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Incentives and Skills: Focus on Research Talent

*Topic 2b Discussion
Paper*

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Mutual Learning Exercise on Knowledge Valorisation

Topic 2b Discussion Paper: Incentives and Skills: Focus on Research Talent

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Directorate-General for Research and Innovation

Directorate A — ERA & Innovation

Unit A.1 — Semester & Country Intelligence

Contact (Horizon Europe PSF coordination team):

Magda De CARLI, Head of Unit A.1

Stéphane VANKALCK, PSF Head of Sector, Unit A.1

Annamaria ZONNO, PSF MLE Coordinator, Unit A.1

Email Magda.DE-CARLI@ec.europa.eu

Stephane.VANKALCK@ec.europa.eu

Annamaria.ZONNO@ec.europa.eu

RTD-PUBLICATIONS@ec.europa.eu

European Commission

B-1049 Brussels

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Incentives and Skills: Focus on Research Talent

Discussion Paper

Prepared by the Independent Expert:

Mostafa Moonir Shawrav

With support from:

Katiuska Cruz

Martina Hartl

Stijn Delauré

Stefanie Kalff-Lena

Dario Capezutto

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INTRODUCTION

Knowledge valorisation helps transform knowledge into social, economic and cultural value. Generally, research, technology and ideas are converted into applications, services or products that can benefit society and support economic growth. The need for knowledge valorisation in Europe is very important. In the last few years, several policies were initiated by the European Union relevant to knowledge valorisation. The 2018 European Council Conclusions on accelerating knowledge circulation in the EU¹ aimed to promote the exchange and flow of knowledge within the European Union. The Council emphasised the importance of open science practices and the need to remove barriers to the circulation of knowledge. It recognised the significance of digital transformation and called for increased investment in research and innovation. The Conclusions also highlighted the importance of intersectoral mobility and the need to foster partnerships between academia, industry, and other sectors. Overall, the Council's focus was on enhancing knowledge circulation to drive innovation, economic growth, and societal development in the EU. In the 2020 Commission Communication titled 'A new ERA for Research and Innovation'², the EU reiterated its support for a cohesive valorisation strategy for research and innovation. The 2021 European Council Conclusions on "Deepening the European Research Area: Providing researchers with attractive and sustainable careers and working conditions and making brain circulation a reality"³ emphasised the need to create appealing and sustainable career paths for researchers, fostering intersectoral mobility and realising the concept of brain circulation within Europe.

In 2022, the Council Recommendation on the guiding principles for knowledge valorisation⁴ was published. This included seven recommendations focused on the following topics:

- Knowledge valorisation in research and innovation policy
- Skills and capacities
- System of incentives
- Intellectual asset management
- Relevancy in public funding schemes
- Peer Learning
- Metrics, monitoring and evaluation

¹ [2018 European Council conclusions](#) on Accelerating knowledge circulation in the EU

² [2020 Communication from the Commission](#) on A new ERA for Research & Innovation

³ [2021 Council Conclusions](#) on Deepening the European Research Area

⁴ [2022 Council Recommendation on the guiding principles for knowledge valorisation](#)

1. Introduction

1.1. Scope, Purpose and Structure of the Paper

The scope of Topic 2b of the Mutual Learning Exercise (MLE) “Knowledge Valorisation-Focus on Skills, Intersectoral Cooperation and Incentive Systems” includes the following:

Incentives for researchers and their teams ranging from funding, assessment, and career progression to enhanced reputation and visibility for knowledge valorisation.

Promotion of activities that foster closer involvement of business sector staff in training of early career and experienced researchers in the academic sector as well as exploration of collaborative arrangements in the R&I labour market, involving public and private organisations and improving cross-sectoral talent circulation, including talent fairs and joint talent support structures or platforms.

Demand-driven skills development, reskilling and mobility of research and innovation talent to facilitate cross-fertilisation and knowledge valorisation, to improve entrepreneurial methods and skills.

Support to increase employability and interoperability of careers in research and innovation, awareness of bottlenecks to intersectoral mobility and best practices for support of interoperable careers and funding opportunities, enabling attractive careers in research and innovation.

The main purpose of the Discussion Paper is to summarise Topic 2b of the MLE and raise open questions on the topic for further discussion during the upcoming Topic 2b meeting in Vienna on 19 and 20 June 2023. The different chapters correspond to the sub-topics focusing on incentives, training and intersectoral mobility.

Intersectoral mobility refers to the mobility of researchers across different sectors, such as academia, industry, non-profit sectors, public and government among many others.

1.2. Gap analysis

Research and innovation are crucial for driving economic growth, societal development, and technological advancement. Europe, with its rich history of scientific achievements, has long been recognised as a hub for research talent. However, recent studies conducted by the European Commission have revealed significant gaps in the incentives and skills available to researchers, particularly in relation to intersectoral mobility within the knowledge ecosystem.

The scenario of intersectoral mobility may vary depending on the country. In 2009, Laura Cruz-Castro and Luis Sanz-Menéndez wrote an article⁵ on mobility from academia to industry in Spain. They pointed out that about 55% of researchers preferred the public sector, while 45% preferred private sector jobs. Although the number of jobs in the public sector were less, the majority of the researchers preferred a job in this sector. This expectation gap is still valid today and is a challenge to ensure intersectoral mobility.

⁵ Journal article on [The employment of PhDs in firms](#)

The relationship between the academic environment and future employment plays a crucial role. In 2017, Hanna Hottenrott and Cornelia Lawson published an article⁶ on how home research groups are shaping researchers' career paths in Germany. It was pointed out that in Germany, only 6% of research groups trained researchers for public jobs alone, while 31% reported that their departing researchers joined industry. It was also found that research groups that give high importance to joint publishing and patenting with industry have a higher probability of their researchers leaving for industry.

Among all three triple-i mobilities (international, interdisciplinary and intersectoral), intersectoral mobility received least attention. According to a MORE4 survey⁷, in 2019 only 23.8% of researchers engaged in intersectoral mobility. When it comes to intersectoral collaboration, it's only 32.2% for non-academic collaboration compared to academic collaboration (77.4%).

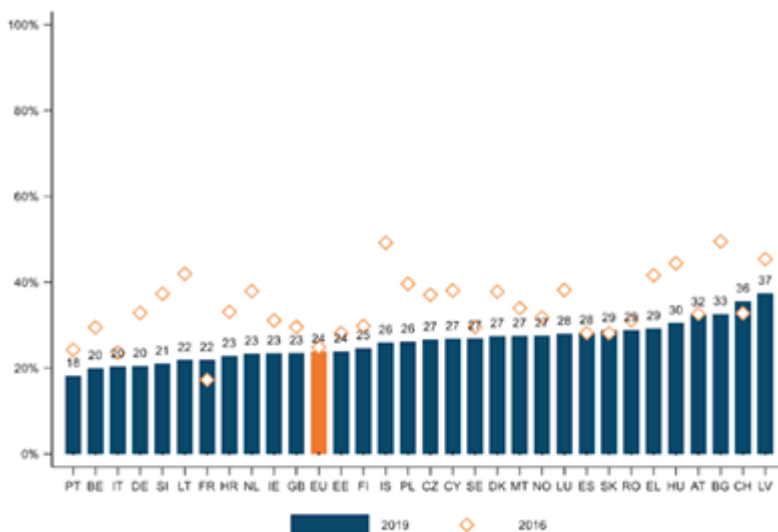


Figure 1: MORE4 EU HE Survey and MORE3 EU HE Survey (2016) (Source: MORE4 study: Support data collection and analysis concerning mobility patterns and career paths of researchers)

Despite its significance, intersectoral mobility faces various challenges that need to be addressed to fully realise its potential. One such challenge is the lack of awareness and understanding among individuals about the opportunities and benefits associated with intersectoral mobility. Many researchers and professionals may be unaware of the possibilities for career development and knowledge exchange outside their current sector. This lack of awareness often acts as a barrier, preventing individuals from exploring and pursuing intersectoral mobility.

One of the key challenges of intersectoral mobility concerns skills. As researchers transition between academia and other sectors, it becomes crucial for researchers to develop the necessary skills that enable them to thrive in diverse environments and meet the unique demands and expectations of each sector. However, a primary hurdle lies in the limited transferability of researchers' specialised skills, often rooted in the highly specific nature of their field of study. This lack of transferability poses difficulties in adapting to new sectors and effectively leveraging their knowledge in unfamiliar work environments. In addition,

⁶ Journal article on [Flying the nest](#)

⁷ Report on [MORE4 Study](#), 2021

researchers frequently lack confidence in presenting and communicating their acquired transferable skills within the academic setting. This lack of confidence hampers their ability to effectively demonstrate and highlight these skills when seeking opportunities outside academia. Consequently, addressing these challenges requires concerted efforts to enhance the transferability of skills, build researchers' confidence in showcasing their abilities, and provide support systems that facilitate successful intersectoral transitions.

Another challenge is the limited availability of supportive policies, programs, and infrastructure. Transitioning between sectors can be complex and involve bureaucratic processes, which can discourage individuals from considering intersectoral mobility. Moreover, sectors may have different organisational cultures, values, and expectations, which can create a mismatch and pose challenges for successful integration and collaboration.

Furthermore, concerns related to job security and stability often deter individuals from engaging in intersectoral mobility. The fear of losing tenure or stable employment can discourage researchers from pursuing opportunities outside academia. Similarly, professionals in industry may be reluctant to leave their secure positions to venture into unfamiliar sectors. Addressing these concerns requires creating a supportive environment that provides stability, recognition, and long-term career prospects for individuals engaging in intersectoral mobility.

Despite the increasing recognition of the importance of intersectoral mobility, there is a gap between the potential benefits and the actual implementation and support available. Existing research has primarily focused on case studies and individual experiences, providing valuable insights but lacking a comprehensive understanding of the broader trends, challenges, and opportunities in intersectoral mobility. A thorough analysis of the current state of intersectoral mobility, including its drivers, barriers, and impacts, is necessary to inform evidence-based policies and initiatives.

Moreover, while some countries and organisations have implemented successful strategies to promote intersectoral mobility, there is a lack of harmonisation and coordination at the regional and international levels. A comprehensive analysis of existing policies, programs, and best practices is required to identify gaps, challenges, and areas for improvement. Such an analysis will provide a foundation for designing effective frameworks and interventions that support and facilitate intersectoral mobility across sectors and borders.

The recent study reports on “Knowledge ecosystem in the new ERA: Talent Circulation and intersectoral mobility”⁸ discussed the above-mentioned factors. It specifically mentioned the main demand and supply side factors for intersectoral mobility. The demand side factors include lack of absorptive capacity in industry, misconceptions, lack of awareness on the value of PhDs, and lack of structural links between academia and industry. The supply side factors include researchers' individual preference for academia, low recognition of intersectoral mobility in academia for evaluation or career progression, lack of insight in own competences as well as adequate training for skills to prepare for a diverse career path, and lack of overall availability of intersectoral mobility options for researchers.

⁸ Policy Brief on Intersectoral Mobility [Knowledge ecosystem in the new ERA](#); Analytical report on the Intersectoral Mobility [Knowledge ecosystem in the new ERA](#)

2. Incentives for researchers and the teams

To effectively promote knowledge valorisation, it is essential to provide researchers and research teams with appropriate incentives that encourage and reward their efforts.

Incentives play a vital role in motivating researchers to engage in knowledge valorisation activities. By offering financial support and recognising the value of research outcomes, funding agencies can encourage researchers to explore the potential applications and commercialisation prospects of their work. Simultaneously, research assessment practices should provide researchers and teams with recognition and validation for their knowledge valorisation efforts, enhancing their professional standing and career advancement.

This chapter focuses on the incentives provided to researchers including funding opportunities and the role of research assessment within the European research landscape. Incentives play a crucial role in attracting and retaining research talent, encouraging intersectoral mobility, fostering innovation, and driving knowledge valorisation.

2.1. Funding opportunities and incentives for research talents

Funding opportunities and incentives constitute a crucial aspect of knowledge valorisation as they provide the necessary resources to support research activities and facilitate the transition from academic knowledge to practical applications. Various funding mechanisms exist to encourage researchers and teams to engage in knowledge valorisation endeavours. Policymakers are concerned about improving the quality and impact of research in universities and public research organisations. Research funding policy and the balance between education, basic research, applied research, and the third mission funding are key issues. Changes in these areas directly influence researchers' motivation and behaviour. Policymakers strive to design funding mechanisms that incentivise high-quality research and strike a balance between fundamental and applied research. Funding policies that support the third mission encourage researchers to engage with society. These changes in funding allocation shape researchers' focus, collaboration patterns, and involvement with industry and policy. Policymakers face the challenge of creating policies that value both research excellence and societal impact, as they shape researchers' motivations and the direction of scientific progress.

Government grants for innovation and research funding programs as well as funding from several other governmental organisations and ministries (e.g., Ministries of Industry and Innovation) form the backbone of public funding opportunities for knowledge valorisation. These programs are designed to support research projects that demonstrate potential for commercialisation or societal impact. They often provide financial resources for innovation and valorisation activities, including feasibility studies, prototyping, market analysis, and intellectual property protection. By accessing these funding opportunities, researchers can pursue further development and commercialisation of their work, translating their knowledge into real-world applications.

In the European context, funding opportunities and incentives exist to support knowledge valorisation and intersectoral mobility. For example, Marie Skłodowska-Curie Actions (MSCA)⁹ offers grants and fellowships to researchers at all career stages- most notably the joint doctorate program.

⁹ [MSCA Program](#)

In terms of Member States perspective, the spin off fellowship program¹⁰ from the Austrian Federal Ministry of Education, Science and Research (BMBWF) in Austria is a good example of promoting incentives for researchers. The fellows are supported by the Austrian Research Promotion Agency (FFG) to commercialise the scientific results by creating startup or spin off companies. In addition, the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation & Technology (BMK) in Austria sponsors an Industrial PhD program¹¹. This is generally submitted by companies or non-university research institutions where the PhD is at least employed by 50% of the full-time position.

Funding and recognition can play a crucial role to influence behavioural change. However, the current funding mechanisms and the incentive systems are not adequate and need serious reform. There is a need for increased funding specifically dedicated to supporting research projects and initiatives that focus on knowledge valorisation and innovation by researchers and their teams. There is a gap in resources for translating research outcomes into practical applications and solutions.

Apart from lack of funding, the existing funding structure lacks flexibility which makes it challenging for researchers to allocate resources towards knowledge valorisation. There is an increasing need for funding and proper incentives mechanisms that allow flexibility, adaptability and enable researchers to explore market potential and effectively transfer their research findings into real-world solutions. In addition, researchers engaged in knowledge valorisation activities generally face a lack of incentives in the traditional academic system.

It is crucial to address the challenges in funding opportunities and incentives to realise knowledge valorisation in Europe. By providing adequate resources, recognising and rewarding researchers' efforts, fostering collaboration with industry, supporting entrepreneurial endeavours, and promoting international collaboration, Europe can create an environment that facilitates the effective transfer of knowledge from research to societal impact.

2.2. Research Assessment

Research assessment plays a critical role in evaluating the quality, impact, and productivity of research activities. It is an essential component of the incentive framework as it informs funding decisions, career advancement opportunities, and overall research strategy.

Research assessment in Europe often relies on various criteria and metrics, including publication output, citation counts, grants awarded, and societal impact. These metrics are used to measure the quality and productivity of research and inform funding decisions and career progression opportunities. However, there are concerns that the overemphasis on quantitative indicators may lead to a narrow understanding of research excellence, potentially overlooking other valuable contributions such as interdisciplinary research, knowledge transfer, and public engagement.

In order to ensure a modern research assessment, several initiatives were taken in the European context as part of ERA Policy Agenda Action 3 (Advancing towards the reform of the assessment system). In 2021, the European Commission organised consultation meetings with several stakeholders including the European Research Area and Innovation Committee (ERAC), the European Research Area Forum for Transition (ERA Forum) as well

¹⁰ [Spin off Fellowship](#) in Austria

¹¹ [Industrial PhD](#) in Austria

as Member States, 40+ organisations and universities. Based on the consultation, a scoping report was published titled "Towards a reform of the research assessment system"¹². After that, based on the co-creation process involving more than 350 organisations from 40 countries, an agreement on reforming research assessment¹³ was published in 2022.

Several principles of the agreement mentioned the importance of knowledge valorisation and associated activities. For example, principle 5 mentions providing rewards for a variety of research missions and Principle 6 recommends recognising the (potential) impact of research results. Principle 7 recommends recognising the diversity of research activities and practices and also emphasises the need to consider tasks like entrepreneurship, knowledge valorisation and industrial-academia collaboration. Principle 9 focuses on acknowledging and valorising the diversity in research roles and careers, including roles outside academia.

After the agreement, at the end of 2022, the Coalition for the Advancement of Research Assessment (CoARA) was formed. The aim of the CoARA is to reform the current system of research evaluation to develop more comprehensive and inclusive methods of assessment. Currently, the CoARA is inviting its members and stakeholders to form working groups to advance the process with a community driven approach.

In addition, the recently published Commission Recommendation on a Code of Practice on standardisation in the ERA¹⁴ also recommended to consider standardisation activities and outputs in the career development plans and research assessment exercises of researchers.

Open science practices, such as data sharing, pre-registration, and open access publishing, have gained prominence in recent years. Research assessment frameworks should recognise and reward researchers who adopt these practices, encouraging openness, transparency, and reproducibility in research. In terms of knowledge valorisation, open science may be perceived as a barrier for commercial exploitation of scientific results for which IP protection might be adequate in many cases. However, there is no conflict. The Code of Practice on intellectual assets management¹⁵ provides several recommendations to practice open science and open innovation after assessing whether the results should be first protected through IP rights and ensuring that there are no barriers to sharing results. The guiding principle also recommends increasing awareness and uptake of intellectual assets management practices and tools in open science and open innovation.

2.3. Training and Lifelong Learning

Training and lifelong learning play a crucial role in ensuring balanced intersectoral mobility within the ERA. The ERA Policy Agenda Action 4 focuses on promoting attractive and sustainable research careers, ensuring balanced talent circulation and international, transdisciplinary, and inter-sectoral mobility across the ERA. The ERA aims to create a seamless and open research and innovation system across Europe, fostering collaboration between academia, industry, and other sectors. To achieve this, it is essential to equip researchers and professionals with the necessary skills to navigate and contribute to different sectors effectively. The guiding principles for knowledge valorisation, the code of practices on intellectual asset management and the Code of Practice on standardisation particularly

¹² [Scoping report](#) on Research Assessment 2021

¹³ [Agreement](#) reform of the Research Assessment 2022

¹⁴ Code of [Practice on standardisation](#)

¹⁵ Code of [Practice on the management of intellectual assets](#)

emphasised the need for training to develop transversal skills to ensure knowledge valorisation.

Training programs and lifelong learning initiatives play a pivotal role in promoting intersectoral mobility by offering researchers opportunities to develop new skills, broaden their knowledge base, and adapt to evolving research and innovation practices. These initiatives not only facilitate the transfer of expertise between academia and industry but also enable professionals to contribute to societal challenges and promote knowledge valorisation.

2.4. Demand driven skills development

Demand-driven skills development for researchers refers to the acquisition of skills and competencies that align with the current and future needs of various sectors, industries, and employment opportunities. It aims to equip researchers with the knowledge and abilities that are in high demand, ensuring their competitiveness and employability in their chosen career paths. In addition, it is also essential to provide necessary training for anyone (academic and non-academic staff) working in a support capacity including business development, intellectual property management, knowledge brokers, industrial research managers and many others. Such training can minimise the skills gap for knowledge valorisation.

The IBM study titled "The Enterprise Guide to Closing the Skills Gap"¹⁶ provides valuable insights and guidance on addressing the growing skills gap in the enterprises. The study highlights that organisations are facing significant challenges in finding employees with the necessary skills to meet evolving demands. It emphasises the importance of bridging this gap through strategic and proactive measures. According to global research, the time it takes to close a skills gap through training has increased rapidly in the past couple of years. For example, in 2014, it took three days on average to close a skills gap through training, however, it took 36 days to close the gap in 2018¹⁷.

In addition, the rapid rise of new technologies and emerging topics has significantly influenced the demand for specific skills in the job market. This shift has highlighted the importance of demand-driven skills development to meet the evolving needs of industries. New technology and topics such as Artificial Intelligence and Machine Learning, Cyber Security, Big Data, Sustainability and Green Technologies, Block chain among many others are the perfect example to illustrate the importance of demand-driven skills development.

In order to ensure demand driven skills development, it is important to understand what role a researcher plays in today's research environment. The European Competence Framework for Researchers (ResearchComp)¹⁸ is a great tool to understand this. ResearchComp is a comprehensive framework that has been developed in alignment with the new ERA Communication and the Skills Agenda. The framework provides researchers with a structured approach to identify and enhance their skills, fostering continuous professional development. By defining core competencies and outlining skill expectations at different stages of a researcher's career, ResearchCOMP offers a roadmap for researchers to assess and improve their skills in areas. By using ResearchCOMP, researchers can self-assess their skills, identify areas for improvement, and create personalised development plans. It helps researchers align their skills with the evolving demands of the research landscape, increasing their competitiveness and employability in both academic and non-academic sectors. The

¹⁶ The [IBM Study](#) on skills gap

¹⁷ [Follow up news](#) on the IBM Study

¹⁸ Policy Brief on [ResearchComp](#) published 2022

complete version of the ResearchComp is expected during the European Year of Skills with a dedicated website.



Figure 2: European Competence Framework for Researchers ‘ResearchComp’ developed as part of Knowledge Ecosystem study.

There are several frameworks or skills maps which were consulted during the development of the ResearchCOMP, such as the Eurodoc transferable skills map¹⁹ or the Vitae Researcher Development Framework²⁰. The Eurodoc map identifies and categorises the transferable skills acquired by doctoral researchers, providing a clear overview of their diverse competencies. This information is essential for researchers seeking to align their skills with market demands and enhance their employability.

There are several ways to ensure skills development, some are mentioned below:

Courses and Workshops: Researchers can enrol in professional development courses that focus on specific skills relevant to the desired field and career path. Several universities offer skills training as part of the doctoral program. Currently, there are several Massive Open Online Courses (MOOC) which are offering both hard and transferable skills development. In addition, micro-credentials could be another option to gain required knowledge on a specific topic.

Enhancing collaboration: Collaborating with industry partners in the private sector allows researchers to gain practical experience and understand the skills required in specific industries. Such collaborations provide opportunities to work on real-world projects, interact with industry professionals, and develop industry-specific knowledge and skills.

Secondments: Secondments play a crucial role in the development of skills during intersectoral mobility for researchers. It involves temporary placements or exchanges between academia and other sectors, providing valuable opportunities for skills development. Through secondments, researchers can broaden their perspectives, acquire new skills, build

¹⁹ Eurodoc [Transferable Skills map](#) 2018

²⁰ [Vitae RDF](#) 2011

professional networks, engage in applied research, and advance their careers. These experiences expose researchers to different work cultures, challenges, and practical applications of their expertise, enabling them to develop transferable skills that are highly valued across sectors. Secondment serves as a bridge between academia and other sectors, facilitating interdisciplinary collaborations and enhancing researchers' adaptability and versatility in navigating diverse work environments. According to recent survey results published by the MSCA²¹ which state that two years after the fellowship, nearly all fellows (96%) who completed part of their fellowship in the non-academic sector, considered that their secondment experience greatly contributed to their further career development.

Networking and Professional Associations: Researchers can join professional associations and actively participate in conferences, seminars, and workshops relevant to their field. These platforms provide opportunities to network with industry professionals, potential employers, and fellow researchers, fostering collaborations and staying updated with the latest trends and skills demanded in their respective fields.

Mentoring: Mentoring plays a vital role in skills development by providing guidance, support, and knowledge transfer. Mentors offer personalised insights, share experiences, and provide constructive feedback to help individuals develop specific skills and navigate their career paths with confidence and competence. In Spain, the REBECA Mentoring program²² focuses on providing a structured mentoring program for researchers for careers outside academia.

There are several examples around the world on how to implement such initiatives. One of the concrete examples is to develop skills to address the circular economy. The EIT initiative "Skills for the Future"²³ is playing a significant role in demand-driven skills development by addressing the evolving needs of the job market. The program is bridging the skills gap and equipping individuals with the necessary competencies for future employment. By closely collaborating with industry partners and stakeholders, the program identifies the skills in high demand and designs training programs accordingly. It provides targeted courses and workshops in fields such as food system, raw materials, climate change, urban mobility and the manufacturing industry. By focusing on these cutting-edge areas, "Skills for the Future" ensures that participants gain skills that are aligned with market needs and are highly sought after by employers. It not only enhances the employability of individuals but also contributes to the overall competitiveness and innovation potential of the European workforce.

²¹ Results of [MSCA end of fellowship evaluation](#) questionnaires

²² [REBECA Mentoring Program](#)

²³ EIT [Skills for Future](#)

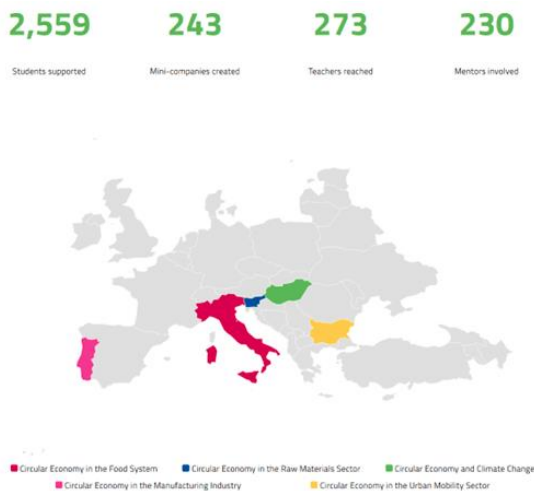


Figure 3: The statistics from the Skills for the Future Program. Taken from the EIT Skills4future website.

There are several examples at Member State level. In Austria, the LBG Career Centre provides training for researcher's skills and programs. In Ireland, the SFI Centre for Research Training also offers similar skills training for researchers.

2.5. Entrepreneurship

Entrepreneurship is vital for researchers' training as it directly relates to demand-driven skills development, knowledge valorisation, and intersectoral mobility. By fostering an entrepreneurial mindset, researchers are encouraged to be open for assessing market opportunities for their research, commercialising their findings, and meeting industry needs. Entrepreneurial skills such as market analysis, business development, and financial acumen enable researchers to transform knowledge into tangible products or services. Additionally, entrepreneurship bridges the gap between academia and industry, facilitating intersectoral mobility. Researchers with entrepreneurial skills possess industry insights, adaptability, and innovation, making them valuable assets in diverse sectors. Entrepreneurship empowers researchers to maximize their impact, foster innovation, and contribute to economic growth by applying their expertise to market demands.

The European Entrepreneurship Competence Framework (EntreComp²⁴) is a reference framework developed by the European Commission to promote and assess entrepreneurship as a key competence for all citizens. It aims to provide a common language and understanding of entrepreneurship skills and attitudes, fostering entrepreneurial mindsets and behaviours across various sectors and contexts. It is important to highlight that ResearchComp incorporates a transversal skill related to entrepreneurship, emphasizing the demonstration of an entrepreneurial spirit. ResearchComp can serve as an initial step for researchers, paving the way for their development in entrepreneurship, followed by the utilisation of EntreComp.

By integrating EntreComp into researchers' training, it enables them to develop key entrepreneurial skills such as opportunity identification, creativity, risk management, and networking. These competencies complement demand-driven skills development by

²⁴ [EntreComp](#)

equipping researchers with the mindset and abilities needed to recognise market opportunities, assess feasibility, and effectively commercialise their knowledge.

Moreover, EntreComp strengthens the connection between entrepreneurship and knowledge valorisation by emphasizing skills related to intellectual property management, business planning, and collaboration. Researchers can leverage these competencies to effectively valorise their research outputs and translate them into valuable products, services, or innovative solutions that address market demands.

Additionally, EntreComp supports intersectoral mobility by fostering transferable entrepreneurial skills. Researchers who possess these skills are adaptable, open to new challenges, and equipped to navigate different sectors. They can leverage their entrepreneurial mindset and competencies to effectively communicate and collaborate with stakeholders from academia, industry, and other sectors. Europe, ultimately contributing to economic growth, job creation, and societal development.

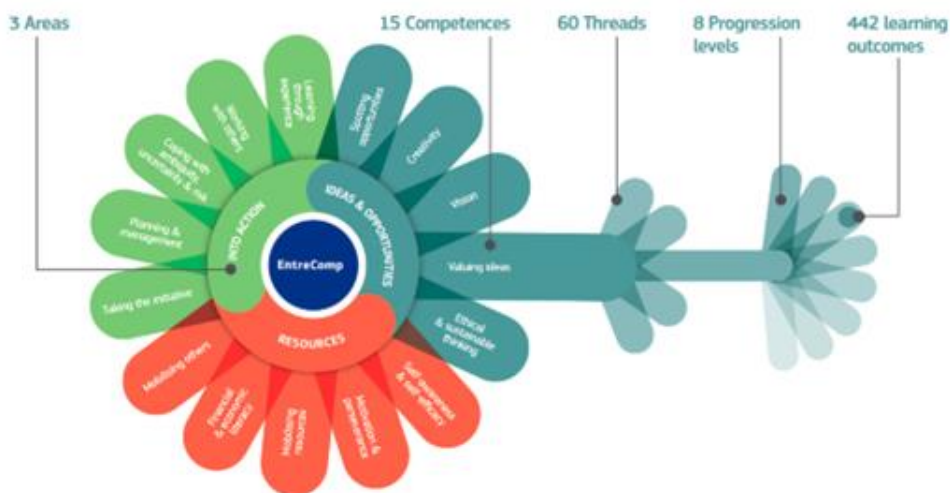


Figure 4: The entrepreneurship competence framework
Source: EntreComp

Overall, the integration of EntreComp in researchers' training reinforces the importance of entrepreneurship, aligns with demand-driven skills development, enhances knowledge valorisation, and facilitates intersectoral mobility. It empowers researchers to unleash their entrepreneurial potential, maximise the impact of their research, and contribute to economic growth and innovation.

The European Innovation Agenda²⁵ also emphasized promoting an entrepreneurial and innovation culture. Several universities and organisations provide specific training programs for entrepreneurship and how to start a startup. For example, Greece has the Evaluate Greece program which offers training as well as funding for new startups. In Austria, there are several accelerators who provide such training. The Competence Centre for Entrepreneurship and Innovation (i2c)²⁶ offers high quality education and training for students, researchers and faculty members at TU Wien through the START Academy. They

²⁵ [The European Innovation Agenda](#)

²⁶ [TU Wien Innovation Incubation Center](#)

also provide networking opportunities with investors and have a dedicated incubator for researchers.

Nowadays, more and more universities and organisations are establishing their own entrepreneurship training through collaboration with trainers, professional entrepreneurs, angel investors organisations and industries. This type of collaboration will address the skill challenges and will ensure proper knowledge valorisation.

3. Intersectoral Mobility

Intersectoral mobility refers to the movement of individuals between sectors (academia, business, public etc.)²⁷, while knowledge valorisation is the process of creating social and economic value from knowledge by linking different areas and sectors and by transforming data, know-how and research results into sustainable products, services, solutions and knowledge-based policies that benefit society. By fostering collaboration and synergy between sectors and ensuring bi-directional intersectoral mobility, the process of transforming knowledge into tangible value can be enhanced.

As mentioned in the Knowledge Ecosystem report, there are both demand and supply side factors for ensuring intersectoral mobility in Europe.

Demand side factors	Supply side factors
Lack of absorptive capacity in industry	Individual preference for academic research career and lack of awareness of opportunities and diverse career paths outside academia
Misconception or lack of awareness on the value of PhDs	Low recognition of intersectoral mobility in academia for evaluation or career progression
Lack of structural links between academia and industry including schemes and actions	Lack of insight in own competences and lack of training for skills to prepare for diverse career paths
	Low overall availability of intersectoral mobility options for researchers, with low sharing of practices among EU Member States

Table 1: Supply and Demand side factors of Intersectoral mobility identified in the Knowledge Ecosystem study Policy brief.²⁸

Lack of absorptive capacity in industry: Industries face challenges in effectively absorbing and integrating researchers into their operation or employment. This is mainly due to the lack of awareness and mechanisms to utilise the skills possessed by researchers. Due to a lack of infrastructure, resources or necessary funding, the researcher’s expertise cannot be fully utilised in some industries.

Misconception or lack of awareness on the value of PhDs: In many countries, there is often inadequate awareness among employers regarding the value and the applicability of a PhD degree in a non-academic sector. This leads to a limited understanding of how the skills acquired during doctoral training can be valuable assets in industry. As a result, employers may not recognise the potential of PhD holders for non-academic roles, impeding their intersectoral

²⁷ Report on [Analysis of Intersectoral Mobility](#)

²⁸ Policy brief report on [talent circulation & intersectoral mobility](#)

mobility. In addition, lack of hands-on experience in doctoral training may contribute to this misconception.

Lack of structural links between academia and industry: Insufficient collaboration frameworks, funding schemes, and initiatives exist to establish strong connections and facilitate knowledge exchange between academia and industry. The absence of structured mechanisms for cooperation between these two sectors limits the opportunities for researchers to engage with industry and gain exposure to non-academic career paths. Strengthening the structural links is crucial to fostering intersectoral mobility.

Individual preference for academic research career and lack of awareness of opportunities: Researchers often have a natural leaning towards pursuing academic research careers due to cultural and societal norms, as well as the perceived prestige associated with academia. Moreover, researchers may have limited awareness of the diverse range of career opportunities available outside academia. This lack of awareness, coupled with a preference for academic careers, restrains their motivation to explore intersectoral mobility options.

Low recognition of intersectoral mobility in academia for evaluation or career progression: Academic institutions may not adequately recognize or value intersectoral mobility experiences when evaluating researchers or considering career progression. This lack of recognition can discourage researchers from pursuing non-academic paths, as their mobility experiences may not be acknowledged or rewarded within the academic system. Without proper recognition, researchers may perceive intersectoral mobility as a risk to their academic career prospects.

Lack of insight in own competences and lack of training for diverse career paths: Researchers often face challenges in identifying their transferrable skills and understanding how these skills can be applied in diverse career paths outside academia. Additionally, there is often a lack of structured training or guidance provided to researchers to help them develop the necessary skills for non-academic roles. This gap in self-awareness and training can impede researchers' confidence and preparedness to pursue intersectoral mobility.

Low overall availability of intersectoral mobility options for researchers, with low sharing of practices among EU Member States: The availability of intersectoral mobility options varies across different countries and regions, with some locations offering limited opportunities for researchers to transition between academia and industry. Additionally, there is often a lack of sharing of best practices and experiences among EU Member States, which limits the dissemination of successful intersectoral mobility strategies. A more cohesive approach to sharing knowledge and practices could enhance intersectoral mobility options for researchers across the EU.

In addition to the barriers outlined in the Knowledge Ecosystem report, various other factors can impede intersectoral mobility. These include societal and cultural biases, researchers' working conditions, visa, and immigration regulations, limited professional networks, personal or family situations, language issues, inadequate mentoring, gender biases, and geographical constraints. These factors are also significant contributors to the challenges faced in pursuing intersectoral mobility.

To address the above-mentioned factors, the report also made general recommendations as well as for demand and supply side factors. When designing actions or instruments to promote intersectoral mobility, several general principles should be considered. These include taking a long-term perspective, as one-time actions are insufficient to increase intersectoral mobility levels. Realistic objectives should be set, considering the long-term consequences for individuals and organisations. Balancing specific and flexible scheme designs is important, as it allows for targeted actions while maintaining adaptability. Involvement of all stakeholders is crucial to ensure the effectiveness of the actions, and

balanced incentives should be created to generate sustainable positive outcomes. Understanding and addressing national barriers to participation in intersectoral mobility is necessary, as incentives alone may not be enough to increase interest. It is also encouraged to build on existing evidence, good practices, and inspiration.

To strengthen the demand for research collaboration and researchers in the non-academic sector, several approaches can be taken. Promoting intersectoral mobility as a form of industry-academia collaboration can help researchers gain valuable industry experience. Leveraging intersectoral mobility to boost capacity in strategic research areas and developing appropriate infrastructure and support mechanisms can foster collaboration across sectors. Creating awareness of the added value of researchers in non-academic settings and fostering interest from industry in hiring PhD holders are also important considerations.

Facilitating and incentivising intersectoral mobility on the supply side requires reducing legal and administrative barriers, particularly in recruitment and career progression procedures. Bridging the communication gap between academia and the other sectors regarding researchers' skills is crucial. Strengthening career support services and providing researchers with information about the labour market and job options can support their transition into non-academic sectors. Developing transferable skills through coaching, entrepreneurial training, and industrial-relevant skills development can enhance researchers' readiness for intersectoral mobility. Finally, the evidence-based monitoring of intersectoral mobility needs to be ensured.

3.1. Promotion of academia – business cooperation

Promoting intersectoral mobility and knowledge valorisation through academia-business cooperation can bring significant benefits. There are some key points to consider:

Establishing Collaborative Platforms: Creating platforms that facilitate communication and collaboration between academia and businesses is essential. These platforms can include joint conferences, workshops, or industry-academic forums where researchers and industry professionals can interact, exchange ideas, and explore potential collaborations. Such platforms provide opportunities for networking, sharing knowledge, and identifying common research interests. For example, the European Innovation Partnership (EIP) or the Knowledge Transfer Network (KTN) in the United Kingdom are examples for such platforms. In Austria, Competence Centres for Excellent Technologies (COMET)²⁹ projects as well as Centres are examples of platforms where industry and academia can collaborate in topics of mutual interest.

Involvement of business sector staff in training researchers: Incorporating business sector staff in the training of researchers is crucial for fostering collaboration and intersectoral mobility. Their industry knowledge and insights complement academic training, bridging the gap between academia and industry. Collaborative arrangements between public and private organisations facilitate this interaction and create opportunities for researchers to engage in industry projects and internships. Talent fairs and joint support structures connect business sector staff and researchers, facilitating networking and identifying potential talent. Overall, involving business sector staff in training activities and promoting intersectoral collaboration are vital for equipping researchers with practical skills and enhancing their understanding of industry dynamics.

Encouraging and Funding Joint Research Projects: Encouraging joint research projects between academia and businesses can bridge the gap between theory and practice.

²⁹ [COMET in Austria](#)

Collaborative research initiatives allow researchers to work closely with industry partners, addressing real-world challenges and co-creating solutions. This approach not only enhances the relevance and impact of research but also strengthens the understanding and appreciation of industry needs within academia. The Marie Skłodowska-Curie Actions (MSCA) joint doctorate program is a great example of such research projects from the Europe wide context. On the other hand, Fraunhofer Institute in Germany is known for its applied research project collaboration with industries.

Encouraging Industry Engagement in Curriculum Development: Involving industry professionals in curriculum development ensures that academic programs align with current industry needs. Industry representatives can provide insights into the skills and competencies required in the job market, ensuring that educational programs are relevant and produce graduates with in-demand skills. The Technical University of Munich (TUM) in Germany involves industry partners in curriculum development through its TUM Industry Affiliate Program. This program allows companies to contribute to course content, offer internships, and collaborate on research projects, ensuring that educational programs align with industry needs.

3.2. Bi-directional mobility

Bi-directional mobility plays a crucial role in fostering innovation, knowledge valorisation, and overall development. The knowledge exchange and transfer in bi-directional mobility can provide deeper insights into both sectors. It can help bridge the gap between theoretical knowledge and practical application. Academics who spend time in the business sector gain first-hand experience of industry dynamics, challenges, and trends. This experience enables them to incorporate real-world examples, case studies, and practical applications into their teaching and research, making academic content more relevant and impactful. Similarly, professionals who engage with academia bring practical insights and real-life examples to enrich academic programs, ensuring that students are equipped with industry-relevant knowledge and skills.

Bi-directional mobility enables talent development and skill enhancement by offering individuals opportunities to gain diverse experiences and perspectives. Researchers and academics who engage with the business sector develop a deeper understanding of industry needs, cultivate interdisciplinary skills, and enhance their ability to translate research into practical outcomes. Likewise, professionals who participate in academic programs or collaborate with academia can gain new knowledge, research skills, and a broader understanding of theoretical foundations, enabling them to excel in their industry roles.

There are several ways to ensure a proper bi-directional mobility. These are highlighted below.

Secondments: As mentioned above, both academia and industry could develop joint secondment programs. One of the major examples is the MSCA secondment as part of doctoral education, post-doctoral as well as staff exchanges. The Swiss National Science Foundation's SPIRIT program funds industry fellowships where academic researchers spend time working in companies. This experience allows researchers to apply their knowledge in practical settings, contribute to industry innovation, and gain valuable industry-specific skills.

Collaborative Research Projects: As mentioned in the section 4.1, Collaborative projects that bring together academia and industry provide a platform for bi-directional mobility. For instance, the European Institute of Innovation and Technology (EIT) Knowledge and

Innovation Communities (KICs) foster collaboration between academia, industry, and other stakeholders.

Research and Innovation Hubs: Establishing research and innovation hubs that bring together academia, industry, and other stakeholders can facilitate bi-directional mobility. The Cambridge Innovation Center (CIC) in the United Kingdom provides a collaborative workspace where academic researchers, start-ups, and established companies coexist.

Private Public Partnerships: Private public partnerships can enhance bi-directional mobility in a different magnitude. For example, in the past, the joint undertaking such as electronic components and systems for European leadership (ECSEL) is a great example of this. The new joint undertaking – Key Digital Technology could support this in terms of funding as well as providing stability.

4. Summary

The Discussion Paper highlights the current context of research talent incentives and the training needed to ensure intersectoral mobility for knowledge valorisation.

As mentioned in the above sections, incentives play a pivotal role in motivating researchers and their teams to engage in knowledge valorisation activities. Financial rewards, recognition, and career advancement opportunities can encourage researchers to actively pursue knowledge valorisation. It is essential for organisations and policymakers to design effective incentive systems that align with the goals of knowledge valorisation and provide tangible benefits to researchers.

Training and lifelong learning are essential for researchers to develop the skills and knowledge required for successful knowledge valorisation. Continuous education in several areas can enhance researchers' capacity to bridge the gap between academia and other sectors. Several best practice examples indicate that sufficient funding to develop such training programs is essential, that support researchers throughout their careers, enabling them to effectively translate their research into tangible outcomes.

Intersectoral mobility emerges as a critical aspect in facilitating knowledge valorisation. Encouraging the movement of researchers between academia, industry, and other sectors fosters collaboration, knowledge exchange, and the creation of innovative solutions. Organisations should establish mechanisms that facilitate career transitions, promote interdisciplinary research, and create a supportive environment for researchers seeking to explore new sectors.

To achieve successful knowledge valorisation, a multi-faceted approach is necessary. Institutions, policymakers, and stakeholders should work together to create an ecosystem that promotes incentives, provides comprehensive training opportunities, and facilitates intersectoral mobility. Collaboration between academia, industry, and government bodies is vital to establish effective knowledge valorisation frameworks, funding mechanisms, and support structures.

Several of the topics mentioned in the Discussion Paper will be thoroughly discussed in the upcoming country visit in Vienna on 19 and 20 June 2023. Examples from some of the best practices will also be shared.

Questions for discussion

In preparation of the Vienna meeting, participants are invited to consider the following questions which will be discussed in further detail during the upcoming meeting. A parallel survey will also be sent to country participants to gather further feedback.

Incentives for researchers and the teams

How can incentives be tailored to different career stages (early-career researchers, mid-career researchers, senior researchers) to effectively drive their engagement in intersectoral collaborations and lifelong learning?

Training and Lifelong Learning

What strategies can be implemented to encourage researchers to proactively pursue continuous professional development and acquire new skills outside their immediate research area?

How can the integration of lifelong learning opportunities into researchers' career trajectories enhance their intersectoral mobility and contribute to the knowledge valorization ecosystem?

How can interdisciplinary collaboration and exposure to different sectors during the early stages of a researcher's career enhance their readiness for intersectoral mobility later on?

How can the integration of lifelong learning opportunities into researchers' career trajectories enhance their intersectoral mobility and contribute to the knowledge valorisation ecosystem?

Intersectoral Mobility

What strategies can be employed to establish and strengthen connections between academia and industry? -> Bidirectional mobility

How can we leverage existing platforms, networks, and resources to create robust support systems for researchers during their transition between sectors, facilitating intersectoral mobility?

How can organizations and institutions create supportive structures and initiatives that encourage and enable researchers to explore intersectoral mobility opportunities without fear of career setbacks or repercussions?

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The Discussion Paper focuses on the research talents, capacity building and intersectoral mobility for knowledge valorisation. The Paper stresses the importance of recognising the incentives for researchers, necessary training for demand driven skills development and the challenges and recommendations to promote academia business cooperation, bi-directional intersectoral mobility. Embracing these principles will contribute to the development of a dynamic and collaborative environment that values and utilises knowledge to its fullest extent, benefiting both researchers and society as a whole.

Research and Innovation policy