles or for their research background and/or transferable skills. According to 14% of the respondents, doctoral graduates who have followed a collaborative doctorate at their organisation are frequently hired by that entity. In addition, 11% of the respondents would be interested in hiring more doctorate holders, but the challenge remains in finding suitable doctorate holders.

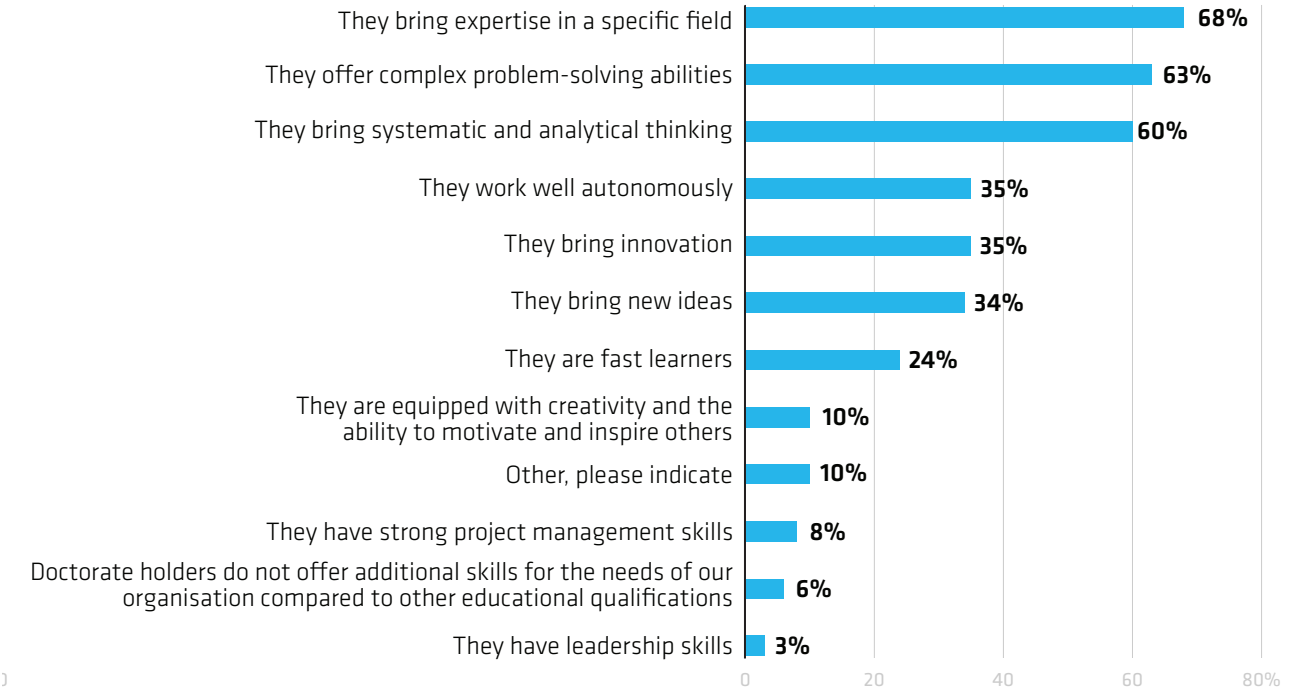
Figure 6: To what extent does your organisation actively look for doctorate holders when hiring new talent?
Number of respondents: 63/63



This stakeholder survey also provides insights into the main reasons for hiring doctorate holders at their organisations. More than two thirds (68%) of the respondents indicated expertise of doctoral holders in a specific field as the primary reason for hiring them. A similar share (63%) considered that doctoral holders offer complex problem-solving abilities and 60% of the respondents valued doctorate holders' analytical competences. Following on from these three top reasons for hiring doctorate holders, 35% of the participants considered that "they work well autonomously" and "they bring innovation". More than a third (34%) selected the option "they bring new ideas" as one of the important reasons for hiring doctorate holders and almost a quarter (24%) of respondents indicated that doctorate holders are fast learners. Fewer

respondents identified with the remaining options: they are equipped with creativity and the ability to motivate others (10%), they have strong project management skills (8%) and they have leadership skills (3%). Only a small percentage (6%) mentioned that doctorate holders do not offer additional skills for the organisation's needs compared to other educational qualifications. Respondents were able to choose all the answers that apply.

Figure 7: What are the primary reasons for hiring doctorate holders at your organisation? Select all that apply.
Number of respondents: 62/63



Lastly, the survey invited stakeholder organisations to suggest actions that universities could implement to make doctoral graduates more attractive to their organisation. The following suggestions were made.

- **Systematic engagement of societal partners:** a common point mentioned by the respondents was the importance of engaging external partners more systematically in the design of doctoral programmes, the definition of doctoral project topics and co-supervision arrangements. Such early, structured involvement would help ensure that candidates gain a clearer understanding of non-academic contexts throughout their training.
- **Doctoral programmes and courses tailored to partners' needs:** designing training components in collaboration with companies, NGOs and public institutions would allow universities to integrate practical perspectives and sector-specific knowledge into doctoral curricula. This includes adapting learning outcomes and course content to reflect evolving labour market demands and realities.
- **Emphasis on applied research:** another recurring recommendation was to place stronger emphasis on applied research. Respondents suggested encouraging doctoral candidates to engage in problem-solving in real-world settings and to align their research more closely with policy or societal needs.
- **The development of strong transferable skills:** respondents stressed the importance of developing strong transferable skills. Competences such as project management, communication, leadership, teamwork and adaptability were identified as essential for successful integration into non-academic environments. Universities were encouraged to offer structured training in these areas within doctoral programmes.

- **The promotion of interdisciplinary competences of doctoral candidates** was seen as increasingly important, as many organisational challenges require cross-disciplinary approaches. Candidates who can navigate and integrate diverse perspectives during the doctoral journey are often better prepared for complex roles beyond academia.
- **Continuous exposure to sectors beyond academia** throughout the entire doctoral journey was seen as important. Collaboration opportunities, such as internships, mentoring schemes, company seminars or research stays, would help doctoral candidates become familiar with external working cultures.
- **More research freedom and time for collaboration:** some participants suggested allowing more research freedom and time for collaboration. Moving beyond a narrow focus on producing peer-reviewed publications within a limited timeframe could give doctoral candidates greater freedom to develop as independent researchers. In this context, one respondent suggested that doctoral programmes should last at least 4 years to provide adequate time for doctoral candidates to deepen collaborative activities and develop into more self-sufficient researchers with broader career opportunities.
- **Maintaining active and ongoing communication channels between universities and societal actors** was considered essential. Continuous dialogue on skills needs, strategic priorities, expectations and timelines would support better alignment between doctoral education requirements and the competences demanded by stakeholder organisations.

4 Challenges and success factors in doctoral collaboration

4.1 Identifying potential challenges

This section documents a range of potential challenges identified by TPG members that can impact doctoral collaborations with societal actors. Several of the challenges found by the TPG and mentioned below correspond with points highlighted by societal stakeholders in the survey. This indicates a clear and shared understanding of some of the main challenges in doctoral collaboration.

Misalignment of priorities

A central challenge lies in the potential misalignment of priorities between the university side and the societal partners. External partners typically operate under their own logic. Depending on the sector, this may be market-driven. In a public institution, it could be the mission and the legal framework within which they operate. The different logics – prioritising short-term and tangible results in the private sector and pre-defined processes in the public sector – or the mission of an NGO are rooted in the respective purpose and environment of the organisations. By contrast, doctoral research is longer term and oriented towards generating new knowledge rather than immediate practical applicability. This divergence can limit academic and societal partners' interest in investing in doctoral collaborations together. The good practice example of the Swedish University of Agricultural Sciences (SLU) shows an approach to designing a structured and transparent process for matching researchers with companies, authorities and other stakeholders engaged in forest use and management.[44]

Incompatible timelines, funding mechanisms, and workplace demands

Different logics of universities and societal actors can be further reinforced by incompatible timelines and rigid funding mechanisms. Doctoral projects usually take several years and require stable commitments. Societal partners, however, may face shifting priorities and new developments that make long-term engagement difficult, not only in the private sector, but also for public or non-profit actors. Reflecting the individual nature of a doctorate, collaborative doctoral projects depend in many cases on flexibility in financial and administrative arrangements. Nevertheless, funding mechanisms and institutional procedures on both sides are frequently too inflexible to accommodate the specific needs of such partnerships. For example, the limited long-term financial predictability of a societal actor can constrain the ability to sustain long-term doctoral collaborations, narrowing the pool of potential partners. Companies or other societal actors may not be fully aware of the structure, requirements and milestones involved in obtaining a doctoral degree, leading to unrealistic expectations regarding workload, timelines or deliverables, including an expectation that the candidates will have more time for other tasks in addition to their doctoral work. This gap in understanding can place doctoral candidates in vulnerable positions, caught between academic requirements and workplace demands.

44 Cf. Swedish University of Agricultural Sciences in the 'Good practices provided by TPG members' annex.

Delicate balance between academic openness and a company's confidentiality policies

Negotiating the balance between academic openness and a company's confidentiality policies is often delicate. Disagreements may arise regarding publication rights, intellectual property rights, data ownership and the timing of dissemination. A lack of trust between companies, candidates and universities can undermine collaboration, particularly when expectations around publications and intellectual property are not clearly defined from the outset.

Cultural barriers

Cultural barriers are another potential obstacle. Academia and societal partners often use different terminology, and might also differ in terms of values and working practices. In some cases, universities conclude that collaboration is not feasible because a partner does not fully appreciate the academic culture, including the importance of research integrity and academic freedom. Conversely, academics may underestimate the contributions of external actors, overlooking that these actors possess enormous knowledge and generate economic value that supports broader societal and research ecosystems.

Potential lack of scientific quality and critical distance

Misunderstandings can emerge when partners do not share a common understanding of research processes, quality standards or institutional norms. One resulting challenge for universities might be how to maintain a comparable academic level in collaborative and traditional academic doctorates. This challenge can be reinforced when (potential) partners and their representatives who are involved in a project do not have a scientific research background. The capacity of potential partners varies significantly. Large companies are generally better positioned to allocate staff time, financial resources and expertise to doctoral collaborations. In contrast, many SMEs and NGOs may lack the necessary expertise, time or funding to commit to a multi-year research project.

Internal university dynamics

Internal university dynamics can significantly influence the realisation of cross-sectoral collaboration. A major barrier in some instances concerns the mindset of professors and supervisors. In certain cases, doctoral candidates are viewed primarily as contributors to publication output or as support for teaching activities, rather than as independent researchers or potential drivers of innovation beyond academia. In other cases, supervisors might have a negative attitude to talented candidates who are interested in a career outside of academia. Such perspectives may reduce the interest in engaging in collaborative projects from the outset, as they require additional coordination and may not immediately translate into high-impact publications.

Structural limitations of doctoral schools and universities

Many doctoral schools lack the specific structures or resources required to develop external contacts or proactively promote collaborative doctoral projects. Without targeted support structures, the burden of initiating and maintaining external partnerships frequently falls on individual supervisors or candidates, which reduces the likelihood of structured engagement. The rigid organisational structures of many universities can further complicate this issue. Institutional systems are often designed for on-campus, nationally oriented research and may lack the flexibility required to accommodate partnerships with societal actors. Moreover, successful collaborations frequently depend heavily on individual principal investigators and their personal networks. While strong personal relationships can enable partnerships, overreliance on individual actors makes collaborations vulnerable to staff turnover or shifting academic priorities. Without institutionalised support structures, including on legal aspects such as intellectual property rights, partnerships may end when key individuals leave.

Collaborative vs academic doctorates – and the challenge of retaining talent

TPG members reported on situations when collaborative doctorates with the private sector partner might take less – or more – time than regular doctorates. Both situations can bring challenges. In the latter case, university regulations might restrict the duration of a doctorate, leading to challenges in settings where the collaborative doctorate takes longer. In the first case, as reported from Germany, collaborative doctorates with industry may be concluded significantly faster than in a purely academic setting, also given the fact that doctoral candidates in academia have teaching obligations, which absorb a substantial amount of their time.[45] This situation can affect incentives and raise questions of how to maintain fairness between the two types of doctorates. Some doctoral candidates might be attracted by the shorter duration of a doctorate without teaching obligations, combined with the prospects of subsequent employment with the collaboration partner. In contrast, incentives for supervisors and universities in general might be negatively impacted by this model of collaborative doctorate, as these doctoral candidates do not support the university in terms of teaching. In addition, especially in strategic areas with strong demand from the private sector, collaborate doctorates can contribute to the challenge for universities to retain talent as postdoctoral researchers and future professors.

External risks to collaboration

TPG members identified external risks to collaboration, including geopolitical and macroeconomic developments that can add further uncertainty and exacerbate the challenges mentioned above. Such risks affect collaborative doctoral projects with international companies or other international partners and/or doctoral candidates, for instance in the case of research security. Collaborative doctoral projects are vulnerable to changing market conditions, economic downturns or unforeseen global events that can alter corporate priorities or financial capacities.

National or institutional policies and regulations

TPG members also mentioned challenges caused by national or institutional policies and regulations. Regulations concerning supervision arrangements, employment contracts, intellectual property rights and doctoral candidate status vary across countries. These legal discrepancies can complicate cross-sectoral collaborations, increasing administrative complexity and legal uncertainty. National laws can, for instance, create potential barriers for supervision by partner entities involved in collaborative doctorates. In some countries, doctoral candidates are engaged in studies measured using the European Credit Transfer and Accumulation System (ECTS), whereas in other countries doctoral students' assessment is based on scientific research and publications only. In the latter, it might be difficult to integrate interdisciplinary and soft skill studies into doctoral education.

4.2 Success factors for collaboration with societal partners

Discussions in the TPG also focused on key success factors that contribute to strong and effective collaboration between doctoral schools and societal partners. Some of these success factors address challenges identified above.

Strategic approach to doctoral collaboration and partner identification

Universities should approach doctoral collaboration strategically and develop the capacity and the know how to work with societal actors. This entails systematically mapping potential partners beyond academia and assessing where meaningful synergies related to the universities' profile and priorities exist. It is helpful to reflect on preferred ways of collaboration from the outset, and to create institutional awareness of the potential capacity of the university to collaborate with societal partners in terms of doctorate-related regulations, possible institutional support, the interest of supervisors and required finances. This can also help institutions to assess how flexible they could be to accommodate different forms of collaboration.

45 Cf. German Council of University Faculties in Engineering and Informatics (4ING) in the 'Good practices provided by TPG members' annex.

Encouraging collaboration between academic staff in universities can further broaden networks and strengthen institutional capacity to engage with external stakeholders. By pooling expertise across disciplines, institutions can present more comprehensive and innovative solutions to societal and industrial challenges.

The importance of proactive engagement was clearly stressed. TPG members suggested that universities should not wait for external actors to initiate contact but instead actively reach out to potential partners to identify specific challenges that could be addressed through doctoral research. By grounding collaboration in real-world problems, universities can demonstrate relevance and provide solutions that align with external partners' needs. Closely linked to this point, it was noted that existing leadership and management structures are not always optimally designed to support collaborative doctoral projects. Collaboration with actors beyond academia often requires coordinated decision-making, administrative flexibility and clear strategic direction. Strengthening leadership frameworks and making external collaboration an explicit institutional priority would enable universities to act more proactively.

TPG members also reflected on the need to embed collaboration structurally within universities, rather than allowing it to depend primarily on individual supervisors. In many cases, a single professor manages the entire relationship with an industrial or societal partner. When that individual leaves, the connection is often lost and the partnership dissolves. To avoid such fragility, collaboration can be institutionalised, while incentives for individual researchers to work with societal partners should be maintained. Developing university-wide support structures, such as liaison offices, innovation managers and doctoral schools, would reduce reliance on personal networks and sustain long-term strategic partnerships. Appointing two university supervisors is another possible solution to strengthen the resilience of networks. Doctoral schools play a key role in supporting and facilitating collaboration with other sectors, including by providing guidance, training and coordination assistance to supervisors. Strengthening the involvement of doctoral schools can encourage more consistent integration of such collaborations in doctoral education.

Building trust by clearly articulating goals, constraints and expectations

TPG members highlighted building mutual understanding and trust with societal partners as a central priority. Clear communication and well-defined processes from the outset help build trust, prevent misunderstandings and reduce the risk of conflicts. Establishing shared expectations early on, by agreeing on common goals, establishing clear processes, defining research questions together, clarifying roles and making sure that the doctoral candidate remains central, creates a stable basis for cooperation. Transparent intellectual property agreements were highlighted as particularly important in this regard. Successful collaboration requires more than academic institutions explaining their requirements; external partners must also clearly articulate their goals, constraints and expectations. TPG members suggested that establishing structured forums, regular exchange platforms or stakeholder engagement panels would create spaces for dialogue between universities and societal partners. Such mechanisms would enable participants to share perspectives between collaboration partners in a continuous and organised manner, rather than relying on sporadic interactions. Several TPG members underlined the value of introducing a "business–innovation translator" role. This function, often fulfilled by a business developer or knowledge transfer professional, entails mediating between the academic and the non-academic world. By translating research in ways that resonate with companies and vice versa, this intermediary can help demonstrate the practical value of doctoral research, align expectations and strengthen trust between partners.

Team-based supervision

By including secondary/external supervisors or mentors, team-based supervision was seen as adding richness to the collaborative doctoral experience. Mentors can support doctoral candidates non-scientifically in ways that are important for their careers. This model may have benefits when problems arise in supervision, where a "second opinion" can be sought in relation to disparate views on aspects of the project.

Organisational flexibility and structures

Greater organisational flexibility was identified as a success factor. Doctoral programmes may need to be adapted to accommodate collaboration with external actors, international mobility, interdisciplinary approaches and diverse career pathways. Balancing structure with flexibility will make programmes more responsive to the evolving realities of research and innovation ecosystems. Clear timelines, milestones and quality assurance mechanisms remain essential. In addition, doctoral programmes should include mechanisms that allow for justified extensions or flexibility, particularly in collaborative projects where delays and shifting priorities are common. One proposal was to introduce greater flexibility in the design of collaborative projects: instead of mainly relying on long-term commitments, universities and companies could develop smaller, faster collaboration projects that better align with external partners' timelines. This would allow companies to see tangible results within a reasonable timeframe, while still preserving the integrity and quality of doctoral research. Such projects could later evolve into larger, longer-term collaborations.

Navigating trade-offs between critical mass and tailor-made solutions

As is the case for many choices that universities are facing in their societal engagement, there are trade-offs. One example is the balance between creating critical mass for collaborative doctorates or mentorships and offering tailor-made solutions. The former has advantages in terms of scale and how systematically universities can support doctoral candidates. However, critical mass can come with standardisation that in turn may create new barriers for flexible solutions. Thus, while TPG members see the advantages of grouping doctoral candidates together, also to minimise bureaucracy, they recognise that this can set up doctoral programmes in a way that might prove too rigid to remain flexible and to allow continued innovation together with societal partners. One solution is for universities to consider a university-wide contract template for collaborations. This could include minimal requirements and remain open to a variety of options, as for instance in the case of supervision in the partner organisation. Universities could consider avoiding hurdles related to the credentials of supervisors at partner institutions and allow for a case-by-case approach. It would still be scientifically rewarding for everyone involved when a doctoral candidate is accompanied by a mentor – or the regular line manager – at the workplace in the case of a collaborative doctorate, rather than at all costs by an individual with a doctorate and years of scientific experience. Before the start of a collaborative doctorate, universities should assess how academic rigour will be ensured, what the roles and responsibilities are for the university-based supervisors and what the supervisors or mentors/line managers at the societal partner can contribute.

Contingency planning

Partners should consider a continuity plan in case of unforeseen changes at the partner organisation, for instance if a company is restructured or a supervisor is no longer in place. This could be tackled at the level of university regulations. For instance, doctoral candidates could be allowed to finish their doctorate in an academic setting if continuation with the partner organisation is unexpectedly no longer possible. TPG members emphasised that in addition to considering these questions at the start of a collaboration, it is essential to clearly communicate possible options and scenarios to everyone involved, and to maintain regular communication with the external partner throughout the collaboration. One option that TPG members suggested are regular informal meetings, for instance on an annual basis, with the supervisors at the university and the partner organisation, and additional contact persons, for instance from the doctoral school and from the management of the partner organisation. This would ensure that doctoral candidates have contact points in addition to their supervisors who can support them in the case of administrative questions or conflicts.

Building reliable networks

Reliable networks were seen as the foundation of effective cooperation. Strong professional connections create continuity, facilitate communication and provide entry points for new collaborative initiatives. In this context, alumni networks were highlighted as valuable. Former doctoral candidates who now work in companies or other organisations often understand the benefits of doctoral education and collaboration from personal experience. As a result, they can act as ambassadors for collaboration, helping to bridge cultural and institutional gaps between academia and external partners.

Applicability and relevance of the doctoral research and communication of the value of collaboration

The applicability and relevance of the doctoral research also emerged as a significant success factor. When research topics and doctoral curricula clearly address real-world problems or respond to societal needs, external partners are more likely to recognise the value of engagement. Demonstrating that doctoral education can generate practical insights and tangible impact strengthens the case for successful collaboration. TPG members recognised that one main set of success factors ensures clear identification and communication of the value of collaboration for societal partners, and highlights the added benefits of working with doctoral candidates. This can be supported by focusing on the applicability of doctoral projects and research, and recognising the importance of addressing real-world challenges that are relevant to external stakeholders. Universities can showcase stakeholders' previous collaboration experiences to ensure that they gain a realistic sense of the opportunities offered by a collaborative doctorate or through other doctoral collaboration activities.

Internal policies and structures enabling doctoral collaborations

The following set of internal policies and structures were identified as success factors for doctoral candidate support.

- Consider the creation of a specific role or office that supports doctoral collaboration from start to finish, including on legal questions.
- Create guidelines for doctoral collaboration, including on key aspects of collaborative doctorates with societal actors. One example is contract templates that leave room for flexibility but cover the most important points, such as the status of the doctoral candidate, employment provisions, funding requirements, supervision at the university and with the societal actor, academic requirements related to examination and publication, and intellectual property rights.
- Ensure that the university's strategy for doctoral collaboration with society is aligned with doctoral education offers, such as transferable skills courses or advice and mentoring opportunities for doctoral candidates that may involve alumni. Ideally, universities strengthen key competences for doctoral collaboration before the doctorate, that is, during bachelor's and master's degrees. These courses may offer students more opportunities for interdisciplinary approaches and for the development of entrepreneurial and soft skills, for example through extracurricular activities.[46]
- Make collaboration with societal actors part of key performance indicators for staff development, and recognise supervisors and other staff who are successful in this engagement. As the 2025 survey shows, three out of five universities are in favour of taking all three missions equally into account when assessing academic careers. Just above a third of respondents were in favour of a stronger emphasis on contributing to society in these assessments.[47]
- Universities that wish to increase or strengthen their collaboration with external partners within doctoral education should take the time to critically assess whether their current policies and procedures create barriers to this desired outcome. Adaptations should not be detrimental to academic and ethical standards.
- Ensure that administrative questions are handled as much as possible by existing structures, when this is more efficient than creating new structures.

46 Results of the EUA survey on universities and innovation found that there is room for further improvement in the development of student entrepreneurial mindsets. Kozirog, K., Lucaci, S.-M., & Berghmans, S., 2024, 'Universities as key drivers of sustainable innovation ecosystems. Results of the EUA survey on universities and innovation' (Brussels), p. 21.

47 Marti, S., & Peneoasu, A.-M., 2026, 'Policies in doctoral education: Navigating geopolitical change and technological acceleration while advancing Europe's society and competitiveness, EUA-CDE 2025 survey report, part II' (Geneva), p. 39.

Public policy support for collaboration with SMEs, NGOs and smaller public entities

The potentially greater hurdles for doctoral collaborations with SMEs, NGOs and smaller public entities are addressed by public policies in several countries that provide targeted funding for collaborative doctorates or other doctoral education activities with societal partners. Flexibility for different types of supervision by the SME or NGO partner is beneficial. It could include different requirements for supervisors at partner organisations as a function of the value added by their practical expertise. Flexibility may be needed in how universities regulate supervision and respective requirements (habilitation or doctorate), and it could be easier to accommodate in the case of team supervision. An additional way to collaborate with SMEs, NGOs or smaller public organisations with limited collaboration capacity could be to first focus on types of collaboration other than collaborative doctorates, for instance mentorships, internships or networking opportunities, including showcasing events for regional collaboration. TPG members suggested that potential obstacles to collaborative doctorates, for instance in national law, should be monitored by universities. In addition, universities should actively advocate for a supportive policy framework.

Fostering long-term partnerships

To ensure continuity, TPG members emphasised the importance of moving beyond ad-hoc interactions towards long-term and structured partnerships. These relationships enable universities and external actors to align their priorities more effectively and to respond jointly to evolving societal and economic demands. Within these long-term partnerships, alignment of goals and timelines plays a crucial role. Collaboration with societal partners can be maintained and strengthened by institutionalising collaboration, formalising existing partnerships and creating advisory boards. The typical duration of a doctoral project does not always align naturally with the faster pace requested by societal stakeholder organisations. For this reason, TPG members recommended to develop flexible approaches that can address differences in time horizons, without compromising academic standards. Including doctoral projects in long-term strategic collaborations between universities and societal partners, which could include R&I collaboration on several levels, could make it easier to define what sort of research should be conducted through doctoral projects. Reflection is also needed on universities' capacity to retain talent after the doctorate, especially in strategic areas with high demand and remuneration in the private sector, such as engineering, biomedicine or AI.

5 The policy dimension of collaboration with societal partners

5.1 How the regional and national level come into play

As the 2025 EUA-CDE survey indicated, respondents see a need for the national and European level to strengthen support for collaborative doctorates and doctoral education activities. Policies that were discussed at the national level mostly include financial support and incentives for doctoral collaboration. Almost two thirds of survey respondents called for more funding instruments for collaborative doctorates with actors outside academia.[48] As the discussions in the TPG highlighted, several countries, especially Finland, Sweden, Norway, Portugal, Ireland, the UK, and the Flemish Region of Belgium have schemes in place that support collaborative doctorates with societal partners. As shown in the EUA-CDE 2025 survey, private sector funding is ranked after that provided by universities, national funding agencies, governments and European funding programmes when it comes to the financing of doctoral candidates overall. Thus – and given that private sector investments vary considerably across countries in Europe – it seems key to further incentivise private sector investments into doctorates, rather than financing most collaborative doctorates with public funding only. That said, TPG members' experiences showed that public funding is beneficial for collaboration with actors that have limited financial resources, such as SMEs, NGOs or smaller public entities. The relative effect of doctoral collaboration on these smaller entities will likely be greater than in larger corporations or public entities, which in turn would also have more resources to fund collaboration with universities themselves.

An advantage of national or regional initiatives is that they provide scale that allows larger numbers of doctoral candidates to gain exposure to a labour market that is wider than academia. One such initiative is a job shadowing programme organised by five Flemish universities, which allows young researchers to "test drive" a professional career by following a professional in their role for one or two days. In 2025, 133 young researchers took part in the programme.[49] In addition to benefitting doctoral candidates, the initiative has increased labour market awareness of the value of doctoral talent, and allowed the Flemish universities to consolidate relationships with the non-academic world.

Another example is the Technological University Research and Innovation Supporting Enterprise (TU RISE) initiative, funded by the Government of Ireland through the Higher Education Authority, with support from the European Regional Development Fund (ERDF) through the ERDF Southern, Eastern & Midland Regional Programme 2021–2027 and the Northern & Western Regional Programme 2021–2027.[50] This initiative aims to support research capacity building in Ireland's

48 Marti, S., & Peneoasu, A.-M., 2026, 'Policies in doctoral education: Navigating geopolitical change and technological acceleration while advancing Europe's society and competitiveness, EUA-CDE 2025 survey report, part II' (Geneva), p. 43. And: Marti, S., & Peneoasu, A.-M., 2025, 'Doctoral education in Europe today: Enhanced structures and practices for the European knowledge society', EUA-CDE 2025 survey report, part I (Geneva), p. 21-22.

49 Cf. University of Hasselt in the 'Good practices provided by TPG members' annex.

50 https://hea.ie/policy/he-reform/tu-research-and-innovation-supporting-enterprise-tu-rise-scheme/ (accessed March 2026).

technological university sector while deepening engagement with regional stakeholders. Crucially, TU RISE enables the expansion of doctoral education that is deeply embedded in societal and enterprise contexts, fostering collaborative research partnerships that directly address regional and national challenges. By supporting structured engagement between doctoral candidates, industry and community stakeholders, the initiative enhances knowledge exchange, innovation uptake and the co-creation of impactful solutions beyond academia.

In Portugal, the national Science and Technology Foundation (FCT) grants yearly doctoral fellowships, including one track for doctorates in a non-academic environment. This fellowship is for doctoral projects carried out within or in close collaboration with non-academic entities, namely companies and public, social, health, cultural or other interface institutions. The aim is to contribute to strengthening the link between work plans developed in an academic environment and the business and social fabric.[51] This type of fellowship offers scale and was increased over recent years, representing 600 collaborative doctorate scholarships (or 37.5% of all doctoral scholarships provided by FTC) in 2025.

Similarly, in Finland, a national doctoral education pilot initiative seeks to expand doctoral education by establishing 1,000 new fixed-term doctoral researcher positions in collaboration with universities, research institutes and businesses.[52] An appropriation of EUR 255 million will be used to carry out 15 pilots for doctoral programmes in individual research fields. The pilot's objectives include increasing the number of doctoral degrees in Finland, enhancing the flexibility of doctoral programme processes and promoting mobility among doctoral graduates across various sectors. The initiative is designed to create an environment that encourages doctoral candidates to pursue diverse research careers and integrate their expertise into the broader society.

5.2 What Europe can do

As the 2025 EUA-CDE survey highlights, respondents view several European funding schemes that cover collaborative doctorates as key for their universities. In addition to the importance of doctoral networks under MSCA, including industrial doctorates, several other instruments, such as the Joint Research Centre's Collaborative Doctoral Partnership Programme, Horizon Europe's Pillar II and the European Institute of Innovation & Technology's (EIT) higher education initiative are rated highly for the funding of doctoral collaboration. The development of a template contract for arrangements such as those of the Joint Research Centre and similar collaborative doctoral schemes would reduce legal uncertainty and the administrative burden for institutions and candidates alike as inputs from doctoral education leaders during the 2026 EUA-CDE Thematic Workshop in Liège highlighted. In general, longer-term funding perspectives, such as four-year support models, should be considered to better match the real duration and structure of doctoral programmes and provide the necessary stability for impactful collaborative doctoral activities. Furthermore, the importance of a higher budget for MSCA was seen as crucial, also given the relatively low success rates. The EIT higher education initiative was particularly valued for its strong training components and the emphasis on transversal skills, entrepreneurship and innovation-oriented mindsets.

The 2025 EUA-CDE survey also assessed in greater detail how to improve or expand funding instruments at doctoral level. Survey participants were asked whether their doctoral candidates were funded by EU projects involving private companies. More than two in five (41%) respondents indicated that doctoral candidates at their university are funded through MSCA industrial doctorate projects. In addition, 34% reported collaborative funding under Pillar II of the framework programme. Almost one in ten (9%) indicated other EU programme instruments, such as the European Cooperation in Science and Technology (COST) programme, the European Innovation Council's EIC Pathfinder, the NextGeneration EU fund, and the

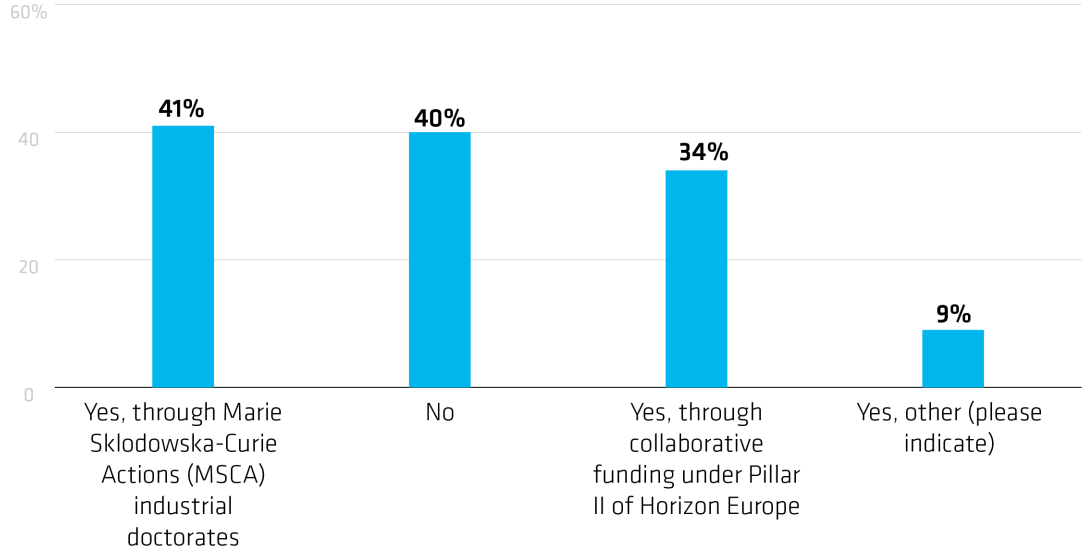
51 Cf. National Portuguese funding track for doctoral fellowships beyond academia in the 'Good practices provided by TPG members' annex.

52 Cf. National Doctoral Education Pilot in Finland in the 'Good practices provided by TPG members' annex.

MSCA doctoral networks. However, a large percentage of respondents (40%) indicated that no doctoral candidates at their university received funding from MSCA industrial doctorates, Horizon Europe Pillar II projects or other European schemes. This means that a large proportion of Europe's universities are currently not reached by these instruments, despite the fact that most universities that participated in the 2025 survey already offer collaborative doctorates.[53] This suggests that there is indeed room for more collaboration with the private sector via EU funding instruments. This would require increased budgets for Horizon Europe funding instruments that support these collaborations, especially in the case of MSCA.

Figure 8: Are doctoral candidates at your institution funded by EU projects that include private companies? Select all that apply (2025 EUA-CDE survey report, part II)[54]

Number of respondents: 210/217



53 Cf. Section 2.2 above.

54 Marti, S., & Peneoasu, A.-M., 2026, 'Policies in doctoral education: navigating geopolitical change and technological acceleration while advancing Europe's society and competitiveness, EUA-CDE 2025 survey report, part II' (Geneva), p. 44.

6 Reflections and ways forward

6.1 Reflections on the previous work of EUA – what has changed in the past 15 years?

As mentioned above, the TPG members discussed the findings of the 2010–2012 DOC-CAREERS project and associated recommendations, as these are among the closest related to the TPG's work that can be found in the literature.[55] The focus of this exercise was to identify aspects that have changed over the last 15 years. Some differences can at least partly be explained by the specific approach of the TPG, which included not just collaboration with private sector companies, but also potentially with all societal partners, including the public and the non-profit sector. In addition, while this TPG focused to a large degree on collaborative doctorates, it also discussed other doctoral collaborations, such as careers advice services, mentorships, internships and networking.

TPG members agreed with the **first 2015 DOC-CAREERS II recommendation** that calls for thorough planning of the collaborative doctoral scheme, involving members from the university and the industry partner, and building trustful relationships. In addition to the focus on intellectual property rights, which was seen as valid, TPG members emphasised the role of specific methods to prepare a collaboration. These include an expectation-setting phase and the co-creation of research questions. Five additional points that are key in the preparatory phase were mentioned by TPG members. First, TPG members noted the importance of clearly defining the rationale and the objectives of the collaborative doctoral project as early as possible before its start. Second, it is key to closely involve the doctoral candidate who will be the linchpin of the collaborative doctorate as early as possible. The third and fourth aspects have become relevant in the last few years: preparations need to include a discussion on AI use to avoid any subsequent academic integrity-related issues. Similarly, given the changed geopolitical environment, research security questions need to be considered early on. This includes topics related to defence and dual use, and the need to balance academic publication requirements with confidentiality. Ensuring that external partners understand the value of academic freedom and the framework for the doctorate from the beginning is important. Fifth, it was highlighted by this TPG that risk management and contingency plans should be agreed upfront.

The **second 2015 DOC-CAREERS II recommendation** on establishing and maintaining formal and informal contact between all the stakeholders was confirmed as a key point. However, TPG members emphasised that depending on the type of societal partner, it might be neither realistic nor necessary to involve top management in a collaborative doctorate. There was agreement that it is important for representatives other than supervisors (or mentors) to be involved on both sides, to ensure the resilience of the collaboration and additional contact points in case of challenges. In addition, TPG members underlined the importance of regular supervisory meetings and more informal meetings with the additional representatives on both sides, to ensure that sensitive issues or possible conflicts are identified and addressed early on.

55 Borrell-Damian, L., Morais, R., & Smith, J., 2015, 'Collaborative doctoral education in Europe: Research partnerships and employability for researchers: Report on DOC-CAREERS II project' (European University Association, Brussels).

TPG members agreed that collaboration with societal partners does indeed require flexibility in the types and modes of collaboration depending on the type of collaboration partner, as stated in the **third 2015 DOC-CAREERS II recommendation**. The TPG also discussed three additional elements.

First, flexibility is not only important with regard to the societal partner, but also to ensure that different settings for doctoral candidates are taken into account. The interviews with doctoral candidates showed that collaborative doctorates that are initiated by experienced professionals lead to particularly impactful outcomes. In addition, this type of collaborative doctorate has a range of advantages that are not possible in collaborative doctorates initiated by a university or partner. The main advantage is the experience and knowledge of the doctoral candidates, which makes collaboration with the societal partner smoother and more organic. Experienced doctoral candidates start in a position that is far more advanced than that of peers who begin their collaborative doctorate after their qualifying degree. An additional doctoral candidate-centred perspective is the need to allow for flexibility to support candidates if something changes, for instance when a supervisor at an SME is suddenly no longer able to support the work or the R&D priorities shift. Further, as the Salzburg Principles emphasise the training of academic supervisors, universities could consider allowing societal partners' representatives to access courses for supervisors at universities. Universities could also be flexible in balancing scientific requirements, for instance by allowing a division of labour between the practical expertise provided by a mentor or supervisor at a partner entity and the academic supervision at the university.

Second, the TPG identified advantages of standardisation, especially for universities that pursue a cohort approach. In this sense, it seems better to combine elements of standardisation with flexibility, depending on a university's overall strategy for societal collaboration at doctoral level. In collaborations with SMEs, as highlighted in the 2015 EUA report, and collaborations with NGOs and smaller public entities, there are various possible solutions to develop collaborative doctorates with an external supervisor or mentor accompanying doctoral candidates on the societal partner side.

Third, TPG members agreed that it is important to go beyond SMEs and include NGOs and smaller public institutions, like municipalities, when it comes to offering specific support.

The **fourth 2015 DOC-CAREERS II recommendation** on ensuring the enrolment of doctoral candidates with the right skill profile was seen as key today. TPG members noted that core competences for doctoral candidates include dealing with ambiguity and a specific mindset, rather than a given skill. This TPG did not identify profiles but rather diverse backgrounds that were found to succeed in collaborative doctorates, including doctoral candidates with substantial work experience. TPG members highlighted the importance of expectation management for doctoral candidates before they embark on a collaborative doctorate. Depending on the background of the doctoral candidates, either the academic or the partner side background should be supported, allowing candidates to spend time across both environments, and learn the different norms and processes. It was also underlined that doctoral candidates should be involved as early and as much as possible in defining and preparing the collaborative doctorate.

The **fifth 2015 DOC-CAREERS II recommendation** is to focus on developing doctoral schools. This was thought to be less relevant, given the high share of universities in Europe with central structures today. However, TPG members considered it crucial to establish structures or expertise for societal collaboration within doctoral schools, to ensure that support resources are in place. The importance of interdisciplinarity was confirmed (**sixth 2015 recommendation**). However, this should also be focused on the doctoral project level rather than only on a dialogue between disciplinary areas.

6.2 Ways forward to enhance doctoral collaboration

This section covers ways forward that actors can consider for their doctoral collaborations. Although the focus is on the institutional perspective of universities, the ways forward are based on inputs the TPG received from all actors involved. Therefore, they may also be relevant beyond the university perspective. The ways forward are in chronological order, starting with strategy and favourable conditions before doctoral collaboration takes place, followed by the preparatory phase, the collaboration phase and the follow up after doctoral collaboration. The section ends with how public policies can support doctoral collaboration.

A self-reinforcing cycle for successful doctoral collaboration

The ways forward presented in this section form a self-reinforcing cycle. Each phase described below can support the next one. The better prepared one phase is, the smoother the next phase will likely be.

Strategy and favourable conditions for doctoral collaboration

- **Collaborating with societal partners as a strategic choice:** universities should be strategic about their doctoral collaborations with societal actors, especially in the case of collaborative doctorates. Key topics to consider include determining focus areas and preferred societal collaboration partners that are aligned with a university's research profile, strengths and priorities. A university's strategy can include defining preferred forms of collaboration, institutional support and guidelines, and assessing financial requirements and conditions for doctoral collaborations. This can include foreseeing flexibilities in the structuring of collaborative doctorates, for instance regarding the time spent at the university or at the partner entity. Another topic for reflection should be the university's capacity to retain talent after the doctorate, especially in strategic areas with high demand and remuneration in the private sector, for example engineering, biomedicine or AI. One way to retain talent after the doctorate is to offer part-time positions to doctoral graduates who are interested in combining their research career pathways outside academia with opportunities in academia.

- **Focusing on interdisciplinary and soft skills before the doctorate:** universities can consider emphasising soft skills and leadership early on to better prepare future doctoral candidates for collaborative opportunities with societal partners. Actions can include, for instance, providing practical extracurricular opportunities during bachelor's or master's degree studies. In addition to soft skills, doctorates need broad expertise beyond single disciplines, because real-life problems are typically interdisciplinary.

- **Mainstreaming societal engagement in university policies and practices:** institutional policies and practices can include a focus on aspects that mainstream societal engagement. Collaborations are mainstreamed and become more sustainable through specific structures and roles (e.g. a director of partnerships), to create a central point that offers support to supervisors and doctoral candidates. At the same time, incentives for individual researchers to work with societal partners should be maintained.

- **Reforming research assessment systems**: evaluation frameworks should recognise a wider range of outputs, including research collaboration with societal actors, knowledge transfer and societal engagement. Partnerships with external stakeholders should be explicitly valued as an indicator of research quality and relevance. This includes recognising co-created research, collaborative doctorates and outputs such as patents and shared datasets as part of the assessment process.

- **Actively increasing collaboration with society:** institutions can increase their societal engagement by actively organising collaboration opportunities that can potentially reach larger groups of doctoral candidates than those who are pursuing collaborative doctorates. This can be achieved, for instance, by organising regular events with networks of societal actors and alumni or through job shadowing, mentoring and internship opportunities. Events with the societal network can be combined with showcasing the activities of existing collaborations. The inclusion of bachelor's and master's degree students in these collaborations can improve recruitment to doctoral education in general and to doctoral collaborations in particular. Universities can create adequate support structures and roles.

- **Fostering more intersectoral mobility:** institutions can consider allowing more shared positions for academic staff, for example by combining functions at the university with roles at hospitals, municipalities, museums or private sector companies. This can make supervision for collaborative doctorates easier. In addition, it can help universities to address potential shortages of teaching staff in strategic areas where the labour market makes retention of academics challenging.

Preparatory phase before collaboration starts

- **Preparing collaboration is key for success**: the first steps towards doctoral collaboration require careful goal setting during an "expectations alignment phase" with the actors involved, to identify shared interests and goals. These discussions can include the scope of the collaboration or the co-creation of research questions. However, they should remain flexible, to allow for initiatives from professionals who are interested in pursuing a collaborative doctorate. This first phase should ensure that expectations are realistic. In the case of doctoral candidates, this could be supported through career counselling.

- **Prioritising the role of doctoral candidates**, especially in collaborative doctorates: stronger emphasis should be placed on doctoral candidates' research interests, professional needs and project ideas when collaborative frameworks are negotiated, to ensure that partnerships are shaped around their professional development and needs.

- **Documenting expectations from the start:** all partners should clearly express and write down their objectives and anticipated outcomes at the beginning of the collaboration to ensure transparency and alignment.

- **Establishing mutual understanding of needs:** academic and societal partners should actively discuss and acknowledge each other's priorities, constraints and working cultures to build trust.

- **Formally agreeing on collaboration content and methods:** before a collaboration starts, key aspects should be agreed in writing between the university, the societal partner and – in case of collaborative doctorates – with the doctoral candidate and the supervisors. These agreements need to ensure clarity in the scope and objectives of the collaboration, the supervision, the collaboration structure, contingency, academic publication requirements vs confidentiality, and intellectual property rights. The legal framework required by all parties should be defined, also through a scientific publication agreement that includes a set clearance period (e.g. three to six months until the final version), possible non-

disclosure agreements and project delays. It is important to set collaboration milestones and agree on work methods in the project and during the collaboration. A minimum period should be considered to link doctoral candidates to academic rigour and the academic environment, including doctoral education resources that support their work.

- **Creating a collaboration structure:** in collaborative doctorates, TPG members advise setting up annual review meetings not just with the supervisors and the doctoral candidate, but also with representatives from the university (e.g. a doctoral school representative) and the societal partner (e.g. the line manager). These people are not necessarily directly involved in the supervision but may be important contacts in case of possible challenges.
- **Recognising that doctorates are very individual:** collaborative doctorates undertaken immediately after a master's degree differ from those pursued by professionals with many years of work experience. Universities should take these differences into account and offer flexible arrangements.
- **Supporting international doctoral candidates:** given the increasing internationalisation of doctoral education, it is key for universities to offer support to international doctoral candidates, who may find themselves in an entirely new environment in Europe and in a collaborative doctorate at the same time. They typically do not have a network and might depend to a greater extent on support structures than national doctoral candidates. One form of support can be a short internship (of around three months) with the societal actor prior to the start of the collaborative doctorate. In such cases, the salary can be funded for example 50:50 by the university and the societal partner.

Collaboration phase

- **Following up** with the collaboration team (doctoral candidate, supervisors and additional representatives) regularly is seen as a key action and should be based on the agreed collaboration structure. The aim is to review milestones, fine-tune collaboration and tackle challenges. These meetings can take place in various configurations and should ensure a regular update of the collaborative doctorate work plan and identification of organisational issues.
- **Anchoring collaborative doctoral projects in doctoral candidates' motivation:** partnerships beyond academia should be designed around the interests and professional goals of doctoral candidates.
- **Supporting the supervisor role:** institutions should provide targeted training and continuous follow-up to supervisors, particularly those with limited experience in cross-sector collaboration, to help them navigate external partner requirements. Universities should also designate a contact person to support external supervisors or mentors, and enhance their understanding of academic structures, quality assurance procedures, expectations and institutional culture. Depending on the collaboration partner, it can be important to **familiarise external supervisors or mentors with academic requirements.** This can include exposing them to university standards, procedures and supervisory processes to develop an understanding of the doctoral education journey.
- **Providing continuous support for doctoral candidates:** ensure that doctoral candidates can remain connected with academia through discipline-related and transferable course offers and other support opportunities. Universities should facilitate opportunities for doctoral candidates to connect with peers and present their work at events. Doctoral candidates should be empowered to take ownership of their project and remain in the driver seat of their doctoral journey.
- **Ensuring sufficient time is allocated for research** during the doctoral project when a collaborative doctorate takes place at a doctoral candidate's original workplace.
- **Maintaining close contact between partners and the university** at supervisor level is important. Universities should invite partners to maintain the network throughout the project and beyond.

Activities after collaboration

- **Create an alumni scheme** to build and maintain a network that can advise students who are interested in collaborative doctorates and doctoral candidates during their research, including on career opportunities outside academia.
- **Recognise the engagement of supervisors in collaborative doctorates**: provide institutional recognition and career development incentives for supervisors who invest additional effort in intersectoral collaboration, acknowledging their role in fostering impactful doctoral education.
- **Adapt research assessment frameworks** to the different career paths of doctorate holders: ensure that research evaluation frameworks recognise a broad range of learning outcomes and career trajectories emerging from these partnerships, and formally acknowledge these contributions in career development.
- **Monitor and reflect**: universities can monitor a doctoral collaboration and its impact, and reflect on possible improvements, via surveys on doctoral candidates' experiences. These activities can also take place in informal settings, such as regular meetings of doctoral school leaders with supervisors and doctoral candidates involved in doctoral collaboration. The results of these reflections can be used for improvements, future engagement with societal actors and feedback to policy that can help to calibrate future public policies.

Public policies supporting doctoral collaborations

- In the case of collaborative doctorates, **grants provided by national or European funders play an important role in fostering collaboration**, especially with SMEs, NGOs and smaller public organisations. Thus, these funding instruments should be further strengthened. Given the evidence that a large share of universities are not reached by Horizon Europe funding instruments, such as MSCA and Pillar II collaborative funding, these funding instruments should be expanded with adequate funding.
- Grant and programmes at national or European level that are funding collaborative doctorates **should provide both funding schemes to scale doctoral collaboration and opportunities for individual doctoral candidates, including those with extensive experience, giving them room to develop their research projects**. At the same time, national or European regulations should avoid creating barriers for doctoral collaboration with societal actors.

Annex 1 – Good practices provided by TPG members

Edge Hill University, United Kingdom

Nik Bessis

Edge Hill University's Our Connected Futures

Overview

Edge Hill University's (EHU) commitment to doctoral collaboration beyond academia is embedded in its refreshed institutional strategy, Our Connected Futures, which integrates research, knowledge exchange, and public and community engagement. Much of this activity is placebased in the northwest of England, a large postindustrial region characterised by historically low productivity and educational aspiration, alongside significant social deprivation and complex public health challenges.

EHU has established strategic partnerships with organisations including Wigan Council (Greater Manchester); Alder Hey Children's Hospital NHS Trust; Wrightington, Wigan and Leigh Teaching Hospitals; and Shakespeare North. Through its Productivity and Innovation Centre, the university has supported the growth of over 350 SMEs, often via Innovate UK-funded Knowledge Transfer Partnerships (KTPs). These partnerships use an embedded-researcher model that engages doctoral candidates and early-career postdoctoral researchers.

The embedded approach has been extended across other sectors. The Health Research Institute's Integrated Clinical Academic Training (ICAT) programme, funded by the National Institute for Health and Care Research (NIHR), provides structured training and mentorship for clinicians pursuing academic careers. In parallel, EHU has developed four-year Clinical Lectureships for medics, with 50% protected time dedicated to doctoral research.

EHU also collaborates with Wigan Council on public education policy and with a growing number of professional sports clubs that fund master of research and doctoral programmes. In these partnerships, researchers are embedded within organisations, working on topics ranging from performance analysis to the role of sport in building community resilience, closely aligned with the Health Research Institute's work on sports injury and rehabilitation.

Institutional good practice

The approach is underpinned by coproduction with partners who directly benefit from the research. Partners like National Health Service (NHS) Trusts and the Crystal Palace Football Club fund embedded master of research and PhDs. They typically have the resources to invest in substantial research but are understandably protective of their data. The programmes address problems that partners want to examine, using their data. A key challenge has been to develop contractual agreements that ensure robust data protection while allowing anonymised data to be used for publication. These agreements, also adopted with local authorities, have been essential to building trust and establishing a strong reputation for integrity. This practice has enabled partners to attract funding beyond existing local authority budgets. Collaboration with Wigan Council has supported bids for Greater Manchester funding in priority areas of mayoral investment, including the use of AI to address health policy and socio-economic challenges. Partnerships with NHS Trusts have additional complexities relating to privacy, confidentiality and the handling of sensitive health data. Our coproduction approach enables bespoke agreements that have strengthened the research environment and contributed to successful NIHR bids, including the GBP 2.5 million Leaders in Mental Health programme.

Coproduction is a core principle of Our Connected Futures. Our experience demonstrates that this enabling approach enhances the research environment, develops people, attracts external funding and generates new knowledge with a tangible impact for regional communities and for wider evidence-based policy and practice.

Leuphana University of Lüneburg, Germany

Anton Guhl & Anja Soltau

Leadership in Society and Business Certificate Programme

Overview

The Leuphana University of Lüneburg attaches great importance to promoting cooperation beyond the academic world at doctoral level by systematically supporting the career development of researchers in the qualification phase. Doctoral candidates are encouraged to prepare for a variety of career paths, both within the academic system and in science-based roles in industry, public institutions and society. This approach reflects the increasing diversification of the academic job market and the resulting change in career prospects for young researchers.

Across its various institutional units, Leuphana offers a wide range of continuing education opportunities for doctoral and postdoctoral researchers. These include targeted workshops and training formats that teach transferable skills for collaboration outside academia, such as strategic networking, conflict management in cooperative environments and professional communication. In addition, the university regularly organises the "Let's Talk Career" lecture series in collaboration with other universities, which provides insights into non-academic career paths through the experiences of alumni.

A central element of Leuphana's graduate school is the Leadership Certificate, which supports doctoral and postdoctoral researchers in developing and achieving career goals outside academia. Through this structured programme, participants develop individual career goals and acquire leadership, communication and cooperation skills to successfully prepare them for their entry into the professional world.

Institutional good practice

The graduate school's Leadership in Society and Business Certificate Programme (one year, up to 15 participants from all disciplines) supports doctoral candidates and postdoctoral researchers in preparing for career paths beyond academia. A key success factor is the programme's participant-centred design. By combining structured self-reflection exercises, intensive peer exchange and thematic workshops led by individuals with academic backgrounds and practical, experience-based knowledge, participants explore individual career goals and start working on their first steps in this direction.

Another important success factor is the programme's phased structure. It begins with internal reflection on skills, interests and values before shifting the focus outwards to potential professional fields and roles. This helps participants articulate clear career profiles, develop job prototypes and engage with practice through elements such as informational interviews, job shadowing and internships.

One challenge in designing and implementing the programme was addressing the participants' diverse backgrounds and career expectations. This was approached using flexible formats and individualised pathways. Another challenge was overcoming uncertainty about non-academic careers, which was met by creating a protected space for reflection, peer exchange and a prototyping process for future jobs.

In conclusion, the programme combines structured guidance, flexibility and practical engagement to support early-career researchers in finding meaningful positions beyond academia.

Munster Technological University, Ireland

Siobhán Mac Sweeney

Embedding societal collaboration in doctoral education: the MTU approach

Overview

Munster Technological University (MTU) puts collaboration beyond academia at the centre of its doctoral strategy, positioning research as a driver of regional, national and international impact. Doctoral candidates engage with multinational corporations, SMEs, public sector bodies and community organisations through industry-partnered PhDs, collaborative research agreements and innovation-focused initiatives. These partnerships ensure doctoral research addresses real-world challenges while generating economic, societal and cultural value.

MTU's regional engagement framework connects doctoral candidates with partners across science, engineering, business, social sciences, humanities and the creative sectors. Projects are frequently co-designed with external stakeholders, to strengthen their relevance and translational impact. International collaboration further enhances research quality through joint supervision, participation in European consortia and global mobility opportunities. Alongside disciplinary expertise, doctoral candidates undertake structured professional development in innovation and entrepreneurship, research communication, career development and work-integrated learning. This prepares graduates for leadership across sectors.

Institutional good practice

A key example of this approach is MTU's tripartite-designed doctoral work placement model. Doctoral candidates undertake structured placements, typically of at least 12 weeks, with enterprise partners aligned with their research and regional priorities. Each placement is governed by a formal agreement between the doctoral researcher, the enterprise host and the principal investigator, defining objectives, deliverables and learning outcomes. This structure safeguards academic quality while maximising enterprise relevance.

Challenges include host identification, variable readiness for doctoral-level engagement, intellectual property management, equitable access for doctoral candidates and potential impacts on completion timelines. MTU addresses these through early placement planning, enterprise liaison support, clear guidance on doctoral-level expectations and a co-creation model that aligns placement activity with thesis objectives. Flexible formats, including remote and hybrid options, enhance accessibility. Intellectual property arrangements are managed case-by-case through the Technology Transfer Office. The learning achieved may be accredited through the 10 ECTS Research Postgraduate Placement module, which formally integrates experiential learning in the doctoral framework.

Norwegian University of Science and Technology, Norway

Gro Lurås

Norwegian Centres for Research-based Innovation

Overview

Collaboration beyond academia is, and always has been, an integral part of the Norwegian University of Science and Technology (NTNU), Norway's largest university. In addition to the Norwegian Centres for Research-based Innovation (SFI), NTNU is host and partner to many of Norway's Centres for Environment-Friendly Energy Research and the newly established AI Centres and Centres for Quantum Technology Research, all of which require substantial collaboration with industry partners. NTNU focuses on innovation at all levels and adapts it for both students and employees. In addition, collaborations with the public sector through university hospitals, university municipalities and university schools are central to the university's ability to work towards its strategic vision: knowledge for a better world.

Institutional good practice

The first centres in the Norwegian SFI scheme[56] funded by the Research Council of Norway[57] were established in 2007 for an eight-year period. A total of 68 centres of research-based innovation have been awarded through the scheme, the latest in 2025. The aim of the SFI scheme is to promote innovation through long-term research, with close collaboration between companies and research groups to strengthen technology transfer, internationalisation and researcher training. For NTNU, the SFI scheme is important strategically, with a substantial in-kind contribution. The university currently hosts eight centres and has participated in around 56% of allotted SFIs.

Researcher training is a key component of SFIs. Most centres include many PhDs who are directly funded through the centre, as well as associated candidates. For the PhDs being part of a centre that is built on well-established collaborations with business partners outside of academia strengthens their networks and opportunities, while showing them the immediate relevance of their doctoral projects. Through the close collaboration between the university and industry partners, these candidates learn about the interplay between research activity and implementation of results and innovations in industry. This eases transitions into the private sector and increases their motivation.

SFI fosters a centre culture where all research and industry partners see the benefit of working together towards a common goal. Key success factors are the training of the PhDs in the SFI ecosystem early on and working with innovation as an integrated part of research. Other success factors are offering courses and relevant work experience for PhDs. During a period of eight years, a centre's priorities can shift for all parties and it is important to establish communication and manage expectations between partners. PhDs need to be clear on their role in the centre and their goal of completing a doctoral thesis. Including active R&D-intensive companies and ensuring that the PhDs are closely connected with partners through co-supervisors and secondments increases the benefits for individual PhD-candidates, the company and the centre itself.

The SFI scheme continues to contribute with high quality research and innovations. It has a considerable impact on research training in Norway. Even by the most conservative estimate, several hundred PhDs have received their education through SFI centres. The scheme benefits the individual candidates, the universities, industry partners and society as a whole.

56 https://www.forskningsradet.no/en/financing/what/sfi/
57 https://www.forskningsradet.no/en/

OsloMet University, Norway

Tanja Storsul

Public sector and Industrial PhDs

Overview

OsloMet has a strong commitment to engagement, active participation and collaboration with the surrounding society. We have doctoral-programmes in educational sciences, engineering sciences, health sciences, innovation for sustainability, social sciences and the study of professions. In all our programmes, we facilitate close contact with the fields of study, and a large share of our doctoral candidates collaborate actively with partners in private or public institutions outside academia.

Institutional good practice

OsloMet has several doctoral candidate schemes, including the "Public Sector PhD"[58] and the "Industrial PhD"[59] funded by the Norwegian Research Council. A Public Sector or Industrial PhD project is a collaboration between three parties: the public body/private firm, a degree-conferring university or university college, and the candidate.

The public or private entity is the owner of the project and is responsible for ensuring that the research question is rooted in the needs of the enterprise. It is the public or private entity that applies to the Research Council for support.

The candidate is the researcher in the project and acquires research competence and knowledge relating to key issues in the public/private sector. Candidates examine in depth relevant issues and contribute to further developing the public body/private entity.

The degree-conferring institution is responsible for quality assurance of the academic content of the doctoral project on admission to the doctoral programme. The scheme presupposes that the projects meet the same scientific requirements as other doctoral projects that are taken up at the institution, and comply with the institution's regulations for doctoral education with regard to admission, implementation and assessment. At OsloMet, we consider that these schemes are very useful for the university and for building bridges between research and the relevant fields of practice. A large majority of the doctoral candidates in these schemes report that they are very satisfied with the opportunity to develop in-depth knowledge in an important area of their practice.

We see two main challenges with these specific schemes. The first is that doctoral candidates selected by their employers for these schemes are typically experts in their fields of practice, and are used to being the person that colleagues come to for guidance. This is a huge advantage, but also a challenge. As doctoral candidates, they are novices in the academic environment, not experts. The key to address this challenge is information, management of expectations, good dialogue and close supervision. Another challenge is that these candidates must have a foot in two camps. They have to maintain close connections with their original employers and field of practice, at the same time as they integrate into the academic environment. Again, this is one of the advantages of the schemes, but also time consuming and quite demanding. We try to address this by underlining the responsibility of university research groups to include these candidates, and by promoting close dialogue between the three parties: the private or public employer, the candidate and the university, so that all can contribute to frameworks for the candidate's project.

At OsloMet, our experience is that the Public Sector and Industrial PhD schemes contribute to closer cooperation and transfer of knowledge between the public and private sectors and research organisation.

58 https://www.forskningsradet.no/en/financing/what/public-sector-phd/
59 The Industrial PhD scheme – doctoral projects in industry

Royal College of Surgeons in Ireland, Ireland

Deirdre Fitzgerald-Hughes[60]

The StAR MD programme: developing clinician scientists through partnership with hospitals and clinical organisations

Overview

The Royal College of Surgeons in Ireland's (RCSI) University of Medicine and Health Sciences in Dublin offers undergraduate, postgraduate and professional education and training opportunities. Our singular focus on human health and healthcare means we have established partnerships with hospitals and clinical sites across Ireland where our learners develop their clinical and research skills. Many staff have dual appointments as hospital consultants and university clinical professors. Our doctoral programmes, the Doctor of Medicine (MD), Professional Doctorate (DProf) and Doctor of Philosophy (PhD), prioritise clinical and patient-centred research, and candidates benefit from our institutionally embedded collaborative culture. For example, an MD candidate's supervisory team must include a hospital-based clinician who is actively researching in a specialised field.

Institutional good practice

RCSI provides opportunities for doctors to undertake a two-year Strategic Academic Recruitment (StAR) MD through the collaborative scholarship programme. The programme enables surgical and medical registrars/specialist registrars and general practitioners to conduct research during their clinical careers, to work towards their MD. The programme offers protected research time, providing scholars with an environment where they can comfortably focus on quality research while maintaining a foothold in clinical practice through hospital/clinical partner organisations. Postgraduate tuition fees and salary are sponsored by the partner organisation and a research budget is provided by RCSI. StAR MD graduates consistently cite the protected research time, committed salary and the research budget afforded to them as critical to successful completion. Scholars also endorse the structured framework of the programme as supporting their academic success. The programme provides frequent progress reviews, thesis-writing classes and networking opportunities.

The programme has expanded over ten years from an intake of six scholars in 2016 to twenty-six in 2025 (115 scholars in total). This expansion was driven by the support of further clinical partners, which increased from one to fourteen. Balancing expansion with the qualities that ensure success is vital and requires carefully managed partnerships. It is important that scholars remain on-track and potential risks to progress are mitigated early. This is achieved through appropriate and sustainable resourcing, including administrative elements. The programme has been led since its inception by the Deputy Head of the School of Postgraduate Studies, Professor Emer Reeves, with support from the School of Postgraduate Studies and Medicine and several academic and administrative departments across the university. The StAR MD calendar of activities includes partnership development and clinical partner/university joint recruitment, project academic review, scholar registration and onboarding. All candidates undergo annual review and mini-vivas, and additional periodic panel reviews. These milestone reviews support StAR MD scholars' progression during the short programme duration, especially given the considerable pressure on these individuals to advance their clinical careers, which may become a competing pressure on their ring-fenced research time.

StAR MD graduates have become ambassadors for the programme. As clinician scientists and research leaders, they strengthen ties between hospitals/healthcare and academia, which are critical in translating our research into improved health outcomes globally.

60 Co-authored good practice: Prof. Deirdre Fitzgerald-Hughes, Prof. Darran O'Connor, Prof. Emer Reeves (School of Postgraduate Studies); Ms Lisa Maye Gregory (RCSI University of Medicine and Health Sciences).

Swedish University of Agricultural Sciences, Sweden

Dimitris Athanassiadis

Building partnerships for collaborative doctoral training in sustainable forestry

Overview

Collaboration with industry, authorities and wider society is an integral part of the Swedish University of Agricultural Sciences' (SLU) mission. The university contributes knowledge and expertise through diverse partnerships, guided by the ambition that SLU research should create tangible benefits for the sectors it serves. Many research questions are best developed in dialogue with stakeholders, and SLU has well-established national and international collaboration structures. External collaboration specialists, who combine strong research credentials with extensive expertise, further strengthen knowledge exchange and outreach.

Institutional good practice

The specific task was to establish a research school within the Swedish Wallenberg Initiatives in Forest Research to train 50 doctoral candidates, 16 of whom will conduct their doctoral studies in collaboration with industry, public authorities or other stakeholder organisations. The overarching aim is to advance research on sustainable forestry while strengthening long-term competence supply beyond SLU.

A key challenge was to design a structured and transparent process for matching researchers at SLU's Faculty of Forest Sciences with companies, authorities and other stakeholders engaged in forest use and management. The process began with a webinar where external stakeholders presented their perspectives on major challenges and research needs related to sustainable forestry.

Researchers who are qualified to act as principal supervisors and interested in collaborative or industry-based doctoral projects were then invited to submit concise, one-page project descriptions to address these challenges. The proposals were compiled into a project portfolio and shared with stakeholders interested in hosting or partnering a doctoral project.

The next step was a full-day, in-person meeting where researchers presented their ideas to potential partners. This format enabled direct dialogue, with questions and discussions during presentations and networking sessions. Afterwards, stakeholders ranked the proposed projects. Based on these rankings, the researchers with the most attractive proposals were invited to submit full applications, which were then scientifically reviewed. A weighted evaluation model ensured that high scientific quality was aligned with stakeholder priorities.

In the final model, each selected doctoral candidate is permanently employed by the partner company, authority or organisation (with exemptions for NGOs and voluntary organisations). The doctoral project spans five years: 80% of the time is dedicated to research training (equivalent to four years of full-time study) and 20% is dedicated to internship activities in the host organisation.

The research school contributes SEK 2.4 million per doctoral project towards salary costs, at a minimum corresponding to SLU's doctoral salary scale. To ensure continuity, participating partners must demonstrate financial stability that covers the full doctoral period. Each supervisory team includes at least one co-supervisor from the partner organisation and access to a reserve supervisor. In addition, the host organisation must demonstrate the capacity to engage actively in research, to ensure meaningful collaboration throughout the doctoral training.

University of Hasselt, Belgium

Rosanne Ceuppens & Rosie Allison[61]

Test drive a career: job shadowing initiatives from the five Flemish universities

Overview

On an institutional level, the University of Hasselt, as a civic university, supports young researchers to become excellent research professionals who are broadly employable in and outside academia. The Doctoral Schools offer an extensive variety of workshops in career development to help young researchers navigate the non-academic world. On top of this, we offer a yearly mentoring pathway, which consists of an academic and civic track. Mentees from the civic track are paired up with a mentor (from a small/large company, government, hospital, social sector or other). Mentor and mentee meet each other on a regular basis and exchange experiences, to help the researchers to successfully enter the external labour market. Hasselt is also a member of the Flemish interuniversity working group, the PhD Talent Coordination Team. This peer group coordinates career development activities in Flanders, with a focus on engaging researchers with the non-academic job market. Initiatives include an annual Job Market for Young Researchers, a yearly PhD Talent Stakeholder meeting with representatives from industry, an Advisory Board of labour market representatives, job shadowing, and a career and job site, the PhD Talent Pool.

Regional initiative

One of the successful initiatives organised by the five Flemish universities is the job shadowing programme. This initiative allows young researchers to "test drive" a career by following a professional in their role for one or two days. In 2025, 133 young researchers took part in the programme to gain a better understanding of what it is like to work in a particular role/organisation. Companies also benefit from this initiative, as they broaden their network, meet PhD talent, and increase their organisational visibility.

One of the key success factors, as highlighted in participant feedback, is how job shadowing emphasises the use of soft skills in industry. As one participant noted from their experience shadowing a supply chain consultant: "This experience showed me how the role requires not only strong technical expertise… but also excellent project management and communication skills."

Furthermore, participants highlighted that the discussions they had over the course of the job shadowing day(s) often went beyond the content of the role, as one participant described: "Aside from the 'real' shadowing, I also liked the non-shadowing part, where we simply discussed career strategies with the person we were shadowing." Participant evaluations of their job shadowing experiences are also posted online on the PhD Talent Pool website, so that other students can benefit from their insights or gain inspiration for future job shadowing initiatives. Job shadowing allows young researchers at the five Flemish universities to get a taste of what it is like to work outside of academia, and to identify the skills they need to focus on for their future career. In addition, the initiative has increased labour market awareness of the value of PhD talent, and allowed the Flemish universities to consolidate relationships with the non-academic world.

61 This regional initiative was provided on behalf of the TPG member of the University of Hasselt.

University of Rijeka, Croatia

Igor Prpić

University of Rijeka and Regional Innovation Matchmaking Platform

Overview

The University of Rijeka (UNIRI) provides doctoral education in line with the principles and recommendations of the EUA-CDE, with a strong focus on interdisciplinarity, internationalisation, quality assurance and collaboration beyond academia.

UNIRI's Doctoral School supports doctoral candidates in developing research with clear societal and economic relevance. This is achieved through structured transferable skills training, career-oriented workshops, summer schools and initiatives such as the PhD Career Café, which introduce doctoral candidates to career paths beyond the traditional academic sector. These activities are reinforced through UNIRI's active participation in European university networks (such as Young Universities for the Future of Europe YUFE and the Young European Research Universities Network YERUN), fostering international cooperation, mobility and joint research initiatives.

A strategic priority of UNIRI is the systematic involvement of non-academic stakeholders from industry, public authorities and civil society into doctoral education and research. This approach combines physical networking activities with digital tools that facilitate applied research, innovation and collaboration beyond academia.

Institutional good practice

The Regional Innovation Matchmaking Platform (RIMAP) is a digital platform jointly developed by the University of Rijeka and the Regional Development Agency of Primorje-Gorski Kotar County (PRIGODA). It serves as an online matchmaking environment connecting academia with industry, public institutions, non-governmental organisations and the wider community.

The platform enables non-academic actors to publish specific challenges and development needs, while researchers and doctoral candidates present their expertise, research capacities and infrastructure.

Several factors have contributed to RIMAP being a successful good practice at UNIRI:

- Clear value proposition for all stakeholders: academic expertise is directly aligned with real-world needs from industry and the public sector, to ensure mutual benefit and relevance.
- Strong institutional and regional support: the involvement of UNIRI, PRIGODA and related innovation units ensures strategic alignment, credibility and long-term sustainability.
- Digital matchmaking approach: an accessible, transparent and searchable online interface significantly lowers entry barriers for collaboration beyond academia.
- Interdisciplinary orientation: RIMAP encourages collaboration across scientific fields, enabling doctoral candidates to contribute to complex societal and economic challenges.

The main challenge was ensuring continuous stakeholder engagement. This was addressed through targeted promotion, workshops, the integration of RIMAP into ongoing institutional and regional projects, and the presentation of successful collaborations. Additional challenges related to data quality, intellectual property and platform sustainability were mitigated through clear guidelines, moderation mechanisms and alignment with institutional, regional and EU-level research and innovation priorities.

RIMAP illustrates how a structured digital platform, embedded in a broader institutional strategy, can effectively strengthen collaboration beyond academia at the doctoral level. It enhances the societal relevance of doctoral research, supports doctoral employability and contributes to regional innovation.

University of South-Eastern Norway, Norway

Monica Fagerlie

Research and education in strong collaboration with industry and society

Overview

The University of South-Eastern Norway (USN) has a strong professional and work-integrated profile, offering education and research that is closely connected with regional society and working life. At the doctoral level, USN emphasises collaboration with partners outside academia to ensure that research is both academically rigorous and relevant to society. This includes participation in national research schools and the Centres for Research-based Innovation (SFI). Across its doctoral programmes, USN integrates real-world problem solving, cross-sector collaboration and exposure to non-academic environments, to prepare candidates for diverse careers within and beyond academia.

Institutional good practice

A good practice that demonstrates USN's commitment to collaboration beyond academia is the Industrial Research School in Complex Systems (INRESCOS). Funded by the Research Council of Norway, INRESCOS is coordinated by USN in collaboration with the University of Agder (UiA), NTNU, and a wide network of companies. The school provides doctoral candidates with structured opportunities to conduct research in and with industry. INRESCOS builds on USN's industry master's model, where master's students conduct research embedded in companies. This well-established practice formed the foundation for the INRESCOS framework, creating predictable collaboration structures for research conducted in real work environments. See experiences here.

A central success factor is the shared commitment to an "industry-as-laboratory" model, enabling candidates to work closely with real-world challenges while maintaining high academic standards. Companies gained access to new knowledge and analytical capacity, while candidates developed deeper problem understanding and highly relevant research topics. This model has also influenced USN's strategic research areas, focused on regional value creation, which increasingly draw on the experiences of the industry master's programme and INRESCOS. These crossfaculty initiatives promote transdisciplinary research and collaboration beyond academia to generate societal impact.

The structures and results developed through INRESCOS were important in securing a new SFI Centre for Effective Engineering and Learning in Complex Systems (CELECT), granted in December 2025. CELECT brings together an expanded consortium of industry partners with academic partners from INRESCOS. It aims to strengthen Norway's capacity for innovation and product realisation in an increasingly complex and technology-driven landscape. Its objectives focus on enhancing innovation capability and efficiency in maritime, manufacturing, defence and aerospace industries, enabling industry to "do more with less, and faster". All CELECT doctoral candidates will be part of the research school. Master's students will also contribute to the centre's research and innovation activities. Industrial needs feed directly into research activities, while the academic work packages generate new knowledge that is validated across sectors. This continuity ensures that collaboration remains structured, scalable and impactful.

The progression from the industry master's model to INRESCOS and now to SFI CELECT shows how structured, long-term collaboration can create scalable impact. Each success has built on the previous one. This demonstrates how strong cross-sector practices in doctoral education can contribute directly to major national innovation initiatives and long-term societal benefit.

German Council of University Faculties in Engineering and Informatics

Jan Hesselbarth

University–industry collaboration on doctoral candidates in electrical engineering in Germany

Overview

Most German engineering departments at universities are represented through "Fakultätentage" like the organisation German Council of University Faculties in Engineering and Informatics (4ING), to establish common opinions and make related public statements. The author of this good practice is the EUA-CDE representative for 4ING, who is active in 4ING and is a professor of electrical engineering at a German university.

In electrical engineering, most doctoral candidates are funded through regular university contracts or other public sources. Funding may also come in part or entirely from an industrial company related to the topic, while the candidate still works at (and is employed by) the university. Candidates employed by the university may conduct parts of their research in the laboratories of an industrial partner. In all such collaborations, the benefit for the research is clear, as the candidate gains access to special equipment, technologies or data. Collaborations for doctoral projects are initiated by the professor, usually based on longstanding relationships with non-academic partners, or by the partners themselves. The university provides draft research contracts and handles organisational and financial matters, as well as intellectual property and publication procedures. The most distant from the public-funded scenario is a doctoral research project carried out by the candidate within a company, funded by that company (most often as a regular employee). We refer to this as an "industry doctorate".

Institutional good practice

All variants of cooperation with industry are strongly welcomed by the university, by most professors and by the students. They enable advanced research with up-to-date practical relevance, help bridge funding gaps in university laboratories and broaden the career prospects of doctoral candidates. However, several aspects of the industry doctorate need consideration: the scientific rigour of the work; the individual contribution of the candidate to the results; the intellectual property/publicity of the results; fairness: the required personal effort of the "industrial" doctoral candidate to achieve the degree, compared to the "classic" doctoral candidate working at the university; and the functioning of the "system".

In relation to the last point, since the teaching contributions of doctoral candidates working at the university are indispensable for its daily operation, a large number of candidates in industry doctorates may destabilise the required overall teaching obligations.

Some of the above aspects can be addressed through appropriate contracts and established practice (for example on scientific rigour and intellectual property/publicity). However, the individual contribution aspect requires strong mutual trust and commitment from the university professor and the supervisor(s) at the industrial partner. The fairness aspect cannot be resolved. An industry doctorate is inherently faster by about one quarter, since distractions such as teaching duties and the "wishes" of the supervising professor do not exist. Similarly, the aspect "functioning of the system" cannot be solved, since in engineering sciences, the number of available and capable doctoral candidates appears small and continues to decline.

All university–industry collaborations offer substantial benefits for the parties involved, including the doctoral candidate. However, it is important to remain aware of the associated challenges and problems, and acknowledge that unsolvable issues require mutual trust and a willingness to compromise.

National initiative of Finland

Anne Portaankorva, Chair, Committee of the Vice-Rectors for Research, the Council of Rectors of Finnish Universities (Unifi); Vice-Rector for Research and Sustainability, Professor in Neurology, University of Helsinki[62]

National Doctoral Education Pilot in Finland

Overview

The National Doctoral Education Pilot, funded by the Ministry of Education and Culture in Finland, aims to promote collaboration beyond academia at the doctoral level.[63] This initiative seeks to expand doctoral training by establishing 1,000 new fixed-term doctoral researcher positions in collaboration with universities, research institutes and businesses. In more detail, an appropriation of EUR 255 million will be used to carry out 15 pilots for doctoral programmes in individual research fields. The pilots' objectives include increasing the number of doctoral degrees in Finland, enhancing the flexibility of doctoral programme processes, and promoting mobility among doctoral graduates across various sectors. The initiative is designed to create an environment that encourages doctoral candidates to pursue diverse research careers and integrate their expertise into the broader society.

National initiative

A notable good practice emerging from this initiative is the structured support and funding provided to doctoral researchers through the pilot programme. This includes a three-year full-time funding model that aims to secure financial stability for candidates while they conduct their research.

Key success factors

- Robust funding mechanism: the provision of 36-month full-time contracts has significantly increased the number of doctoral positions and provided candidates with the financial security necessary to focus on their research without the burden of financial insecurity.
- Streamlined processes**:** the pilot has led to modernisation within universities regarding doctoral education structures. This includes a reduction in coursework requirements and administrative burdens, which may facilitate faster completion of degrees.
- Focus on supervision quality**:** strengthening supervision practices has been a priority, to ensure that doctoral candidates receive the guidance needed to navigate their research journey successfully.

The updates in the administration and coursework requirements for the doctoral degree, initiated by the doctoral pilot programme, have already borne fruit. The total number of doctoral degrees completed in Finland in 2025 was more than 10% higher than the number of degrees in 2024.

Challenges encountered: despite the positive developments, challenges persist. The concept of "security of supply in knowledge" remains vague, which complicates the assessment of the pilots' success. Additionally, 50% of the doctoral candidates have expressed concerns about their ability to complete their degrees within the designated three-year timeframe. This indicates a need for ongoing support and flexibility in completion timelines. To address these challenges, feedback is continuously gathered from doctoral researchers and supervisors to refine processes. The structured approach supports the academic progress of doctoral candidates, while fostering an environment that connects research with practical applications in various sectors. By integrating diverse perspectives from academic and non-academic fields, the National Doctoral Education Pilot aims to create a more cohesive doctoral education landscape in Finland, ultimately preparing graduates to contribute effectively to society.

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62 This national initiative was provided on behalf of Finnish TPG members.

63 Cf. https://unifi.fi/en/reforming-researcher-training/ and the report about the recommendations: https://unifi.fi/wp-content/uploads/2024/08/Unifi_The_future_direction_of_doctoral_education_in_Finland_accessible.pdf

National initiative of Portugal

Margarida Correia-Neves

National Portuguese funding track for fellowships for PhDs beyond academia

Overview

In Portugal, the national agency Science and Technology Foundation (FCT – ***Fundação para a Ciência e a Tecnologia***) grants yearly doctoral fellowships in all scientific fields. Since 2022, the call has been divided into two tracks. The first is PhDs in all areas in academic institutions. The second is PhD in non-academic environments, aimed at doctoral projects carried out within or in close collaboration with non-academic entities, namely companies or public, social, health, cultural or other interface institutions, with the aim of contributing to strengthening the link between work plans developed in an academic environment and the business and social fabric.

National initiative

This line of grants in non-academic environments aims to: (i) promote interaction between academic research and productive or social sectors outside the university, encouraging doctoral projects that have applicability and direct impact on society; (ii) enable doctoral candidates to carry out a substantial part of their work in external organisations, strengthening relevant skills beyond the academic environment and increasing employment opportunities after the doctorate; and (iii) structure advanced training that responds to real challenges in the socio-economic fabric, strengthening links between science, technology, innovation and society.

A specific condition for the award of these scholarships is that the "candidates' work plans cover a considerable period of the scholarship in non-academic institutions, ensuring at least 12 months (consecutive or interpolated) at the same non-academic host institution operating in Portugal." Furthermore, "it is also necessary to carry out research activities in at least one host institution of an academic nature, whether national or foreign, in order to ensure the desired link between the academic and non-academic environments."[64] Another specific condition is that at least two supervisors need to be considered, one from the academic host institution and the other from the non-academic institution where the work is performed.

Non-academic doctoral scholarships have been gaining ground in relation to the total number of doctoral scholarships awarded by the FCT, representing 22.3% in 2023 (332 out of 1,488), 29.9% (451 out of 1507) in 2024 and 35.4% (550 out of 1554) in 2025. In the call for applications for 2026, which is currently underway, the commitment to continue supporting doctoral studies in close collaboration with civil society entities, companies, museums, hospitals, associations and non-governmental organisations is reiterated, with a total of 1,600 scholarships being offered, of which 600 (37.5%) are in the Specific Application Line in a Non-Academic Environment.

64 Concurso Bolsas de Doutoramento 2026 – Linha de Candidatura Específica em Ambiente Não Académico, accessed on 2 March 2026.

Annex 2 – Members of the 2025-2026 EUA-CDE Thematic Peer Group

The EUA-CDE Thematic Peer Group "Doctoral schools: building bridges beyond academia" consisted of 22 representatives from 13 countries. It was chaired by Jari Hämäläinen and coordinated by the EUA-CDE Secretariat. In addition, the work of the TPG was supported by Irma Grdzelidze in her capacity as member of the EUA-CDE Steering Committee. Minna Hendolin participated in this TPG in her role as Vice-Chair of the EUA Expert Group on Innovation.

Composition of the Thematic Peer Group:

- Jari Hämäläinen, Professor for Industrial Mathematics (LUT) and Senior Advisor for Strategic Development and Internationalisation at Slovak University of Technology (STU); former Vice-President for Research and Innovation, Lappeenranta-Lahti University of Technology (LUT), Finland (TPG Chair)
- Irma Grdzelidze, Associate Professor at the Faculty of Psychology and Educational Sciences, Ivane Javakhishvili Tbilisi State University, Georgia; EUA-CDE Steering Committee member
- Minna Hendolin, Director of Impact, University of Eastern Finland, Finland; Vice-Chair of EUA Expert Group on Innovation
- Dimitris Athanassiadis, Coordinator of the Doctoral Research School, Swedish University of Agricultural Sciences, Sweden
- Nik Bessis, Professor of Computer Science; Senior Advisor (Research), Edge Hill University, United Kingdom
- Janet Carton, Head of Graduate Studies and Research Strategy, University College Dublin, Ireland
- Rosanne Ceuppens, Policy Advisor for Doctoral Schools, Hasselt University, Belgium
- Monica Fagerlie, Senior Adviser, University of South-Eastern Norway, Norway
- Deirdre Fitzgerald Hughes, Associate Professor of Microbiology and Deputy Head of School Postgraduate Studies, Royal College of Surgeons, University of Medicine and Health Sciences, Ireland
- Oscar García Leal, Academic Coordinator of Doctorate Studies, European University of Madrid, Spain
- Anton Guhl, Head of Doctoral Courses, Leuphana University of Lüneburg, Germany
- Jan Hesselbarth, EUA-CDE representative, German Council of University Faculties in Engineering and Informatics (4ING), Germany
- Marjolein Iversen, Vice-Dean for Research, Western Norway University of Applied Sciences, Norway
- Gro Lurås, Senior Adviser, Norwegian University of Science and Technology (NTNU), Norway
- Siobhán Mac Sweeney, Head of Graduate Research School, Munster Technological University, Ireland
- Skirmantė Mozūriūnaitė, Head of Doctoral School, Vilnius Tech, Lithuania
- Sharon O'Brien, Dean of Graduate Studies, Dublin City University, Ireland
- Igor Prpić, Head of Doctoral School, University of Rijeka, Croatia
- Tanja Storsul, Pro-Rector for Research, OsloMet University, Norway; EUA-CDE Steering Committee member
- Ganna Tolstanova, Vice-Rector for Research, Taras Shevchenko National University of Kyiv, Ukraine
- Liisa Uotila, Head of Development, Researcher Education Services, University of Helsinki, Finland
- Antonio Vicente, former Director of Doctoral School; President of the School of Engineering, University of Minho, Portugal

The following members participated partly due to replacements at their home institution:

- Margarida Correia-Neves, Director of Doctoral School, University of Minho, Portugal
- Maija Tenkanen, Vice-Dean for Research at Faculty of Agriculture and Forestry, University of Helsinki, Finland

EUA-CDE TPG coordinators:

Simon Marti, Head of EUA-CDE

Ana-Maria Peneoasu, Policy & Project Officer, EUA-CDE

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The EUA Council for Doctoral Education (EUA-CDE) was launched in 2008 at the initiative of the European University Association, responding to a growing interest in doctoral education and research training in Europe. An integral part of the European University Association, it is now the largest European network in this field, covering more than 290 universities and institutions working on issues related to doctoral education and research training in 39 countries.

Since its creation, EUA-CDE has been leading the transformation and strengthening of doctoral education in Europe. Building on the outcomes of EUA's work on doctoral programmes and research careers, EUA-CDE has been the driving force behind the implementation of the Salzburg Principles and Recommendations and the promotion of doctoral education as a main intersection between the European Higher Education Area (EHEA) and the European Research Area (ERA).