



ORIGINAL ARTICLE

Drivers and challenges of RIS3-related university engagement: Insights from five European regions

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Abstract

Universities have long been considered key players in regional innovation systems and innovation-driven regional development. In addition, as part of the quadruple helix, they can play a major role in RIS3 design and implementation by acting as civic universities. This contribution differs depending on external and internal factors as well as their interaction. This paper aims to shed light on the main challenges and drivers experienced by five universities whilst taking part in an Erasmus+ project. Adopting a reflexive narrative approach, it investigates to what extent and how they acted as Civic Universities and what they could learn from this quadruple helix interaction. The results show that, even in their diversity, all universities perceived themselves to have acted as CUs in the context of the project.

KEYWORDS

civic universities, industrial density, place-based development, quadruple helix, smart specialization policy

JEL CLASSIFICATION

I23, I25, R58, O31

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1 | INTRODUCTION

Higher education institutions (HEIs) have long been recognized and studied as key players in regional innovation systems and innovation-driven regional development (Brekke, 2021; Uyarra, 2010). The new approach at the European level towards innovation-driven and place-based growth is based on the Regional Innovation Strategies for Smart Specialisation (RIS3). The RIS3 have been closely interlinked with the use of the European Regional Development Fund (ERDF) for research and innovation investments since the 2014–2020 programming period (Foray, 2015; Foray et al., 2012; McCann, 2015). They are designed at the regional, national or both levels in EU Member States (Larrea et al., 2019; Tolia, 2019) and focus on a limited number of priority areas. As a place-based and bottom-up approach (Barca, 2009), they build on the Entrepreneurial Discovery Process (EDP). Their core is the cooperation between quadruple helix (QH) stakeholders (Carayannis & Campbell, 2006, 2009), which, as an evolution of the triple helix (Etzkowitz & Leydesdorff, 2000), also includes civil society. As part of the QH, HEIs are expected to play a major role in the design and implementation of RIS3 (Foray et al., 2012). The way in which a HEI should be involved in RIS3 can be related to the civic university profile (Edwards et al., 2017). HEIs considered to be civic are embedded in their communities and collaborate with other QH actors to solve societal challenges through the generation and exploitation of knowledge (Carayannis & Campbell, 2006, 2009; Goddard et al., 2016). Types of activity at civic universities encompass social and economic contributions to territorial development, namely HEIs' 'third mission' (Kempton et al., 2021; Trippl et al., 2015).

Similarly, European funding programmes, like the new Horizon Europe Programme, highlight the contribution that HEIs may make to the mission towards societal and economic changes.

Many stakeholders take part in this process and HEIs can aspire to play a mediating role as the dynamic link between public and private sectors and within regional and national innovation ecosystems. This can be a challenging mission for HEIs.

Thus, this paper aims to shed light on the main challenges and drivers experienced by five universities whilst taking part in the RE-ACT – Self-reflection tools for smart universities acting regionally project.¹ RE-ACT is a Forward-Looking Erasmus Plus project,² aimed at building a self-assessment tool (HEInnovate for RIS3) complementary to HEInnovate,³ with a specific focus on HEIs' involvement and contribution to RIS3. Five HEIs from Southern, Central and Eastern Europe are involved in the project: Porto Business School (PBS, Portugal), University of Macerata (UNIMC, Italy), Technical University of Kosice (TUKE, Slovakia), Corvinus University Budapest (CUB, Hungary) and Babeş-Bolyai University of Cluj-Napoca (BBU, Romania).

Since the project requires the mobilization of QH stakeholders and their participation in collaborative project activities, this paper applies the civic university theoretical framework to understand the main lessons learnt by carrying out tasks and activities planned in the project.

The five HEIs involved in the RE-ACT project have been selected as case studies as they are diverse in terms of institutional characteristics, policy context, place-based characteristics and level of regional engagement. Indeed, they focus on different research and educational topics and, being regionally engaged, they deal with various levels of regional development and RIS3 approaches. More precisely, each HEI has been actively involved in RIS3-related activities: some of them ran projects connected to this topic, some others participated in the RIS3 design and revision processes and, in some case, acted as facilitators.

Hence, the research questions are:

¹RE-ACT project website <https://ris3heinnovate.eu/> (last accessed 31/01/2021).

²Forward-Looking Projects are large-scale projects that aim to identify, develop, test and/or assess innovative (policy) approaches that have the potential of becoming mainstreamed, thus improving education and training systems.

³HEInnovate is a self-reflection tool, implemented by European Commission and OECD in 2013 for Higher Education Institutions wishing to explore their innovative potential. See more at: <https://www.heinnovate.eu/en> (last accessed 31/01/2021).



- a. To what extent and how did the HEIs involved in the RE-ACT project perceive themselves as acting as civic universities?
- b. What could HEIs learn from interacting with QH stakeholders about the role they should play in their regions and in RIS3-related activities?

The paper starts with a literature review on HEIs' role in regional development and RIS3 as well as on the civic university framework. The following background section introduces the HEIs involved in the project, their regional contexts and a short presentation about RE-ACT. Following this, the adopted methodology is presented and the research results and discussion focus on the civic university dimensions related to the HEIs' experience of the RE-ACT project. Finally, the conclusion points out further areas of research in addition to the limitations.

2 | LITERATURE REVIEW

2.1 | Regional development and RIS3

The latest regional development theories have emphasized the role of innovation in economic growth (Asheim et al., 2016; Benedek, 2004; Isaksen et al., 2018; Marques & Morgan, 2018). They particularly advocate place-based policies that focus on the sub-national level (regions or localities) as well as relying on bottom-up approaches through the involvement of various stakeholders (Barca, 2009; Barca et al., 2012; Beer et al., 2020; McCann, 2015).

Focusing on territory enables an understanding of the dynamics of knowledge exchange and exploitation between the key actors from the regional innovation system (Asheim et al., 2016) as well as a common strategic approach.

RIS3 represents a new approach to regional development in line with the latest theoretical advancements (McCann, 2015) and natural combination of innovation and regional development policies (González-López & Asheim, 2020). They are the third generation of research and innovation strategies deployed by the European Union (Asheim et al., 2020), in close connection with the implementation of the Cohesion Policy (Foray, 2015; McCann, 2015). RIS3 relies on the concept of smart specialization that promotes a broader understanding of the process and scope of innovation. At the core, there is cooperation between QH stakeholders through the EDP and targeting public investments towards a limited number of priority areas of competitive advantage (Foray, 2015; Foray et al., 2012). RIS3 at the regional level can cover NUTS 2 or NUTS 3 regions (Trippel et al., 2020).

2.2 | HEIs' role in place-based development and the civic university framework

Owing to their role in the generation and dissemination of knowledge, HEIs are expected to play a major role in place-based policies and economic development by: (a) training human resources for the labour market; (b) conducting research oriented to market needs; (c) supporting innovation and development through collaborative processes with communities and businesses; and (d) connecting the place to global knowledge flows to import new technologies and attract talents (Beer et al., 2020). In the RIS3 context, HEIs should engage in collaborative processes (EDPs) with other public and private stakeholders, thus contributing to the process with research results and skills development. As argued by Edwards et al. (2017), HEIs could play a role in:

- participating in strategic governance structures,
- selecting and developing smart specialization priority areas, and
- providing activities which address regional economic and societal challenges



This contribution differs depending on the external and internal factors as well as their interaction.

External factors relate to a HEI's geographic location and place-based characteristics (e.g. size of the area, demography, economic, technological and social levels of advancement, industrial structures and density) (Elena-Pérez et al., 2017; Kempton et al., 2021). External factors also include the national and regional policy context (Kempton et al., 2021): type of instruments and incentives deployed through RIS3 for their research and innovation activities (Elena-Pérez et al., 2017); stage of the policy process (i.e. RIS3 design, implementation or monitoring, evaluation) (Fonseca et al., 2021); governance of place-based policies; (Edwards et al., 2017; Kempton et al., 2021); the institutional structure of the place (Brekke, 2021); and RIS3 vertical multi-level governance and related alignment/misalignment of strategies when deployed both at regional and national levels (Larrea et al., 2019).

Internal factors concern a HEI's educational, research and institutional profile, history and tradition, size and hierarchical position, internal decision-making structures and interactions, as well as leadership and institutional priorities, including the emphasis put on the different university missions (Elena-Pérez et al., 2017).

As for the interaction between the external and internal factors, it is worth mentioning the alignment or misalignment between a HEI's focus on social and economic needs in terms of education and research and the regional economic structure and profile (Fonseca et al., 2021; Fonseca & Nieth, 2021; Marques & Morgan, 2018); the cooperation between a HEI and other actors, which also depends on the relatedness or similarity in competencies and knowledge basis (Brekke, 2021; Peer & Penker, 2014); and the spatial (geographical) and non-spatial proximity (organizational, based on a sense of belonging and similarity) (Torre & Wallet, 2014). Indeed, as HEIs play a relevant role in providing human capital responding to economic and societal challenges, their location and typology also influence student access and participation, investment, talent growth, and business and societal collaboration (Woolford & Boden, 2021).

HEIs regional engagement may also be described through the civic university concept (Edwards et al., 2017), also referred to as the 'engaged', 'responsible' or 'developmental' university (Kempton et al., 2021).

According to Goddard et al. (2016), civic universities are characterized through seven dimensions.

1. Sense of purpose: orientation towards solving economic and societal challenges through cooperation and knowledge exchange with stakeholders or groups and networks.
2. Active engagement: involvement in collaborative networks at local, regional and global levels with different QH stakeholders linked to education and research, as well as social and economic development.
3. Holistic approach: integration of core activities of education and research with the third and fourth missions, involving all types of staff and students.
4. Sense of place: embeddedness into the social and economic fabric and physical environment.
5. Willingness to invest: attraction of funding in other areas beyond immediate academic interest and/or in staff, connecting disciplines and sectors.
6. Transparency and accountability: monitoring and evaluation of HEIs' actions, involving external stakeholders in such activities and communicating both externally and internally its mission and contribution to social and economic development.
7. Innovative methodologies: tailoring new technologies, education and research according to stakeholders' needs and to foster collaboration across sectors.

HEIs' potential contribution in place-based policies and RIS3 (Beer et al., 2020; Edwards et al., 2017) and the civic university framework (Goddard et al., 2016) are strongly interconnected, as summarized in Figure 1. Indeed, the civic university 'sense of purpose', 'active engagement', 'sense of place' and 'transparency and accountability' (Goddard et al., 2016) can be easily linked to the role of HEIs in fostering innovation and development through collaborative processes with communities and businesses (Beer et al., 2020). Collaboration also involves the governance level (Edwards et al., 2017), in which civic HEIs may play an active role. These aspects also refer to the provision of activities addressing regional economic and societal challenges (Edwards et al., 2017). Through their engagement

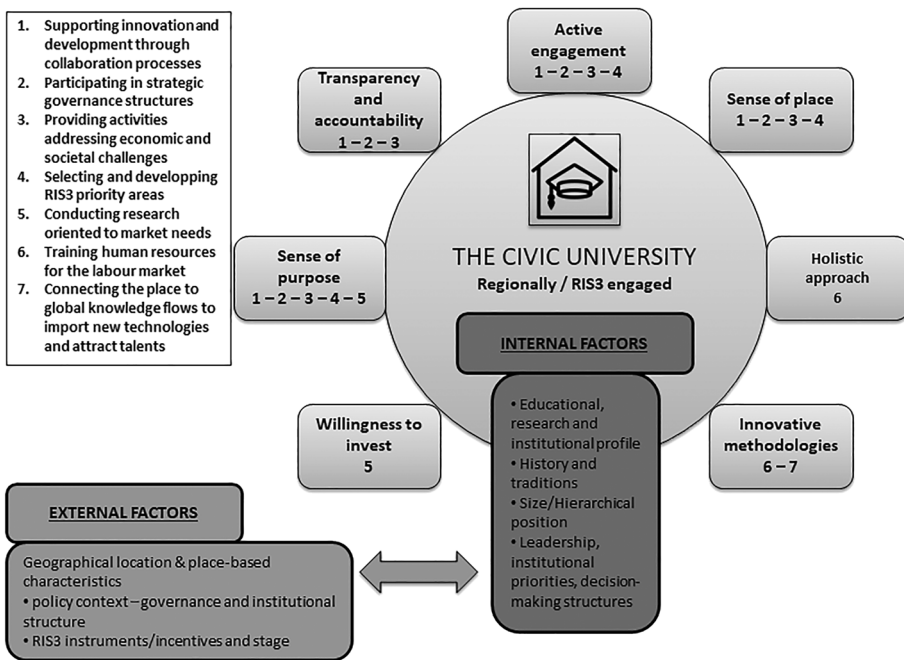


FIGURE 1

with the place in a broader sense (Goddard et al., 2016), HEIs can differentiate specific contexts and contribute to the identification of smart specialization priority areas (Edwards et al., 2017; Woolford & Boden, 2021). ‘Sense of purpose’ and ‘willingness to invest’ (Goddard et al., 2016) both linked to conducting research oriented to market needs (Beer et al., 2020): the former through addressing economic and societal challenges, the latter through the pursuit of specific funding to run this kind of research. Moreover, the ‘holistic approach’ (Goddard et al., 2016) may be linked to the role played by HEIs in training human resources for the labour market, as part of their third and fourth missions. As for the ‘innovative methodologies’ (Goddard et al., 2016), these serve mainly to connect the place to global knowledge flows in order to import new technologies and attract talents (Beer et al., 2020).

3 | BACKGROUND CONTEXT

3.1 | RE-ACT project as research context

The RE-ACT project aimed to develop and test a new online self-reflection tool complementary to HEInnovate, exploring its added value in the context of RIS3. This new self-assessment tool supports HEIs in undertaking an internal analysis that can be translated into organizational action plans. It also fosters a collective debate which focuses on improving their regional engagement and on building a joint positioning.

The project’s general objective is to foster the engagement of HEIs within QH collaborative networks from the regional innovation system in the context of RIS3 design and implementation.

Its approach has been anchored in a profound participatory methodology, requiring the participation of several stakeholders to pilot, implement and assess the tools and resources. It consists of several participatory actions leveraged by HEIs and directly involving local authorities heading the RIS3 processes.



This is in line with the action research approach, aimed at stimulating flexibility and responsiveness in research through critical reflection (Dick, 2002).

The way in which the activities were carried out requires partner HEIs to reflect on their civic university profile, seeing them actively involved with all the regional QH actors and making them collaborate with other regional HEIs (Goddard et al., 2016).

The project activities included the first step of an extensive research analysis: questionnaires, interviews and focus groups addressed to organizations leading RIS3 processes at the regional and/or national level as well as to RIS3 and HEInnovate experts. This phase investigated the pivotal role HEIs play in innovation-driven regional development and the added value of self-assessment tools and lessons learned during 2014–2020 in the involved regions/countries. The insights from this step led to the design of the HEInnovate for RIS3 tool. The second step involved key actors from all the different nodes of the QH to gain a wider understanding of the HEIs' contribution in RIS3 and to boost collaborative processes. To do so, the consortium followed a double path by creating exchange opportunities between HEIs from the same region and between HEIs and other QH actors.

The HEIs debated to jointly define their positioning as a regional asset for RIS3. A training course on RIS3 and the HEIs' related potential role, including the use of the new self-assessment tool, several peer support meetings and a peer workshop supported this process.

RIS3 responsible organizations and other key actors attended a similar training course on HEIs' role in RIS3 and within the QH. In the following step, the RE-ACT partners were asked to present the joint positioning to key regional actors and fine-tune it. Furthermore, the project includes the organization of a regional event to leverage RIS3 design and implementation and other collaborative processes in addition to workshops and other co-creation events.

The upcoming steps include the exploitation of lessons learnt during previous activities: these will be used as resources dedicated to replication activities and amplification of the QH networks at national and international levels.

3.2 | RE-ACT partner countries: Place-based characteristics and policy context

This paragraph aims at supporting a reflection on how and to what extent, despite their diversity, HEIs involved in the RE-ACT project were potentially able to act as civic universities. To do so, it considers the external factors and details the place-based characteristics and policy context of each partner country/region.

Table 1 focuses on the place-based characteristics of the region where each HEI partner is embedded and highlights their diversity according to selected indicators. These include NUTS 2 regions, category under Cohesion Policy based on GDP/capita, population and industrial density, and employment specialization. Table 2 contains the regional innovation index and synthesizes the policy context.

As shown in Tables 1 and 2, Budapest has the largest metropolitan agglomeration with a high population and industrial density and is the only region which is more developed. Nord-Vest, Central Transdanubia and Východné Slovensko have the lowest population and industrial density and are considered less developed. They also lag behind in their innovation performance compared with the others. Budapest, Marche and Norte, with a higher population and industrial density, have better innovation performance. In terms of policy context, national and regional RIS3 co-exist in Italy, Portugal and Romania, being elaborated as ex ante conditionality for 2014–2020 (Larrea et al., 2019; Ranga, 2018; Szávics, 2020) and revised for 2021–2027 (Pinto et al., 2021). These countries also have RIS3 policy responsible organizations at the NUTS 2 level. However, it is only in the case of Italy that they are considered part of the public administration (Laranja et al., 2020; OECD, 2019; Ranga, 2018). Hungary shifted to a centralized approach, starting from 2014 to 2020 (Józsa, 2016). Slovakia follows a historically centralized approach and continues to design RIS3 at the national level only. However, some of the regional development agencies, established at the NUTS 3 level, have developed voluntary RIS3; for example, Košice region, together with Prešov region, form Východné Slovensko (Hudec & Prochádzková, 2018; Hudec & Urbančíková, 2011).



TABLE 1 Place-based characteristics of the HEIs from the RE-ACT project. Sources: European structural and investment funds data (2021); Eurostat (2018, 2019); regional innovation scoreboard (2021)

HEI (locality)	Region NUTS 2	Category under cohesion policy	Employment specialization (2021)	Population density (2019)	Industrial density (2018)
CUB – Budapest, Székesfehérvár	Budapest (HU11)	More developed	Services	3,433.8	123.99
	Central Transdanubia (HU21)	Less developed	Manufacturing	99.1	70.23
UNIMC - Macerata	Marche (IT13)	Transition	Manufacturing	161.9	83.70
PBS – Porto	Norte (PT11)	Less developed	Manufacturing	169.3	106.86
BBU – Cluj-Napoca	Nord-Vest (RO11)	Less developed	Manufacturing	75.0	51.37
TUKE – Košice	Východné Slovensko (SK04)	Less developed	Utilities and construction	103.9	78.10

3.3 | RE-ACT partner HEIs: Institutional characteristics and involvement in RIS3

The objective of this paragraph is to present the internal factors describing the institutional characteristics and HEIs type of involvement in RIS3.

As shown in Table 3, UNIMC, BBU and TUKE can trace their history back to the thirteenth to eighteenth centuries while PBS and CUB are relatively new institutions. The latter two also have their focus on economics and business in common, even though PBS is the only HEI that only offers postgraduate educational programmes. More specifically, PBS is a private non-profit association with administrative and financial autonomy within the University of Porto, being, however, academically and scientifically affiliated to it. Thirty-nine non-academic associate bodies, including public and private, national and multinational business corporations and other institutions form part of PBS. As a consequence, it plays a role in fostering academic–business collaboration and supports the overcoming of the limited absorptive capacity among traditional SMEs in Portugal (Pinto et al., 2021).

CUB has recently undergone an institutional change as a result of the Hungarian academic reform, strengthening its competitive behaviour. UNIMC focuses solely on social sciences while TUKE is more specialized in engineering and technology. BBU covers a large variety of educational and scientific fields and is the biggest in terms of number of faculties and enrolled students. It also has the highest share of students at the NUTS 2 level. The three oldest HEIs are also the ones that strive towards balancing local and regional with national and international orientation on the basis of their mission, vision and strategic aims. In contrast, CUB and PBS put more emphasis on affirming themselves at the national and international level.

Each partner HEI has some RIS3-related experience.

CUB has not been actively involved in RIS3 design. Nevertheless, it has implemented RIS3 projects. In the Central Transdanubia region the HEI performed research to explore the possible areas of development for HEIs to enhance their role in smart specialization at the sub-national level, connecting with QH stakeholders (Rosta, 2020). Its educational and research profile matches the employment specialization of Budapest and partly the horizontal smart specialization areas of Hungary as well.

Since 2019, UNIMC has been actively engaged in the revision of RIS3 for 2021–2027, supporting the Regional Government of Marche Region in this endeavour. UNIMC does not have scientific disciplines directly related with RIS3 priorities. In strong connection with its institutional aims, however, it puts emphasis on its role in knowledge



TABLE 2 Policy context of the HEIs from the RE-ACT project. Sources: Larrea et al. (2019); S3 platform: EYE@RIS3 database; regional innovation scoreboard (2021)

HEI (locality)	Region NUTS 2	RIS3 2014–2020	RII 2021	RIS3 priority areas 2014–2020
CUB – Budapest, Székesfehérvár	Budapest (HU11)	National	Moderate innovator	Agricultural innovation Sustainable environment Healthy local food Healthy society and wellbeing Advanced technologies in the industry of vehicles and other machines Clean and renewable energies
	Central Transdanubia (HU21)	National	Emerging innovator	Horizontal areas: Inclusive and sustainable society; ICT and information services
UNIMC – Macerata	Marche (IT13)	National and regional	Moderate innovator	Integrated and sustainable manufacturing Smart homes for smart communities Ambient assisted living and health industry New advanced industrial automation solutions for mechatronics ICT
PBS – Porto	Norte (PT11)	National and regional	Moderate innovator	Symbolic capital, technology and tourism Mobility and environmental industries Health and life sciences Culture, creativity and fashion Advanced manufacturing technologies Marine and maritime technologies Food and environmental systems Specialized professional services (IT, digital)
BBU – Cluj-Napoca	Nord-Vest (RO11)	National and regional	Emerging innovator	Advanced production technologies Health Cosmetics and food supplements Agri-food New materials Horizontal areas: ICT



TABLE 2 (Continued)

HEI (locality)	Region NUTS 2	RIS3 2014–2020	RII 2021	RIS3 priority areas 2014–2020
TUKE – Košice	Východné Slovensko (SK04)	National	Emerging innovator	Healthy food and the environment Public health and medical technology Digital Slovakia and creative industries Industry for 21st century Cars for the 21st century

generation and absorption in the region (Aleffi et al., 2020), supporting innovation and QH cooperation for several years (Tomasí et al., 2021).

There is no evidence of direct involvement of PBS in RIS3. Nevertheless, thanks to its intensive strong links with the business environment and recent interest in actively participating in the regional innovation system, it horizontally supports all RIS3 priority areas from the Norte region. It is also involved in a Horizon 2020 project along with other QH actors in an area matching some of the RIS3 domains selected by Norte.

BBU has been effectively involved in the regional RIS3, having a vice-rector as a member in the steering group (higher level governance body), participating at EDPs and promoting project ideas that are part of the RIS3 portfolio. The HEI has been also involved in the various RIS3-related initiatives of the European Commission targeted at lagging regions. The HEI co-operates with different types of QH stakeholders, as well as with other HEIs from the region. Its institutional profile partially matches the innovation and employment specialization of the region.

TUKE has always been actively involved in the design of development policies in Košice region in strong cooperation with the regional government. It is currently involved in the development of the voluntary RIS3 for 2021–2027, as well as the preparation of major R&I investment projects. TUKE's educational and research profile corresponds to the specialization of the NUTS 2 region in addition to the old industrial profile of the region (metallurgy and engineering) and has been continuously expanded to meet the needs of newly emerging industries (Hudec et al., 2019; Šebová & Hudec, 2012).

4 | METHODOLOGY

The authors, who also correspond to the representatives of the selected HEIs, have adopted the reflexive narrative approach widely used in psychology research. It consists in elaborating a narrative to produce a story pertaining to the research interest and objective (Smith & Sparkes, 2006).

The reflexive narrative approach has also been related to action research by Colombo (2003). This connects reflexivity to action and is included in the sense-making process where both the participant and researcher are engaged.

For this purpose, the authors considered the narrative inquiry as has been described by Hoshmand (2005): a storied account of an experience, namely the RE-ACT project, constructed from reports and observations from the HEIs involved. Accordingly, a self-reflection process about HEIs' involvement in the project activities has been implemented.

Thus, the RE-ACT research team built a self-reflection matrix on the basis of the civic university framework. To complete it, some guidelines (Table 4) were elaborated. These pertained to the HEIs partners' perception about their civic behaviour related to project actions. This was done by reviewing research reports, conceptual outlines, training



TABLE 3 Institutional characteristics of the HEIs from the RE-ACT project. Source: Partner HEIs contribution based on latest available data from National Statistical Offices and internal documents of HEIs (e.g. charters, strategies, reports)

HEI	Year of establishment	No. of faculties	No. of students at all three levels 2020–2021 academic year	No. of students at all levels out of total NUTS 2 (2020)	No of HEIs in the region	HEI's territorial positioning based on aims, mission and values	Main educational and research profile
CUB (Budapest)	1920	11	10,034	>8%	34	- becoming a leading HEI in Central Europe in its own field and turning into an international university	Social sciences (especially business and economics, and to some extent sociology, political science), mathematics
CUB (Székesfehérvár)	2016			~5% (estimate)	6		
UNIMC (Macerata)	1.540	7	9,901	>20%	4/4 public	- generating and disseminating knowledge through education and research - contributing to the development of individuals and society through cooperation with local, regional, national and international organizations	Social sciences
PBS (Porto)	1988	1	No data	No data	8/3 public	- equipping business leaders with skills and knowledge to improve the quality of management in enterprises - becoming a top business school at national and European levels	Business, management (only postgraduate)



TABLE 3 (Continued)

HEI	Year of establishment	No. of faculties	No. of students at all three levels 2020–2021 academic year	No. of students at all levels out of total NUTS 2 (2020)	No of HEIs in the region	HEI's territorial positioning based on aims, mission and values	Main educational and research profile
BBU (Cluj-Napoca)	1959	22	45,821	>45%	13/7 public	<ul style="list-style-type: none"> - generating and transferring knowledge through education and research, becoming a world class university in the fields of competitive advantage - contributing to local, regional and national development according to societal needs, including the development of services 	Arts, humanities, social sciences, theology, life sciences, engineering, technology,
TUKE (Košice)	1952	9	9,103	>31%	8/5 public	<ul style="list-style-type: none"> - providing excellent education and original research results and services according to the needs of industry, region and society in general - affirming its role at national and international levels 	Engineering, technology, social sciences (economics)



TABLE 4 Self-reflection matrix guidelines. Source: Author elaboration on Goddard et al. (2016)

CIVIC UNIVERSITY DIMENSIONS	Dimensions' definitions from the perspective of the project
Sense of purpose	<ul style="list-style-type: none"> • Focus on how joint materials and methodologies were tailored to stakeholders' regional needs/expectations and how project objectives were considered as contributing to wider regional ones.
Active engagement	<ul style="list-style-type: none"> • Describe how stakeholders were reached and engaged with. • Clarify if the number and type of expected target groups were mobilized. • Specify whether all necessary stakeholders participated.
Holistic approach	<ul style="list-style-type: none"> • Specify whether the project activities involved all the QH actors. • Clarify whether the project activities brought HEIs staff, students and researchers together with other key stakeholders.
Sense of place	<ul style="list-style-type: none"> • Specify whether all participants from the regional level were involved. • Clarify how participants from outside the region, if any, were chosen.
Willingness to invest	<ul style="list-style-type: none"> • Describe additional efforts that the project team made that were more than those minimally required.
Transparency and accountability	<ul style="list-style-type: none"> • Reflect on the extent to which the team was able to be fully transparent in their regions when inviting all types of stakeholders.
Innovative methodologies	<ul style="list-style-type: none"> • Describe how the RE-ACT methodological approach supported the partner HEIs in involving the QH stakeholders. • Mention methodological adaptation, if any, to practical exercises during the project activities tailored to the stakeholders/place-based needs.

reports, insights collected through a Delphi method, interviews with policy-responsible organizations from each region involved in the project and qualitative information collected through the practical exercises from the training sessions. All the information was consulted, and some unstructured interviews carried out to provide additional information about the project experience.

Additionally, the partner HEIs were asked to provide information about their institutional profile and their regional context to be detailed in the background.

Each university filled in the matrix and summarized the main contents in a short presentation, describing their RE-ACT implementation experience. This is reported in the findings.

As for the analysis, a coding process comparing the short presentations was carried out with the aim of highlighting the differences and similarities among the partners' approaches and identifying thematic clusters. Following this, the collected data were elaborated and critically analysed.

5 | FINDINGS

On the basis of the self-reflection process through the matrix addressing the civic university dimensions and use of project outputs as materials for data gathering, each HEI produced a descriptive synthesis of its experience during the project implementation. This is presented in the following paragraphs and includes the external and internal factors.

5.1 | RE-ACT implementation experience

CUB addressed both Budapest and Central Transdanubia regions in its project activities. While interest and involvement of the key actors was higher in the former, the experience with QH stakeholders through previous research



activities was wider in the latter. The HEI implemented a holistic approach by supporting the official national RIS3 design and by relying on the 2014–2020 national and Central Transdanubia RIS3 and other previous RIS3-related activities. As a result, CUB engaged RIS3-related topic experts and involved national policy-makers. Additionally, connections established with other types of stakeholders in previous projects in both Central Transdanubia and Budapest were used to involve stakeholders from civil society and industry in project activities. Nevertheless, mobilizing the necessary number of stakeholders, especially on behalf of businesses and civil society, was relatively hard. In addition, continuously engaging the same stakeholders in different project activities also proved challenging. The low level of interest can be linked to the complexity of RIS3-related topics and the centralized character of the RIS3. These are perceived as bottlenecks for engaging actors from the regional level since stakeholders have difficulties in linking their R&I aims with the objectives of the national policy document. To counteract this, CUB invested efforts in a clear and transparent manner and in a language accessible to different types of stakeholders by using popular channels of media to communicate project results and plans about future activities. The latter can be considered a novelty and additional communication measure to the ones jointly agreed by the consortium. The HEI also tried to tailor the implementation to stakeholder needs. To this end, CUB had to apply a flexible approach to the format and method of deploying collaborative-types of project activities. Other engagement of participants and the level of their digital literacy were both taken into consideration when making choices about the platforms to be used, length of events and their dates, requiring innovative behaviour by team members.

For UNIMC, the start of the project represented an opportunity to create synergies and complementarities between project activities and the revision of the 2021–2027 RIS3. These were treated as part of a holistic approach, mutually reinforcing each other. This dual involvement, as well as feedback gathered from stakeholders during the research activities, added a greater sense of purpose to the HEI. In other words, perceiving the project as one of the initiatives that also contributed to the RIS3 objectives. In previous projects, UNIMC had built up a network of actors from the industry in the whole region that they reached out to engage in collaborative project activities. Owing to the involvement in RIS3 design, the HEI also expanded its contacts and mobilized and involved new actors (e.g. highly innovative companies) in their activities. In this context, the most significant involvement was from the northern part of the region where most of the industrial districts are located. Overall, the experience in both the project and RIS3 revision shows a greater engagement of the R&D and business environment and less from civil society. According to stakeholder feedback, civil society involvement is hindered by a lack of knowledge about RIS3 and the benefits it can bring. To overcome this bottleneck and facilitate QH interaction, UNIMC designed a new methodological approach adapted to the online environment, tested and further refined together with the policy-responsible organization. This can be considered as a novelty in Marche. In a similarly innovative way, UNIMC gathered feedback during the RIS3 design to further improve and tailor its project activities. UNIMC selected stakeholders in a transparent and accountable perspective. On the one hand, the HEI invited actors involved in previous projects to give continuity to their commitment. On the other hand, it involved stakeholders from the regional innovation ecosystem to provide useful insights and improve RIS3-related knowledge exchange. UNIMC combined stakeholders' active engagement and holistic approach by involving researchers with various backgrounds – including university delegates for RIS3 priority areas, administrative staff, and PhD students – in the activities. On the basis of the needs expressed, UNIMC was willing to invest in additional activities, organizing, for example, a thematic event dedicated to innovation in the cultural sector.

PBS considered the project as an opportunity to contribute to regional innovation system development, thus characterizing project activities with a high sense of purpose. Moreover, engaging both stakeholders previously involved in RIS3-related processes in addition to new ones, PBS embraced a holistic approach adding value both to the project and to regional policy objectives. The QH stakeholder engagement process differed depending on the type of project activities. In the case of research-related activities, the HEI targeted initiatives to members of the regional decision-making structure and urban administration owing to difficulties in engaging business representatives and responsible regional policy organizations. In the case of collaborative activities, academia and industry showed a significant level of interest and involvement compared with the local public administration and regional



policy-makers and civil society, for which the HEI found, respectively, a fair level of involvement and a lower lack of interest. Generally, the wider interest on behalf of business actors is due to the strong connection of PBS with industry. With regard to academia, its representatives were easier to mobilize, since the HEIs are interlinked in networks through the Regional Innovation Councils and the RIS3- related EDP platforms. Owing to the difficulties in involving the necessary number and type of stakeholders, PBS extended the territorial coverage of its activities to the neighbouring Centro region, especially in the case of ignition events and training courses. Additionally, research-related activities balanced the regional and national levels, involving representatives of the national RIS3 responsible organization as well. Even if the HEI communicated project-related information in a transparent and accountable manner, the complex terminology related to RIS3 was found to be hardly accessible to some stakeholders. This aspect can be considered as one of the reasons why the civil society representatives could not be continuously involved in activities. Intertwining project objectives with regional needs, PBS organized, as an additional event, a webinar in collaboration with the European Commission on the HEIs' role in place-based development during the European Week of Regions and Cities. Moreover, the HEI introduced an additional practical exercise in the training content to respond to stakeholder needs and tailor content. This brought together HEIs from Norte and Centro regions to reflect on the strengths, weaknesses, opportunities, and threats linked to the regional collaboration and HEIs' involvement in RIS3. This is an innovative element, to be considered as a novel way of finding links between the two regional innovation systems.

BBU considered the project as an additional opportunity to contribute to regional RIS3 objectives, creating further links within the regional innovation system. BBU developed a holistic approach regarding the team involved, covering all areas of expertise relevant for the project. This principle was applied also in relation to stakeholder mobilization. To engage relevant stakeholders in project activities, BBU relied on leaders, boundary spanners and key experts involved in RIS3 processes from the most relevant organizations at the regional level. When engaging stakeholders, BBU tried to involve all the QH nodes, with particular attention to those with experience in RIS3 priority areas. BBU not only relied on existing partnerships and previous cooperation, but also relied on these to disseminate information in their own networks to reach out to additional organization. Although there was some fluctuation within target groups during the various project activities, a core group of QH representatives participated throughout implementation. When reaching out to key actors, one of the aims was to assure a balanced geographical representation. However, the majority of participants were from the biggest urban agglomeration where the HEI's headquarters are also located. Even though BBU is present in several Romanian regions, the Nord-Vest region was targeted owing to the policy context. At the beginning of project implementation, there had been some reluctance on behalf of the stakeholders to participate in the first event. However, this was overcome through transparent communication through different channels, highlighting the added value of the project for regional actors. Compared with other QH actors, the involvement of the local public administration was lower. However, the RIS3 policy responsible organization actively participated in and supported activities; for example, completed the training content with information requested by stakeholders. The content and organization of the training course were adapted on the basis of the feedback gathered and the needs expressed by the key actors during the ignition events. For example, topics such as available funding sources or technology transfer were additionally covered. Given the reliance on stakeholders' proposals, additional space and time was offered during training sessions for participants to interact, share best practises and personal experiences among each other in a systematic manner that can be considered a novelty. The lessons learned and experience gathered during the project has already been and is continuously fed into new institutional initiatives with complementary aims. This is a way to assure a greater impact and a means for the HEI to further develop its capacity to act as a civic university (CU) and to bring added value to the national and international networks it participates in.

TUKE implemented the project activities in synergy with the regional RIS3 policy-making process. This added value to both initiatives as stakeholders perceived them as complementary and were motivated to jointly bring fundamental changes to the region. This also supported TUKE in embracing a more holistic approach and in becoming more transparent and accountable in communicating the project, especially the participatory activities, to a wider



audience. This created a collaborative environment that helped TUKE to engage new actors, especially from Košice region and the metropolitan area of Košice, where the actors from the NUTS 2 innovation system are agglomerated. Thus, the involvement of triple helix stakeholders in both initiatives was easier. The involvement of civil society came about owing to the emphasis put on it by TUKE and the City of Košice. It led to novelty in the policy design process as well as resulting in a new specialization area connected to wellbeing.

TUKE's sense of place allowed the HEI to reach out to key actors from Prešov kraj, although there was a low number of organizations from Prešov urban centre (near to the city of Košice) involved.

Moreover, when implementing research-related activities, TUKE carefully balanced the involvement of relevant actors from the NUTS 2 and national level which also reflects a dual sense of purpose: TUKE's engagement in both regional and national policy processes and networks.

The project activities also involved people with expertise in HEInnovate and RIS3 (sense of purpose and holistic approach), for example: the most experienced HEI in regional technology transfer from Žilina region.

It was crucial for the project that both decision-makers and boundary spanners were involved in joint project activities thanks to the parallel preparation of RIS3. TUKE's involvement in the project and the related expertise gained contributed to the decision at an institutional level towards further investing in initiatives with complementary aims. In particular, TUKE has initiated the development of a new project within the Ulyseus European Alliance.

6 | DISCUSSION

The activities carried out by the HEIs partners in the context of the RE-ACT project have been analysed considering the place-based characteristics and policy context. They were then framed in the dimensions of the seven civic universities to understand the extent to which they perceived themselves as acting as civic universities.

The general objective of the project is to reach a joint positioning about HEIs' role in the regional innovation ecosystem and in fostering collaborative processes. This reflects Asheim et al. (2016), emphasizing the importance of territorial focus to create a common strategic approach. To this end, all the project activities have been designed to support knowledge exchange and exploitation between regional key actors.

As place-based characteristics influence the way in which HEIs act regionally (Elena-Pérez et al., 2017; Kempton et al., 2021), in the case of these five institutions, it appears that embeddedness or sense of place in regions with lower industrial density leads to a stronger engagement towards regional development. They show greater propensity to participate in strategic activities aligned with common economic objectives (Fonseca et al., 2021; Fonseca & Nieth, 2021; Marques & Morgan, 2018), especially in areas close to their profile (Torre & Wallet, 2014). They tend to focus more on building collaborative relationships with businesses (Beer et al., 2020), giving priority to the economic upliftment of the territory. However, the prevailing proximity-based partnership (Torre & Wallet, 2014) seems to be closer to the triple helix approach (Etzkowit & Leydesdorff, 2000), as it puts less emphasis on civil society engagement.

All HEI partners perceived themselves as having a good level of civic engagement, especially in terms of cooperation and knowledge exchange (Carayannis & Campbell, 2006, 2009; Goddard et al., 2016; Tripl et al., 2015). They addressed the social and economic issues highlighted by the regional environment through project activities (Brekke, 2021; Kempton et al., 2021; Uyarra, 2010) and, in some cases, supporting RIS3 design and implementation (Edwards et al., 2017; Elena-Pérez et al., 2017).

As for the sense of purpose, all partners claimed to have reached several stakeholders already implicated in the RIS3-related system (Edwards et al., 2017; Elena-Pérez et al., 2017), sometimes taking advantage of previous contacts and familiarity with researchers in regional innovation networking circles. BBU participated with key stakeholders in 2014–2020 RIS3-related activities while TUKE and UNIMC even took part in the simultaneous 2021–2027 RIS3 design activities. This led to the expansion of connections, also useful for the project. As for CUB, previous connections established in prior activities related to the national Human Resources Development Operational



Programme were extremely helpful in the process of stakeholder engagement, even if the ongoing national academic reform caused a slow-down. Although driven by project objectives, the way of delivery was and had to be tailored to the stakeholders needs; it triggered the need to share purpose with other strong regional activities, with a view towards mutual enrichment and win-win solutions (RIS3 design and development, national reform).

In general, all partner HEIs are actively engaged and regionally positioned with the other QH actors (Beer et al., 2020). However, reaching out to key stakeholders multiple times and demanding institutional self-reflection, common reasoning and acknowledgement of the need for strategic change was an extremely difficult task. In some cases, the help of boundary spanners was crucial for success. Moreover, original ways to engage stakeholders had to be explored. Partners mainly relied on contacts gathered in past institutional activities. For example, BBU 'relied on leaders, boundary spanners and key experts involved in RIS3 processes' while TUKE 'approached colleagues from the Žilina region, advancing in academic technology transfer'. Industry was the most represented category while other QH categories sometimes remained underrepresented (e.g. civil society in the case of the activities of UNIMC, TUKE and CUB and local public administration in the case of the activities of BBU and PBS).

A holistic approach and societal concerns distinguish the civic university from the entrepreneurial university (Edwards et al., 2017). However, RIS3 is still very much perceived as exclusively industry-oriented and for big players only. RE-ACT partners have advanced civic actors and societal needs into discussion, although in some cases, breaking through entrenched perceptions has often been challenging. The project involved different stakeholders with different profiles and experience (BBU, UNIMC and PBS) such as administrative staff, students, Ph.D. students and researchers from academia. CUB and TUKE highlighted the university environment as closed into segments, with narrowly focused interests and less inclination for cross-cutting and holistic directions. Common intentions were driven in the case of partners' involvement in previous or present RIS3 design/revision (UNIMC, UBB and TUKE). The project activities brought together HEIs' staff, students and researchers with other key stakeholders, strengthening the social capital of the region.

There was a strong sense of belonging to the region as a place. Most partners perceived themselves as being well embedded in the social and economic environment and invited QH representatives from all over the region, trying to ensure a balanced geographic representation. Some partners (BBU and UNIMC) have noted interest from stakeholders in more economically developed areas, outside of the HEI's seat. UNIMC's collaboration with the regional government on the new RIS3 has attracted interest from innovative companies outside the Macerata area (the district in which the HEI is located). While in the case of these two HEIs the project implementation was facilitated by the existence of an official regional RIS3, CUB and TUKE found themselves in a completely different situation. The latter two HEIs' policy context is framed by centralized innovation policies in which it is harder to integrate regional distinctiveness. This has resulted in the necessity of balancing between the national RIS3 and regional place-based characteristics. Such region-specific needs have triggered the development of a voluntary RIS3 in the Košice region, independent of the national strategy, and for the researchers involved, the need to focus more on the regional level, whether NUTS 2 or NUTS 3. In several cases, reaching out to participants from neighbouring regions (PBS, CUB, TUKE) generated little interest and showed the presence of a silo effect.

HEIs mainly showed their willingness to invest in RIS3-related activities in synergy with RE-ACT. However, this only refers to attracting further external sources of financing. In any case, the willingness to get additionally involved personally or institutionally in the project activities, as well as other complementary initiatives with a regional focus, is promising. Investing is rather interchanged with engagement, with results in a variety of ways. QH participants also willingly offered their engagement, time and work to contribute to improving their places in the RIS3 context. From this perspective, it is crucial that the university has experts in regional science and planning, as this is necessary for understanding the collaborative nature of the regional innovation system and overcoming the barrier of mindset differences or misalignment between goals and interests of government, companies and HEIs (Brekke, 2021; Peer & Penker, 2014). BBU highlighted its availability to invest additional resources in terms of time and efforts aiming to support entrepreneurship and R&D commercialization and to attract additional financial resources to support QH cooperation. UNIMC highlighted its role as a moderator in the working groups for the elaboration of the RIS3 of the



Marche Region, providing expertise and participatory methodologies as well as organizing a thematic event dedicated to innovation in the cultural sector. In terms of organization and communication, CUB used popular media channels to communicate results and planned activities, and PBS organized a high-level European event. TUKE highlights its role in the development and implementation of major investment projects supporting R&I at the regional level.

Transparency and accountability were intended similarly by partner HEIs referring to communication with stakeholders and the wider public, use of accessible language and creation of long-term relationships. The partners communicated the project objectives and activities by exploiting their existing networks, using digital media and institutional webpages to increase and captivate their audience. Indeed, the topics of HEInnovate and RIS3 are not well known and all the partners therefore recognized the need to communicate RIS3-related and project content as clearly as possible. CUB, BBU and TUKE declared the appropriate selection of experts as an important factor, so that they were sufficiently familiar with RIS3-related topics. This also brought subsequent understanding and better results. Nevertheless, in most cases civil society was less involved, and this might be due to the lack of their knowledge linked to project topics. RE-ACT is intensive in the number of meetings and events necessary to achieve an understanding of creating a professional self-evaluation tool. The potential of overwhelming stakeholders with the multitude of events raised the question of when and how to reveal this information during project implementation. To create a long-term relationship with stakeholders, BBU communicated the projects' next steps and the links between the activities and UNIMC involved stakeholders from previous projects, considering continuity as a relationship to be valued over time. PBS claimed to have had difficulties in involving key regional actors to participate in the various phases/events of the project.

In general terms, innovative methodologies are mostly perceived by partners as new ways to build and improve stakeholder interactions (Beer et al., 2020; Edwards et al., 2017) during project activities, building trust and generating social capital for long-term partnerships (BBU and CUB). The innovative idea of the project consisted in linking the HEInnovate approach of entrepreneurial universities with the design and implementation of RIS3 into one comprehensible product (Edwards et al., 2017). Incremental innovations consisted of introducing extra practical exercises for knowledge exchange in a cross-sectional setting on RIS3 topics (PBS), or in incorporating, adapting and validating RE-ACT contents in interactive moments during regional RIS3 events (UNIMC, TUKE). The use of digital technologies was a cross-cutting element common to all partners, related to the specific pandemic situation owing to SARS-CoV-2, and contributed to mutual learning and small-scale innovations.

7 | CONCLUSIONS

This study has focused on the case of the RE-ACT project and aimed to investigate, through a reflexive narrative approach, the extent to which and how the 5 HEIs involved acted in light of the civic university framework (Goddard et al., 2016) and by considering their regional engagement, especially in the light of RIS3 activities. Indeed, the main innovative contribution of this study is to combine the civic university approach (Goddard et al., 2016) to the HEIs' involvement in place-based policies and RIS3 (Beer et al., 2020; Edwards et al., 2017). In this context, this contribution also aimed to explore what could be learned from interacting with the QH actors and further fed into institutional development. To support this process, the HEIs reflected on their experience and studied the project outputs (e.g. project activity reports). As the HEIs were located in regions with different industrial and population density, various levels of innovation performance and stages of economic development as well as different RIS3 and employment specialization, the authors also considered the external and internal factors that might influence their behaviour, such as place-specific factors and policy context (Brekke, 2021; Edwards et al., 2017; Elena-Pérez et al., 2017; Fonseca et al., 2021; Kempton et al., 2021; Larrea et al., 2019), institutional aspects (Elena-Pérez et al., 2017) and their interaction (Brekke, 2021; Fonseca et al., 2021; Fonseca & Nieth, 2021; Marques & Morgan, 2018; Peer & Penker, 2014; Torre & Wallet, 2014).



Despite their diversity, all HEIs perceived themselves to have acted as civic universities in the context of RE-ACT, addressing all seven civic university dimensions. Linked to the sense of purpose, the crucial linkages between the project activities and the HEIs' involvement in RIS3-related processes have been highlighted. Active engagement and holistic approach affected the HEIs' capacity to involve actors from the QH with different profiles and experiences (e.g. RIS3 experts and staff from different levels from the QH and researchers, students and Ph.D. students and other experts from academia). Involvement of experts and scholars from the field of regional science and planning represents the basis for understanding the collaborative nature of the regional innovation system and overcoming the barrier of mindset differences. Moreover, the HEIs with experts on RIS3 topics, long-standing activities and established contacts in the region were able to address and promote the topic much more easily. Nevertheless, civil society involvement needs to be fostered.

A regional sense of place is strongly developed in universities. Geographical proximity allows for easy encountering and information exchange, although this may not lead to innovation through the sharing of and combining of ideas across sectors. If industrial density is lower, regional actors need to cooperate more in supra-regional single-sector groupings or local clusters. This is amplified in the countries where TUKE, BBU and CUB are located, characterized by centralized decision-making and slow transition of mono-structural regions.

The willingness to invest is considered in terms of personal commitment, especially to provide work and time to HEI experts.

Transparency and accountability have been interpreted as the capacity to communicate the project to a wider audience and to give continuity to previously established networks as well as involving stakeholders throughout the project's collaborative processes. Additionally, it also concerns the ability to use an accessible language for all QH stakeholders, especially for those who are not familiar with RIS3- and HEInnovate-related topics. Related to this latter aspect, innovative methodologies and tailor-made approaches developed by HEIs to improve stakeholder engagement and interaction can be highlighted.

To conclude, HEIs involved in the RE-ACT project understood the importance of building a wider shared knowledge base, enabling a balanced exchange among all QH actors. A further aspect concerns the HEIs' involvement in RIS3 design and implementation, which contributed to a mutual enrichment, providing win-win solutions also in terms of fine-tuning between project activities and goals and region-specific needs. In this sense, this paper is a contribution from a policy perspective. The results show that the HEIs, besides participating in the RIS3-related activities as part of the QH, in some cases played the role of a support system for RIS3-responsible organizations to foster and manage the collaboration processes. In particular, they provided methodological approaches that helped the involved regions/countries increase the exchange in their respective regional innovation ecosystems. In any case, not all the HEIs have been recognized in this regard by policy-makers, nor have they directly contributed to RIS3 design/revision and implementation. At the policy level, strategies could be considered that take into account HEIs as facilitators in the context of RIS3, also to reinforce and create long-lasting connections among the actors.

In this respect, project activities resulted in being more successful when well-established and long-term stakeholder networks from the same region/country were involved. As a result, these networks should be continuously reinforced. Indeed, the willingness to cooperate is simply not sufficient if the regional structure is sparse. The risk is that firms could be more likely to look abroad for partners for their innovative ventures and spillover knowledge, regarding the local university as merely an educational institution that is supposed to produce graduates for their benefit. Paradoxically, more interest in innovative activities with HEIs may arise in urbanized centres with a greater number of establishments, regardless of the whether the HEI is located there or not. To overcome the lack of interest and fragmentation of participants from different neighbouring regions, a systematic, long-term, cross-sectoral and cross-border collaborative process could be established.

This study presents some limitations as it only addresses six regions from five countries with different levels of industrial density, development levels and innovation performance. Thus, this paper does not fully explore these concepts and, especially, industrial density which also remains blurred in the literature. The topic is set in the context of



a specific project. However, the results are certainly relevant for the RE-ACT consortium or regions, as it enables new viewpoints on HEIs as well as the generalization of the results.

Hence, further research could explore how HEIs can act as civic universities in low industrial density regions in other countries.

Last but not least, owing to the pandemic situation, all the project activities have been carried out online. For this reason, it is not possible to assess if the HEIs would have acted in the same way along the same civic university dimensions in a pre- or post-pandemic context.

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