

THE IMPACT OF PARTNERSHIPS AMONG EU HIGHER EDUCATION INSTITUTIONS ON TERRITORIAL INNOVATION ECOSYSTEMS: TRANSLATING TRANSNATIONAL INITIATIVES INTO LOCAL CONTEXTS

RICARD ESPARZA MASANA*  & JAYNE WOOLFORD**

* *Departament d'Empresa, Universitat Autònoma de Barcelona, Edifici B, Campus UAB, 08193 Bellaterra, Cerdanyola del Vallès, Barcelona, Spain. E-mail: ricard.esparza@uab.cat (Corresponding author).*

** *DG Joint Research Centre, European Commission, Spain*

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ABSTRACT

The article examines the influence of higher education institutions' (HEIs) participation in European collaborative consortium projects on territorial innovation ecosystems. The analysis focuses on three policy instruments: the Erasmus+ Knowledge Alliances, the European Universities Alliances initiative and the HEI Initiative of the European Institute of Innovation and Technology (EIT). Four dimensions of impact are considered: educational outcomes, the responsiveness to local challenges and needs, the strengthening of collaboration with territorial stakeholders and the institutional role of participating HEIs. The findings suggest that HEI engagement in these initiatives generates measurable effects across these dimensions, though such impact remains limited and varies substantially according to the nature of the projects and the profile of the participants.

Key words: higher education institutions; regional innovation ecosystems; quadruple helix; smart specialisation; Erasmus+; European Universities; HEI Initiative

INTRODUCTION

In recent decades, European institutions have increasingly introduced and implemented support instruments for HEI collaboration in order to strengthen the *European Higher Education Area* (EHEA) and the *European Research Area* (ERA) and reinforce the focus on knowledge for innovation.¹ Transnational collaborative initiatives between higher education institutions (HEIs) in the EU (and third countries) aim to enable the exchange of experience and cooperation in the development of high quality, resilient and inclusive education and training provision, to

improve institutional capacities and position European higher education at the core of global excellence and research and innovation agendas, and European recovery and resilience. Nevertheless, these instruments additionally seek to enhance the presence and participation of HEIs in their territorial innovation ecosystems through strengthening collaboration across academia, research, business and society at the local level, bringing together the four major actors of the innovation system. The objective is to empower universities to act as drivers towards global economic competitiveness and as actors of change in the twin transitions, albeit with a

place-based, quadruple helix focus that links innovation policy to regional development or cohesion objectives.² HEIs—at the interface of research, education and innovation—in their territories (Woolford & Bodin 2021) should not be limited to fostering research strengths (Vallence *et al.* 2017) but incorporate a broader contribution to the territorial innovation ecosystem across the range of HEI missions.

Over the past few years, European institutions have increasingly recognised the importance of ensuring that collaborative projects funded among HEIs across member states generate tangible impacts within the local innovation ecosystems of the participating organisations, especially in the context of smart specialisation (S3) frameworks. Programmes such as Knowledge Alliances (Erasmus+), European Universities (Erasmus+), and HEI Initiative (European Institute of Innovation and Technology, EIT) have progressively incorporated this rationale, particularly since the 2014–2020 period, with further reinforcement observed in the current 2021–2027 period. While the literature is extensive regarding the role of HEIs within their respective innovation ecosystems, there remains a notable gap concerning the specific influence of public instruments designed to foster university collaboration and their consequent effect on these ecosystems.

The primary aim of the present research is to address this gap. The study investigates the role of the aforementioned European *transnational* collaboration instruments for HEIs in fostering HEI participation in their *local* innovation ecosystems and contribution to territorial challenges and transformation. Its originality lies in its exploration and comparative analysis of the global–local dichotomy inherent in these transnational initiatives, which are spatially blind at EU level but have territorial and organisational impacts on the successful or partner institutions and territories in different aspects. Firstly, policy development: addressing the needs of the territory and providing solutions and policy input to societal challenges. Secondly, in policy implementation: the development of new educational and training mechanisms, methodologies and materials. Thirdly, at the systemic level, through

the strengthening and extension of HEI relationships with other innovative actors in their territorial ecosystem. Finally, fourthly, at organisational level, through HEI institutional innovation.

The research was structured around four interrelated hypotheses reflecting these four dimensions: (1) the instruments analysed promote the consideration of territorial needs and challenges, including relevant innovation and territorial development policies and strategies; (2) collaboration with other HEIs within such projects serves to accelerate the implementation of new or updated educational activities that address these identified needs and challenges and can contribute to enhancing the territorial relevance of education provision; (3) these initiatives also contribute to broadening and deepening relationships with other actors within the territorial innovation ecosystem; and (4) linked to the previous points, collaboration with other HEIs through these projects acts as a catalyst for institutional development. ‘*Theoretical Background*’ section contextualises the research in terms of the state of the art in relation to the four dimensions.

THEORETICAL BACKGROUND

Universities have been widely recognised as key actors in regional development, with their roles evolving in response to shifting conceptions of economic growth (Oztel 2020). HEIs’ primary and secondary missions of training future professionals and undertaking research and innovation (R&I) activities were broadened in the late twentieth century to include an entrepreneurial bent. HEIs not only provide services and products but they are also expected to actively participate in societal advancement (Markkula & Kune 2015) and perform civic and entrepreneurial functions (Goddard *et al.* 2016; Ferreira *et al.* 2018). In this context, a place-based approach has been advocated, encouraging universities to act as planning facilitators and innovation providers in response to local needs (Benneworth & Hospers 2007). The notion of the third mission of HEIs reflected institutions that increasingly contributed to local communities

and knowledge-based regional development through partnerships with government, businesses, and organisations (Cai & Etzkowitz 2020). The concept of 'Fourth Generation Universities' reflects the evolution of university missions to incorporate substantial place-based impact, strong connections to territorial needs and challenges and focus on societal impact (Pawlowski 2009). However, the diversity of HEIs and their organisational capacities necessitates that exchanged good practices be adapted to local specificities (Kempton 2019; Fonseca & Nieth 2021).

In relation to policy development, HEIs are increasingly recognised as important actors in addressing social challenges through transformative innovation policy agendas (Parker & Lundgren 2022). In the EU, innovation policy has shifted from a technological and market-oriented approach to a challenge-based model, broadening the role of universities, but also introducing challenges for institutional adaptation (Cinar *et al.* 2024). Higher education increasingly needs to adapt, responding more effectively to regional expectations (Pupp & Filep 2021), expanding their role in territorial governance by collaborating to address local challenges and needs, functioning as catalysts for innovation and regional economic development (Huggins *et al.* 2012), with learning and knowledge transfer central to regional innovation systems (Asheim *et al.* 2007). Nevertheless, universities may not always fulfil regional economic or innovation expectations. Aranguren *et al.* (2009), Rodrigues and Melo (2013), and Pugh *et al.* (2016) demonstrate that, although there is potential for collaboration that supports institutional development and advances territorial priorities, the effects remain limited. More recently, Rodríguez-Pose and Wang (2025), in their analysis of Sweden, identify a misalignment between university research outputs and industry needs, demonstrating that universities' local impact is limited.

In terms of policy implementation, HEIs are especially expected to design and deliver educational activities that meet the needs of the local innovation ecosystem. Universities play a critical role in diffusing knowledge to industry and society, creating a skilled workforce

that drives innovation and economic growth (Cooke 2001), while cooperation between HEIs, industry, and other stakeholders is linked to higher graduate employment in knowledge-based societies (Shyramunda & van den Bersselaar 2024). Additionally, the involvement of students and alumni in technology transfer and entrepreneurship is also increasing, though further research is needed to fully understand the impact (Guerrero *et al.* 2024). HEIs are increasingly encouraged to move beyond technical qualifications and foster comprehensive education that develops social and emotional skills (Goulart *et al.* 2021). Collaboration with companies and organisations is seen as crucial for developing soft skills and enhancing employability (Succi & Canovi 2019). University-industry partnerships and joint training initiatives are expected to improve the knowledge, skills, and expertise necessary for innovation and economic growth (Wright *et al.* 2008), resulting in curricula that are more relevant and practical (Yorke 2006; Davey *et al.* 2011). Moreover, collaboration with local stakeholders influences not only knowledge creation and transfer but also the delivery and content of education (Kendall 2006).

In this regard, interdisciplinarity is highlighted as essential for understanding complex challenges (Repko & Szostak 2017), with integrative thinking valued by employers (Spelt *et al.* 2009), and challenge-based training methodologies have been shown to enhance critical thinking, problem-solving, collaboration, and teamwork (Michaelsen *et al.* 2004; Prince 2004; Healey & Jenkins 2009; Spronken-Smith *et al.* 2011). Meanwhile, internationalisation, improved mobility options, and the opportunity to experience diverse learning environments, directly stemming from transnational collaboration, further develop students' intercultural competence and adaptability (Knight 2004; Deardorff 2006) and cultural understanding and empathy (Gurin *et al.* 2002; Milem 2003), with employers valuing graduates with international experience (Marginson 2014).

At the systemic level, collaboration between HEIs and other innovation ecosystem actors is vital for the transfer of knowledge, skills, and expertise, supporting problem-solving, decision-making (Doloreux & Parto 2005),

co-creation of knowledge, commercialisation of research, and new product development (Perkmann *et al.* 2013). The presence of universities in a territory is positively correlated with economic growth through the development of skilled human capital and innovation (Valero & van Reenen 2019) with geographical proximity enhancing the frequency of university-industry collaboration (D'Este & Iammarino 2010). Successful ongoing or previous relationships between HEIs and firms are important facilitators of collaboration (Fitjar & Gjelsvik 2018) and firms tend to prefer universities with strong research profiles and successful collaboration histories (Laursen & Salter 2004). Conversely, other research found an inverse correlation between research intensity and university-industry collaboration in Norway (Atta-Owusu *et al.* 2021) and limited interest from the local business community in engaging with HEIs (Huggins *et al.* 2008), and in terms of collaboration with public entities, including local and regional governments, varies significantly depending on the territorial context, and may be hindered by differing objectives and priorities (Chatterton & Goddard 2000; Benneworth & Nieth 2018). Nevertheless, some studies suggest that university-local government partnerships are particularly significant for fostering innovation and economic development in peripheral regions (Yusuf & Nabeshima 2007; Edwards *et al.* 2017).

At the organisational level, HEIs are encouraged to embrace open and dynamic pathways that foster both internal and external collaboration (Planck *et al.* 2025). Developing intrapreneurial elements, managing change, and organising resources and capacities are essential for fostering innovation within institutions (Flores *et al.* 2024). Transnational and cross-institutional collaborations further reinforce HEIs' positions within innovation ecosystems, with international connections providing positive externalities (Sotarauta *et al.* 2016), such as facilitating access to knowledge, resources, and expertise (Guerrero *et al.* 2016). Such engagement broadens and deepens collaboration, attracts local interest, and enhances university reputations (Goddard & Vallance 2013). The incorporation of increasingly diverse

actors, including transnational stakeholders, has led to recognition that innovation ecosystems have evolved into internationally connected entities crossing regional and national boundaries (Cai 2022). The transnational collaborations of stakeholders within a broader multi-government/-actor system mean innovation processes are increasingly interconnected on a global scale (Sotarauta *et al.* 2016; Zenkienė & Leišytė 2024).

Within this context, the research aims to comparatively examine the extent to which international/global collaboration between HEIs under three different EU initiatives is aligned with territorial needs and able to capture the local dimension, leading to tangible territorial impacts in terms of policy design and implementation and in systemic and institutional spheres.

SCOPE OF THE STUDY AND METHODOLOGY

The present study focuses on three instruments that specifically aim to foster or strengthen collaborative activities and the exchange of good practice, not only with other HEIs across the EU but also between HEIs and their local innovation ecosystem. The three instruments (from the most specific to the most general) are the Knowledge Alliances of the Erasmus+ Programme (renamed in 2021 as Alliances for Innovation), the HEI Initiative of the European Institute of Innovation and Technology (EIT), and the European Universities initiative from the Erasmus+ programme. Table 1 presents an overview of the three instruments.

The Knowledge Alliances^{3,4} initiative aims to improve teaching and learning to develop better skills for students related to the needs of (for the most part) the business sector. Project partners from different member states exchange good practice and design actions to enhance academia-industry collaboration in the design and provision of training in labour market relevant skills and competences, and/or to improve their institutional support services for collaboration with business, often, but not always, in specific sectors.

The HEI Initiative⁵ of the EIT has a slightly broader scope, looking to strengthen

Table 1. Overview of collaborative HEI instruments.

Programme	Calls	Projects funded	Partner requirements	Geographical scope
Knowledge Alliances (KAs)	7 calls (2014–2020)	158 projects	Minimum 6 organisations (at least 2 HEIs and 2 businesses)	Organisations from at least 3 different countries
EIT's HEI Initiative	3 calls (2021–2022)	65 projects	Minimum 4 organisations; they must be led by a HEI	Geographic diversity encouraged
European Universities (EUAs)	3 calls (2020–2023)	50 projects	Only HEIs (at least 3); max. 1 project per HEI	HEIs from at least 3 different countries

Source: Based upon calls for proposals of the three instruments.

innovation and entrepreneurship (I&E), support institutional development, generate I&E skills and competences, and promote the creation of start-up companies. Partners are required to produce a joint Innovation Vision Action Plan (IVAP), a long-term roadmap to foster I&E at institutional level. The HEI Initiative stresses the requirement to collaborate with relevant stakeholders in each participant territory and hence aims to position HEIs at the core of their local innovation ecosystems: partners are requested to specify under which actions and in which manner this collaboration will take place.

Finally, the European Universities initiative⁶ (Erasmus+) was designed to create transnational alliances to increase the quality and competitiveness of the European higher education system (European Commission 2017, 2022a, 2022b) and to foster ‘societal engagement and outreach, ensuring that HEIs have a more active role in their local and regional ecosystems’ (Reichert 2019). The alliances are collaborative networks of HEIs across Europe who establish cross-border strategic partnerships to enhance educational quality and foster cooperation in education, research, and innovation. Their collaboration activities include cultural exchange actions, innovation and knowledge transfer projects, and the development of joint courses, usually to address common challenges or priority domains (academic, sectorial).

This study relies on data from primary sources—direct inputs from participants in

one or more of the considered instruments—and, to a lesser extent, secondary sources provided or facilitated by the managing bodies of each instrument: the European Education and Culture Executive Agency (EACEA) in the case of KA and EUAs, and the EIT for the HEI Initiative. The methodology to collect primary data was adapted in each case to the logic of the instrument and the availability of sources from the European Commission/EACEA and the EIT, whose support was required to reach participant organisations and collect information. The sources utilised are depicted in Table 2.

The questionnaires and/or invitations to participate were sent to all project/consortia leaders for all the initiatives, rather than only to a sample of them. The details of the responses obtained are also provided in Table 2. Additionally, several representatives were interviewed and/or answered open answer questionnaires, with the sample being selected to ensure the greatest possible diversity in profile (considering member state, project, and its field), as well as in the responses, in order to contrast different perspectives. All written or oral interaction with participants was conducted in English. In every case, the questions were structured to reflect the analytical blocks and hypotheses presented in this article, with minor adaptations arising from the specificities of each of the three instruments analysed, in terms of structure, objectives, operating rules, and the role of HEIs and ecosystem actors within

Table 2. *Primary and secondary sources.*

Instruments	Sources
Knowledge alliances	<ul style="list-style-type: none"> • Survey sent to all Knowledge Alliances lead partners 2014–2020, offering the possibility to share it with other beneficiaries. 95 answers were received (74% of respondents were HEIs), including beneficiaries from 23 EU28 countries and 5 partner countries • Questionnaire to selected survey respondents to deepen the analysis. The selection was based on having a representative sample in terms of geography and sectors addressed by the projects. 13 responses were received • 6 interviews to questionnaire respondents, selecting on the basis of reported impact on the local innovation ecosystem • Review of all projects’ websites and (where available) public reports • Review of data and information facilitated by the European Commission
HEI initiative	<ul style="list-style-type: none"> • Survey sent to the beneficiaries of the 1st and 2nd cohorts (both in 2021). 69 people from different organisations representing 32 different projects responded from 20 EU27 countries and 6 partner countries • 12 interviews to selected organisations, based on the responses of the survey; the selection process was based on ensuring geographic diversity and including those projects where more potential for impact was reported in survey responses • Review of 12 projects’ applications forms (those made available by survey respondents who chose to share them) • Review of all posters from the IVAP 2023 meeting of the HEI Initiative • Review of all projects’ websites and (where available) public reports • Review of data and information facilitated by the EIT
European universities	<ul style="list-style-type: none"> • 9 online focus groups (organised on the basis of geography) to which all 2020–2021 participants were invited. 89 people participated, representing 34 alliances and 26 EU27 countries. The focus groups were divided in 3 thematic 20 min slots and included open and survey-style questions with voting options via an online tool • 7 in-depth interviews with selected representatives, having a sample that was geographically diverse, and which included different types of EUAs, in terms of topics addressed and objectives/priorities • Review of all projects’ websites and (where available) public reports • Review of data and information facilitated by the European Commission

Descriptive details can be found in Esparza Masana & Woolford 2023 and Esparza Masana & Woolford 2024.

them. Table 3 provides a summary of the key topics on which all participants, across the three instruments, were questioned.

RESULTS

The following analysis addresses the research findings in relation to the four domains outlined and the impact that the examined projects and consortium alliances have in these areas. Tables 4–6 present aggregated data regarding participants’ perceptions of the projects’ impact across various dimensions, which are supplemented by additional data collected in the analysis. Given the differences in the design of the analysed instruments, the

response collection phase (with reference to the inputs detailed in Table 2), and the precise formulation of questions were tailored to each unique context and the needs of the European Commission (the research coordinator). The responses are, however, readily comparable across the instruments and enable both individual and collective conclusions to be drawn for the three instruments.

Policy impact—Addressing territorial needs and societal challenges—Projects funded under the three instruments respond to and address territorial challenges and contexts to differing degrees. Projects that had undertaken an ex ante mapping exercise to analyse the local innovation ecosystem, challenges, needs and

the multiple layers of relevant policy framework tended to acquire a better understanding of their added value in relation to territorial

Table 3. *Dimension addressed in questionnaires and interviews (all instruments).*

• Activities designed and implemented both at the consortium level and individually.
• Consideration of educational needs vis-à-vis the demands of local employers.
• Participation and engagement of actors from the local innovation system in project activities.
• Analyses undertaken related to the needs and challenges of the territories of the participants.
• The project's contribution (in terms of impact) concerning these needs and challenges.
• The project's contribution (in terms of impact) with respect to strategies and public policies.
• New or enhanced collaborations with actors both within and beyond the local innovation system.
• Impact on the participating institution and its members, at both the collective and individual levels.

needs and challenges, the development and implementation of territorial policies and strategies, as well as enhanced stakeholder collaboration and project dissemination and communication. This ex ante alignment exercise was most evident and embedded within the European Universities alliances, and least so under the Knowledge Alliances, where there was a tendency to spot these complementarities and potential partners only during project implementation, that is, after project approval.

Overall, however, the majority of research participants consider their projects align with relevant territorial policies. Smart specialisation strategies are considered particularly relevant to projects due to their cross-cutting and place-based logic, but EUA projects in particular reflected broader territorial perspectives and challenges, including for example, an EU macro-region or the Mediterranean space, as well as the UN Sustainable Development Goals (SDGs). Nearly all EUAs (90.1% of respondents) stated their projects considered local strategies and policy contexts, and 67% reported that their projects contributed to

Table 4. *Impact of KA projects on selected dimensions (% of responses; scale from 1 to 5, being 1 'little impact' and 5 'large impact').*

	(1)	(2)	(3)	(4)	(5)
Improvement in the quality and relevance of higher education in the territories and sectors concerned	0.0%	2.1%	10.5%	34.8%	52.6%
Development of new skills for workers in declining industries	12.6%	20.0%	31.6%	20.0%	15.8%
Creation of knowledge and learning that are directly relevant to smart specialisation design and implementation	2.1%	5.3%	25.3%	32.6%	34.7%
Increased collaboration with other local stakeholders	1.0%	1.0%	9.5%	41.1%	47.4%
Creation of transferable knowledge that is relevant in the local context (outside the project itself)	0.0%	0.0%	8.4%	34.7%	56.9%
Connection of local ecosystems to world class research and education institutions to respond to global challenges	0.0%	0.0%	2.1%	29.5%	68.4%
Stimulation of entrepreneurship in partner universities' students and researchers	2.1%	2.1%	25.3%	37.9%	32.6%
Wider engagement of participants with other projects, initiatives and stakeholders locally	1.1%	4.2%	16.8%	45.3%	32.6%
Increased capacities for individual researchers, students, etc., as well as on the organisations involved	0.0%	0.0%	13.7%	33.7%	52.6%

Table 5. *Impact of the participation in European Universities Alliances on selected dimensions (% of responses considering inputs in Table 2; scale from 1 to 5, being 1 'little impact' and 5 'large impact').*

	(1)	(2)	(3)	(4)	(5)
Enhanced quality and greater innovation in pedagogical approaches concerning aspects of innovation and entrepreneurship.	0.0%	12.8%	12.8%	33.3%	41.0%
Better skilled future employees, considering the needs and challenges of the local job market	0.0%	2.1%	2.1%	27.1%	68.7%
Increased collaboration with organisations belonging to the local innovation ecosystem (quadruple helix)	4.9%	10.1%	25.0%	47.5%	12.5%
New or enlarged innovation projects business-academia	10.7%	14.0%	40.9%	27.1%	13.3%
Enlarged consideration of or contribution to local/regional strategies and the territorial needs they address	4.3%	8.7%	19.6%	37.0%	30.4%
Possibility to influence future public policies or strategies, thanks to the learning outcomes of the project	4.3%	12.8%	25.5%	36.2%	21.3%

Table 6. *Impact of HEI Initiative projects on selected dimensions (% of responses considering inputs in Table 2; scale from 1 to 5, being 1 'little impact' and 5 'large impact').*

	(1)	(2)	(3)	(4)	(5)
Development of new pedagogical methods, especially those related to fostering innovation and entrepreneurship	0.0%	0.0%	1.5%	18.7%	79.8%
Addressing the needs and challenges of the agents of the quadruple helix (local innovation ecosystem)	1.5%	1.5%	1.5%	43.9%	51.6%
Consideration of local policies and strategies (linked to innovation), especially smart specialisation	11.1%	11.1%	7.3%	33.3%	37.2%
Increased or enlarged contacts with other organisations of the innovation quadruple helix in the territory	13.0%	13.0%	11.7%	15.9%	46.4%
Establishing connections with the entity responsible of regional/local innovation strategies, especially smart specialisation	50.8%	5.8%	5.8%	24.6%	13.0%

addressing territorial needs. Similar figures for KA and HEI Initiative survey respondents are 67% and 86%, and 54% and 94% respectively. Additionally, 78% of HEI Initiative respondents state that there has been an impact (from moderate to large, see Table 6) in terms of developing or widening present and new R&I projects based on this consideration.

Participants were slightly less likely to consider that their initiatives provide solutions to policy challenges. KA and HEI Initiative projects frequently adopt a problem-solving approach to local challenges as part of their activities. For instance, 51% of KA survey respondents state that they have developed R&I-based

solutions to local business-sector challenges in collaboration with researchers/firms/students (although only 17% say that they have been able to trial and test innovation-based measures). HEI Initiative projects often design technological or other solutions for specific challenges, and EUA projects consistently consider challenges either thematic (e.g., neuroscience, space) or cross-cutting (e.g., digitalisation, entrepreneurship).

The perceived impact in terms of improving or contributing to policymaking is low, despite the potential for policy design and implementation benefits from project results and learning. KAs had the lowest impact in

relation to governance and policymaking approaches with less than 10% of respondents reporting that their project had a significant impact on governance and policymaking; less than 30% some impact, and the remainder reporting little or no impact. In fact, while the majority of KA participants in the survey state that their projects take into account the strategies and public policies of their respective territories, few could provide practical examples of how their project currently has or could potentially have a direct impact on these policies. While participation in a European University alliance was seen to strengthen HEIs' presence in the context of territorial policymaking, this closely reflected the length of collaboration.

The participation of public authorities in project activities increased the potential for policy or systemic impact and future or ongoing collaboration. Nevertheless, the integration of the knowledge and lessons learnt from collaboration into the territorial policy context was lacking. Collaboration with public authorities varied; however, ranging from 23% of HEI Initiative respondents and 28% of KA respondents having contacted them to over 90% of the participants in the EUAs focus groups. Of the latter, 57% think that their participation in the alliance could influence territorial strategies/policies moving forwards, whereas only 13% of HEI Initiative respondents stated there was a significant impact from collaborating with authorities in charge of regional/local innovation strategies/policies. In most cases under all initiatives, collaboration with territorial authorities was occurring in an ad hoc rather than a continual manner.

Nonetheless, participants in all three instruments agree when stating that, in general, the results of their projects could impact the creation of knowledge that is directly relevant to smart specialisation design and implementation (for instance, over 90% of KA respondents see this potential impact).

Educational impact—Education and teaching innovations linked to the territorial ecosystem –

The three instruments variably enhance the territorial relevance of higher education provision, strengthening its link to the local context

and innovation and entrepreneurship. All three initiatives looked to address the needs of local actors regarding university graduates' skills and competencies and specifically the development of horizontal skills to meet social and economic challenges. All research participants agreed their projects reflect and respond to these needs, include specific actions to address them, and have an impact on employability and skills match, as shown by the large rates of perceived high impact in this regard (see [Tables 4, 5 and 6](#)).

EUA participants in the study noted that their participation in an alliance strengthened institutional capabilities to adapt to new educational paradigms: 74% of EUA focus group participants stated that their alliance's activities have a significant impact on their institution's educational/academic activities, especially related to new teaching methods, challenge-based teaching, and improved employability of their students. Many of the participating HEIs had analysed skill gaps in the job market and student outcomes, with the aim of improving the territorial relevance of academic programmes and reducing skill mismatches. The alliances were perceived to provide a context in which new or innovative evaluation and assessment methods could be tested, and in which multiple learning environments could lead to the development of key multicultural competencies in students, and 'unlock the transformative power of education'. Over 95% of participants stated that participation in the EUA had a significant impact on improving the skills of their students, when considering the needs and challenges of the local ecosystem.

KA projects tend to be the most applied, with 82% of respondents to the KA survey implementing new learning and teaching methods and/or integrating a challenge-based approach and 78% reporting some or significant impact in this regard. 85% stated that the project had some or significant impact in the improved employability of students, and 93% considered that their project contributes to the provision of a better skilled workforce. 36% also saw significant impact in developing skills and competences specifically considering challenges around declining industries (a challenge addressed in several KA projects).

KAs notably increase the involvement of companies in preparing and delivering university education: 52% of KA survey respondents state that they have created training schemes in cooperation with enterprises; 46% have created—together with companies—continuous educational programmes and 35% say that company staff has been involved in teaching and research activities. Several universities participating in KA projects had developed new micro-credentials⁷ which were seen as particularly conducive to the professional training of students, often integrating the development of skills demanded by local industry. Interdisciplinarity tended to be lower in the case of KA projects, where a large number refer to a specific sector and demonstrate lower levels of multidisciplinary within project teams. Nevertheless, more than 87% of respondents stated that the projects had improved the quality and relevance of higher education in the territories and sectors concerned. According to the survey results, the top 3 education-related impacts of KAs were: the improvement of teaching methods (54%), the provision of better skilled workers (53%) and the improved employability of students (45%).

Projects under the HEI Initiative must be designed, in accordance with the requirements set out in the calls, to promote teaching methods that foster an innovative mindset and entrepreneurship within participating institutions, particularly through engagement with stakeholders in the relevant territories and in collaboration with the EIT's Knowledge Innovation Communities (KICs). Thus, these projects mostly include challenge-based initiatives, with interviewees noting they help transition towards student-centred education focused on local challenges and priorities and include a stronger focus and impact in relation to the development of entrepreneurial competencies in students.

Over 98% of the research participants stated that their participation in a HEI Initiative project had a significant impact on developing new educational methods. These participants state that the activities which make the greatest contribution to this objective, and which are implemented as a result of their participation in the project consortia,

are: training and mentoring from local organisations, providing know-how to facilitate entrepreneurship as a career path, ensuring industry involvement in entrepreneurship education (curriculum design and provision of industrial experiences for students); integrating new innovation and entrepreneurship elements across different programmes/disciplines through cross-cutting curriculum enhancement; and providing guidance and mentoring on management, financial or legal aspects of starting a new business for students and staff.

While all three initiatives aim to promote students' professional development in the context of their local industries, job markets and entrepreneurial projects, all participant organisations under the HEI Initiative, without exception, carry out actions that directly promote entrepreneurial activity. In KA projects, the focus on entrepreneurship is more limited, with some representatives of participating organisations commenting that the presence of entrepreneurs could be further encouraged alongside that of well-established companies. In the case of EUAs, the emphasis on entrepreneurship varies across projects, as does the number of activities they devote to fostering it. Conversely, none of the three instruments show significant transversal impact in promoting digital tools, except for projects specifically focused on this domain.

Participants under the three initiatives, especially EUAs, regarded the lack of regulatory cohesion and European integration in the field of higher education as a limiting factor that hinders the development and implementation of joint initiatives and impedes further collaboration.

Systemic impact—Collaboration within territorial innovation ecosystems and with local stakeholders

All three instruments facilitate joint learning and knowledge transfer between HEIs and other territorial stakeholders. Respondents from KAs tended to report a deepening of existing collaboration: 88% of KA survey respondents reported establishing deeper ties with local actors with which they had already been collaborating. EUAs were more able to generate new collaboration or involve new partners, widening engagement with local

stakeholders: 60% of the EUAs focus groups participants think that being part of the alliance has enhanced their collaboration with additional organisations in their innovation ecosystem. Meanwhile, interviewed HEI Initiative projects representatives reported both deepening collaboration with existing partners as well as broadening collaboration through the incorporation of new partners. In general, however, the focus tended to be primarily upon reinforcing cooperation and engagement between academia and industry. Across the three instruments, collaboration and engagement with wider stakeholders was facilitated by the nature of the institution (e.g., applied science), local territorial characteristics (rural universities are a significant local player), and when building upon previous successful collaboration.

However, there is, at times, limited interest from the local business community in engaging with and utilising the knowledge-oriented services offered by the higher education sector and the three initiatives. EUAs perceived stronger private sector interest in engaging with universities that are part of a trans-European alliance and seem to therefore be internationally significant players. Additionally, 40% of survey respondents state that being a member of a EUA has helped them establish or grow innovative business-academia projects. Collaboration with the private sector is more intense in KA and HEI Initiative projects, especially in sector-specific alliances with collaboration enhancing bilateral communication and 'bridging the gap between business and academia'. For example, 83% of KA survey respondents think that projects enhance business-academia collaboration, while only 45% say the same when asked about the collaboration with wider quadruple helix stakeholders. Additionally, 93% of them state that their projects create new potentially transferrable knowledge relevant to the needs of the local ecosystem. In the case of the HEI Initiative, more than 97% of participants believe that their project considered the needs of local industry during the design phase. This results in broad possibilities for cooperation with the private sector, although interviewees feel the project's impact is mixed.

Collaboration with public entities varies depending on project scope, local context, and differing priorities. Nevertheless, overall, territorial authorities, including city and metropolitan governments, are considered particularly relevant across all the initiatives, helping universities understand regional challenges and develop targeted strategies. EUAs have the most significant impact in this regard, with more than 30% of the participants in the study reporting active collaboration with their territorial administrations, and more than 65% some form of public sector engagement. KA and HEI Initiatives demonstrate lower engagement, with administrations often acting as observers or occasional participants: the majority of HEI initiative respondents (77%) in fact reported no engagement or initiation of contact with relevant territorial authorities. Across the three initiatives, universities from smaller Member States tended to have more established relationships with the relevant public authorities at territorial level and national level. Similarly, projects with cross-cutting topics (such as digitisation) tend to find more collaboration opportunities with public administrations. The impact in other areas varies according to individual project, for example, social projects tend to have stronger collaboration with NGOs, foundations, and/or thematic associations.

While all projects tend to strengthen collaborative relationships and dialogue between universities and wider ecosystem actors, there are some limitations. There was little evidence of projects generating new R&D/innovation initiatives, except for more sector-specific projects and/or where there is an established relationship with companies participating in the project. Under the KAs, there was evidence both of collaboration evolving from the educational sphere into the research sphere and, conversely, of relevant R&I projects undertaken in other departments of the participant organisations unfortunately not engaging with the project. In the public sphere, there is ample room to increase practical collaboration between project participants and administrations, ensuring lessons derived from projects feed into and inform local policies or strategies.

Finally, in a large number of cases, broader ecosystem stakeholders seem generally uninformed about projects and their aims and improved communication and engagement across a broader range of ecosystem actors, for example through the development of common platforms, would further enhance implementation and impact.

Organisational/institutional impact – The three initiatives also provide the catalyst for internal institutional changes and have a significant positive impact on the professional development of academic, research and management staff. Firstly, in terms of their understanding of the innovation ecosystem and its challenges; secondly, in terms of incorporating new pedagogical methodologies and educational innovations, particularly challenge-based education; and finally, through increasing their inclination towards collaboration and fostering an entrepreneurial mindset. 86% of KA respondents reported increased capacities of researchers, students, and other staff within their organisation.

The impact on students is also extensive, varying according to each programme's objectives: KA projects focus on professionalisation, the HEI Initiative on entrepreneurship, and EUAs on cross-cutting activities. All participants in the research consider students benefit significantly from these projects, enhancing their employability and improving the institution's long-term reputation, especially when they collaborate with local stakeholders. Of the KA participants, more than 70% felt that the alliances had improved staff and student levels of entrepreneurship.

At the institutional level, participants from all three instruments also identify benefits with international collaboration helping to develop institutional capabilities (in relation to educational developments) and positioning within the regional innovation ecosystem. For example, more than 60% of interviewed or surveyed participants in the HEI Initiative believe that their participation in the project has had a significant impact on increasing or broadening their contacts with quadruple helix organisations in their territory. Among respondents from the KAs, 78% believe that the projects

have led to greater engagement with other projects and initiatives involving territorial actors, and 98% believe the project further connects the internationally recognised research and innovation on global challenges to their local innovation ecosystem.

Despite these positive impacts, several challenges remain. A significant issue is incentivising academic staff to participate in projects. Within participant HEIs, while the number of actively participating staff tends to increase, some academics remain uninvolved due to a (perceived) lack of academic recognition, financial benefits, or other incentives. Another area for improvement is in the development of synergies with other projects at institutional level that may be funded from different sources. Projects are usually implemented independently or by different parts of organisational structures, without thoroughly exploring complementarities and opportunities to generate greater impact through the development of cross-project synergies. Structured approaches to identify and leverage potential synergies could enhance overall project and instrument impact.

Summary overview – Figure 1 provides a visualisation of the research's conclusions with regard to the degree (on a scale of 1–5) of (perceived) impact of each analysed instrument in key elements of the different areas of analysis. A score of 5 indicates that all sources lead to the conclusion that the programme's impact in that area is clear and significant; 1 indicates that this impact is low or negligible, according to all considered sources (as detailed in Table 2). Overall, of the three initiatives, European Universities demonstrate the greatest impact on HEI engagement with their territorial innovation ecosystem, although the other two schemes show a greater capacity to provide solutions to address local challenges and needs.

FINAL REMARKS

The research compared and contrasted the role and impact of HEI transnational cooperation instruments on the positioning and

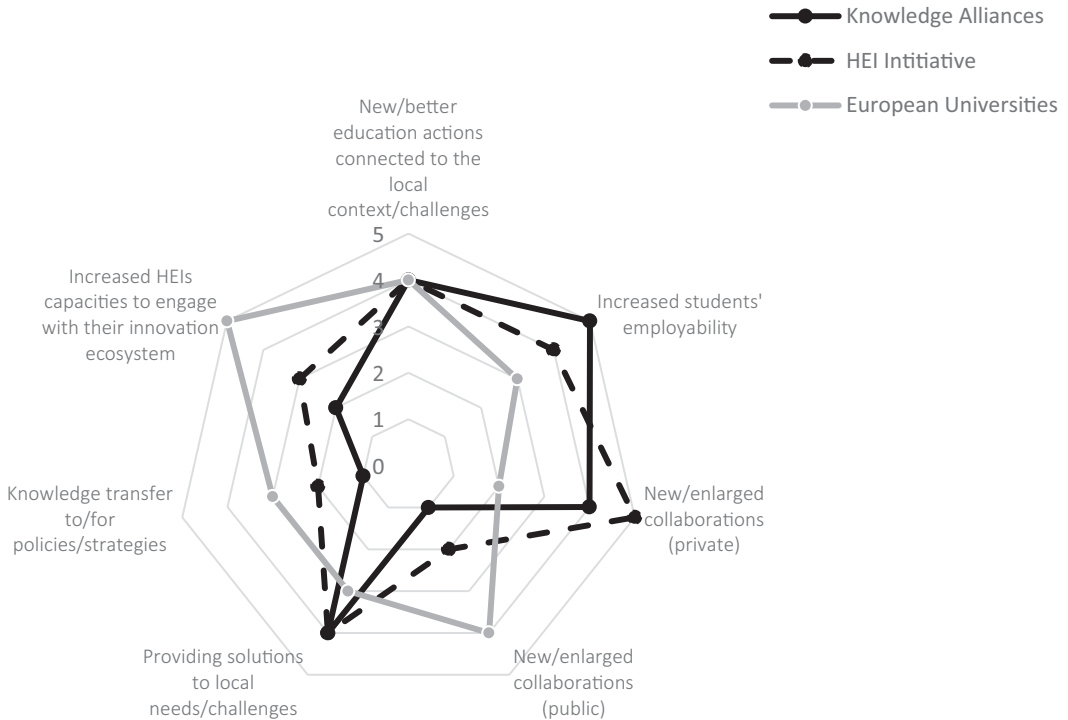


Figure 1. Impact of the analysed instruments on the studied domains. 1 = low impact; 2 = limited impact; 3 = some impact; 4 = relevant impact; 5 = major impact. The punctuation of each element was established according to this criterion: >80% of respondents (all inputs) stating that there was a relevant impact was granted a 5; from 60 to 80%, a 4; from 40 to 60%, a 3; from 20 to 40%, a 2; <20%, a 1.

relevance of these institutions within their own territorial innovation ecosystems and their potential contribution to territorial challenges and transformation. In terms of policymaking and governance, all the initiatives demonstrated a clear impact in relation to strengthening the knowledge of HEIs on the needs of their territory and their incorporation of a new transformative mission, encouraging the integration of territorial, societal and sustainability considerations into their academic and research activities (Woolford *et al.* 2025). In line with the discussed literature, especially Benneworth and Hospers (2007) and Cai and Etzkowitz (2020), the results demonstrate that transnational collaboration increasingly prompts HEIs to analyse their territorial contexts and to align their strategies and missions with local needs and priorities, although to varying degrees depending on the institution, territory, the rationale for cooperation and

the initiative. Through transnational project participation, HEIs connected more explicitly to territorial needs and policies, co-creating knowledge that increasingly reflects and translates global societal challenges into a local context. Projects incorporating rigorous ex ante mapping and early-stage territorial alignment were found to be most effective in fostering stakeholder engagement, advancing locally relevant competencies, and reinforcing the broader institutional role of HEIs within their innovation ecosystems. Nevertheless, consistent with earlier findings of limited policy uptake (Aranguren *et al.* 2009; Rodríguez-Pose & Wang 2025), the study reveals that most projects still fall short of generating durable policy impact, as engagement with public authorities remains sporadic rather than systemic and the incorporation of policy learning from the project into the territorial innovation ecosystem and policymaking process is little more than

superficial or episodic. This highlights an unexploited opportunity, at territorial level, to promote and embed a synergistic whole of government approach and, at institutional level, to territorially embed and anchor HEIs in their innovation ecosystems.

Regarding policy implementation and the transformation of higher education models, the results align with the literature highlighting universities' increasing adaptation to innovation-driven and challenge-based contexts (Spronken-Smith *et al.* 2011; Parker & Lundgren 2022). The funded initiatives fostered stronger integration of academic provision with local innovation ecosystems and labour market needs and hence the territorial relevance of higher education. Across the board, projects incorporated more challenge-based, innovative, and interdisciplinary education and tested novel teaching and assessment methods and developed staff and student competencies and professional skills in areas relevant and aligned to the territorial context and labour market, as well as more widely. The promotion of entrepreneurship, and the facilitation of multicultural learning environments and the co-creation of knowledge that responds to and links global excellence and sustainability and societal challenges to local contexts and needs was also evident. However, the persistence of regulatory fragmentation reveals constraints to scalability and sustainability—reflecting systemic barriers also discussed by Flores *et al.* (2024) and Planck *et al.* (2025). Overcoming these challenges demands more integrated governance frameworks and coherent multi-level policy coordination if the transformative potential of territorially embedded higher education is to be fully realised.

Similarly, in the systemic sphere, the analysed instruments demonstrate an expansion or reinforcement of connections and collaborations within the territorial innovation ecosystem and increasingly networked and connected HEIs. Nevertheless, consistent with previous literature suggesting uneven collaboration outcomes (Huggins *et al.* 2008; Atta-Owusu *et al.* 2021), the extent to which they are able to promote collaboration, and its impact, varies widely in each specific project/alliance, depending on scope, local and thematic context, particularly in relation to industry. In general, projects

help strengthen collaboration and communication between participating HEIs and territorial actors, particularly at the municipal level, in territories with fewer stakeholders, and/or when the projects have a sectoral dimension. However, the initiatives lack significant impact on the development of research and innovation activities and tend to fail to act as primary or necessary catalysts for further cooperation in their field or deeper systemic cooperation. Moreover, the weak translation of project outcomes into policy highlights the need for stronger requirements to integrate and measure interaction with legislators and policymakers under the three programmes.

Finally, in terms of institutional impact, the initiatives act as significant catalysts for or enablers of transformation, consistent with the literature on intrapreneurship and organisational change within HEIs. They significantly enhance the professional development of staff by deepening their understanding of innovation ecosystems, integrating innovative pedagogical approaches like challenge-based education and entrepreneurial learning, fostering collaboration and entrepreneurial mindsets, and strengthening internal innovation capacities. Students also benefit through improved employability and enriched skill sets, strengthened by reinforced institutional reputation and engagement with local stakeholders. While at a partnership level, synergies are identified between the initiatives under the analysed instruments and other projects/programmes, at organisational level there is an identified need to strengthen complementarities between projects from different calls, funding initiatives and faculties/disciplines to amplify their impact (see also Sotarauta *et al.* 2016; Kempton 2019). Limited incentives for participation, funding fragmentation, and regulatory rigidities hinder long-term cooperation. Efforts under the European Strategy for Universities⁸ and related EU-level initiatives to develop legal and governance frameworks for alliances and joint degrees represent crucial steps towards overcoming these systemic barriers and realising the initiatives' full transformative potential.

From the comparative analysis of transnational collaboration and its local impacts across three EU initiatives, the four initial hypotheses introduced in 'Introduction' section

are validated but nuanced by the institutional and systemic diversity and territorial heterogeneity highlighted more widely in the literature (Benneworth & Nieth 2018; Cai 2022). First, while transnational initiatives encourage attention to territorial needs and policies—especially through ex ante alignment—the depth and consistency of policy impacts vary widely, with many efforts remaining fragmented or superficial. Secondly, while cooperation among HEIs accelerates educational innovation responsive to local challenges, institutional fragmentation and regulatory inconsistencies limit scalability. Thirdly, these projects broaden and deepen engagement with territorial actors, strengthening innovation ecosystems, but the extent and impact of collaborations fluctuate considerably depending on local contexts and thematic focuses, with limited translation into systemic innovation activities outside sector-specific domains. Finally, in institutional terms, such programmes foster entrepreneurial and collaborative capacities and institutional development, particularly in less developed regions, yet persistent barriers and challenges remain in relation to incentivising participation, coordinating funding and interdisciplinary approaches, and overcoming regulatory barriers to optimise their transformative potential. Overall, the discussed findings reaffirm the contribution of higher education collaboration to transformative innovation but further highlight that impact within or upon territorial innovation ecosystems will be significantly shaped by the local context and place-based factors.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the European Commission.

Restrictions apply to the availability of these data, which were used under licence for this study. Data are available from the author(s) with the permission of the European Commission.

Endnotes

- ¹ Commission Staff Working Document, accompanying the document Communication from the Commission to the EP, the Council, the EESC and the Committee of the Regions, A New European Innovation Agenda.
- ² In accordance with the European Strategy for Universities; <https://education.ec.europa.eu/sites/default/files/2022-01/communication-european-strategy-for-universities-graphic-version.pdf>.
- ³ <https://erasmus-plus.ec.europa.eu/knowledge-alliances>.
- ⁴ The instrument, which included 7 calls from proposals in the programming period 2014–2020, has been reshaped and renamed for the period 2021–2027 under the name 'Alliances for innovation'.
- ⁵ <https://eit-hei.eu/>.
- ⁶ <https://education.ec.europa.eu/education-levels/higher-education/european-universities-initiative>.
- ⁷ Following the European Commission's definition: 'Micro-credentials certify the learning outcomes of short-term learning experiences, for example a short course or training. They offer a flexible, targeted way to help people develop the knowledge, skills and competences they need for their personal and professional development'. Extracted from: <https://education.ec.europa.eu/education-levels/higher-education/micro-credentials>.
- ⁸ COM/2022/16.

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