Higher Education Innovation Ecosystem Latin America and Europe: Self Assessment and Development Plans

Inês Barbedo[1], Vera Ferro-Lebres[2], Marja Laurikainen [1*], Luís Pais[2]

[1] Transdisciplinary Research Center in Education and Development (CITeD) Instituto Politécnico de Bragança, Portugal

[2] CIMO, LA SusTEC, Instituto Politécnico de Bragança, Portugal

[3] Häme University of Applied Sciences (HAMK), Finland

*Corresponding author e-mail: inesb@ipb.pt +351 273 330 950

Contributing authors: anna.cortez@ipb.pt; jribeiro@fade.up.pt; maria.alves@ipb.pt; vferrolebres@ipb.pt

INTRODUCTION

In a world characterized by high rates of technological innovation and urgent social transformations, higher education institutions (HEIs) are increasingly being recognized as drivers of innovation ecosystems (Kotiranta et al., 2020; Lazzarini et al., 2018). Such innovation ecosystems – multidimensional, multi-actor systems fostering knowledge creation, exchange, and application - are becoming the crucial platforms through which universities emerge as drivers of regional development, inclusive growth, and the enhancement of sustainable societies (Piqué et al., 2021; Schaeffer et al., 2021).

Across the literature, the innovation ecosystem is described in various and complementary ways. The OECD characterizes innovation ecosystems as systems of interdependent actors and institutions that formally and informally interact to produce innovation at various levels, with an emphasis on systemic coordination, flexibility, and value creation, across regions and cities (OECD, 2020). Other authors add a functional dimension, defining innovation ecosystems as evolving systems of people, organizations, and institutions' connections that drive innovation and entrepreneurship in specific places (Cai et al., 2020a; Zhang et al., 2024). Cai, Ma &

Chen (2020) theoretically suggest a multi-layered model, with HEIs being elements and orchestrators of innovation ecosystems, shaped by institutional logics, national policy, and mission orientations (Cai et al., 2020a).

Other perspectives emphasize structure and inclusiveness. The quintuple helix model not only incorporate academia, industry, government, and civil society, but also the environment, and thus the relevance of the ecosystem to sustainable innovation is broadened. Mercan and Göktaş (2011) refer to central core elements—human capital, knowledge infrastructure, finances, and supportive policy structures—that interact dynamically in both centralized and distributed modes. In rural or emergent environments, as Bravaglieri et al. (2025) suggest, innovation ecosystems are described by informal governance, distributed leadership, and a strong orientation towards wellbeing and equity.

Aligned with these complementary definitions, the EMBRACE project positions HEIs at the forefront of context-aware, foresight-driven, and mission-directed learning innovation ecosystems. In this vision, universities are not just reservoirs of skills and research, but also enablers of stakeholder interactions and co-creators of innovation paths.

This article presents the results of a systematic self-evaluation process undertaken by HEIs in Finland, Portugal, Colombia, and Brazil to evaluate the maturity and performance of their innovation ecosystems. The process involved institutionally facilitated workshops based on a shared assessment framework and led to the development of localized improvement and development plans. All of the institutions reflected on their reason of existence, partnerships, governance structures, and strategic vision within a common framework of ecosystem performance dimensions, with common values of equity, flexibility, and long-term change.

Through a comparison of Latin American and European institutions, this study offers evidence regarding the development of innovation ecosystems in higher education across various geopolitical and cultural contexts. The debate also takes place against global policy visions, such as the 2030 Agenda for Sustainable Development, the Smart Specialisation Strategy (RIS3), and the Sustainable Development Goals (SDGs), all which emphasize the role of universities in enabling inclusive, responsive, and proactive systems of innovation.

This paper's primary contribution is its comparative examination of institutional self-reflections and the resultant development plans. The findings show not only shared challenges and priorities—such as strengthening cross-sectoral partnerships, improving data-driven decision-making, promoting inclusive governance structures, ensuring sustainable funding mechanisms, and enhancing lifelong learning and skills alignment—but also context-specific responses that

consider institutional missions and territorial contexts. In so doing, the paper contributes to the continued conceptualization of how HEIs can critically reflect on and shape their innovation ecosystems in a bid to better serve learners, economies, and societies in transition.

Theoretical Framework

The concept of an innovation ecosystem has been a robust vehicle through which to understand the evolving role of higher education institutions (HEIs) in the 21st century. Even though the term "ecosystem" originated in the natural sciences, its application in innovation, education, and economic development has given rise to a range of theoretical meanings. This section outlines the dominant frameworks upon which the analysis of higher education innovation ecosystems in this study is based, with a particular focus on their relevance to institutional self-study and development strategic planning.

1. Innovation Ecosystems: From Linear Models to Systemic Thinking

Earlier models of innovation—e.g., the linear "science-push" and "market-pull" models—have been substituted to a significant degree by systemic approaches emphasizing interdependence, feedback mechanisms, and co-evolution among heterogeneous actors. The OECD (2007; 2023) conceives innovation ecosystems as institutional and relational configurations that allow knowledge valorisation, co-creation, and value creation. They are not static; they are dynamic spaces conditioned by institutional arrangements, policy environments, and capabilities of involved actors.

Complementary to this insight, the United States Agency for International Development's (USAID) strategy (2022) advocates for a systemic, dynamic and resilient innovation ecosystem to drive new areas of economic activity in products, processes, and services. And that should cultivate productive, creative relationships with the private sector and civil society to leverage work with partners and allies to encourage global economic growth that is values-driven and sustainable. This understanding of ecosystems look into catalyzing innovation and partnership by identifying new and innovative ways to engage with the private sector, philanthropy, faith-based organizations, and academic institutions locally and internationally; promoting sustainable development; and supporting economic growth (USDS & USAID, 2022). Both perspectives highlight that innovation is not the product of individual organizations but of their interaction and synergies.

2. The Role of Higher Education Institutions

HEIs' role in these ecosystems is becoming multi-faceted. Quoting Cai, Ma & Chen (2020), HEIs can be characterized as being within and steering innovation ecosystems. They are involved in knowledge co-production, human capital development, policy advocacy, and stakeholder brokering, typically under competing institutional logics—such as academic excellence, market flexibility, and civic engagement. Their success in innovation systems is not only a function of their endogenous strengths but also of being able to trust-based link up with external partners and of aligning their missions with regional and global challenges.

Kangas & Aarrevaara (2020) also reaffirm the mediating role of HEIs as knowledge intermediaries in smart specialization strategies, especially in less-disadvantaged regions. Their alignment with governance arrangements, entrepreneurial discovery processes, and facilitation of stakeholder dialogue are critical to catalysing place-based innovation.

3. Multi-Actor and Inclusive Models

Modern ecosystem theories have increasingly adopted the functions of multi-actor governance and participatory inclusiveness. The quadruple helix model (Carayannis & Campbell, 2009) extends the classical triple helix—university, industry, government—to include civil society as a co-creation entity based on participative processes. The quintuple helix model (Carayannis et al., 2012) goes one step further with the inclusion of the natural environment, thereby tying innovation systems to ecological sustainability and long-term resilience.

This is a Latin American context-specific inclination, where, as Bravaglieri et al. (2025) assert, rural and peripheral systems draw on distributed leadership, in-formal collaboration, and wellbeing- and equity-centred value systems in contrast to the sole focus on economic development. The systems are supported by social capital, mission coherence, and cultural adaptability—forces increasingly resonating in global innovation policy debates.

4. Tools for Assessment and Development

Translating these conceptual frameworks into operational institutional strategies requires reflection tools, assessment, and planning. The self-assessment model used within this study—adapted from the Education Design Lab's Ecosystem Self-Assessment Workbook—uses ten interdependent dimensions that capture the future-readiness of an ecosystem. They include shared governance, data openness, funding alignment, equity, innovation culture, and stakeholder co-creation. The tool facilitates institutionally informed, formalized conversation between institutional actors and facilitates development plan conceptualization founded on systemic knowledge and contextual complexity.

Through marrying theory models to practical tools, the research offers a holistic framework by which HEIs can measure where they currently lie in terms of innovation ecosystems and map strategies whereby they can best contribute to society.

Methodology

The study employed a qualitative, participatory, and multi-case research strategy to examine how Finnish, Portuguese, Colombian, and Brazilian HEIs assess and improve their learning innovation ecosystems. The study's methodology relied on structured institutional self-assessment workshops facilitated by a shared analytical framework and translated facilitation materials. The study not only gathered comparative data but also sought to build capacity for strategic reflection and long-term planning within each institution.

1. Research Design and Scope

The study applied a multiple-case design with seven HEIs: Finnish: Hämeen ammattikorkeakoulu | Häme University of Applied Sciences (HAMK); Portuguese: Instituto Politécnico de Bragança (IPB) | Bragança Polytechnnic University; Colombian: Universidad Tecnológica de Pereira (UTP) | Technological University of Pereira; Colombian: Fundacion Universitaria del Area Andina (AREANDINA) | Area Andean University Foundation; Brazilian: Instituto Federal do Espírito Santo (IFES) | Federal Institute of Espírito Santo; Brazilian: Instituto Federal de São Paulo (IFSP) | Federal Institute of São Paulo; Brazilian: Universidade Federal do ABC (UFABC) | Federal University of ABC.

All institutions carried out their own self-reflection exercise in the shape of a standardized facilitation structure that promoted institutional choice while allowing for cross-case comparison.

Latin-American institution-level attendance ranged between 5 and 7 teaching and non-teaching staff per HEI, totalling 30 participants across all. Participants comprised senior academic faculty members (professors) and non-academic staff engaged in management, innovation, or outreach to communities. Differing views were aimed at reinforcing reflection on institutional strategy, performance and prospect.

2. Self-Assessment Workshop Process and Facilitation

The self-assessment cycle occurred in the following phases:

- Introductory Session: The pilot session was held at IFES (Brazil) in August 2023 where all partner HEIs and teams performed a first introduction, and Portugal

(IPB) shared best practices, the value of co-creation and lessons learned from their learning innovation ecosystems, engaging participants in a preparatory reflection. Additionally, a survey with three questions for individual reflection (Table 1).

- Training Session: In November 2023, there was a synchronous online training session to deeply understand and reflect on the motivation and level of collaboration between the universities and the world of work, and how they can cooperate and develop innovative processes to face the increasing complexity of the cross-societal challenge. Participants completed a self-assessment, in the first phase individually and then as an Institution (Table 1), reflecting on the existing ecosystem.
- Asynchronous Activity: Asynchronously using localised and translated material in Portuguese, Spanish, and English as the project's working language (Table 1). It was asked of all institutions to prepare a graphic description of the existing learning innovation ecosystem.
- Intensive Workshop Series: All institutions participated in a five-workshop intensive series during a week of November 2024 in Colombia to conduct intensive discussion, peer learning, and facilitation assistance. Joint completion of assessment, sharing practices and knowledge, and co-creation of draft plans were key highlights of such workshops. The main tool used for self-assessment was the Education Design Lab's (EDL) Ecosystem Self-Assessment Workbook. The tool enables HEIs to evaluate ten interdependent innovation ecosystem dimensions of future-readiness, equity, and system-wide collaboration. Each dimension includes rubrics with a three-point maturity scale ("Not at All," "Somewhat," "We're There/Close"), reflective prompts, and a priority indicator (Likert Scale from 1 to 5). Institutions were encouraged to justify their self-assessments with qualitative evidence and identify gaps in data or stakeholder alignment (Table 1).
- Trilingual or bilingual facilitated discussions where appropriate, with guidance materials and tools translated into Portuguese and Spanish to enhance inclusivity and comprehension. Visual aids (e.g., Miro boards) were also used to enhance participatory interaction.

Date	Format	Objective	Topics	Reference
August 2023	Face to Face in Vitória, Brazil	Individual reflection on the academia and world of work collaboration	1. In which higher education- external stakeholders interaction activities have you personally been involved? 2. What approach do you use to promote interaction between higher education and external stakeholders? 3. What are the characteristics of a good challenge to boost interaction	Authors own development

				between higher education and external stakeholders?	
November 2023	Synchronous	Reflect on existing learning innovation ecosystems activities in two phases: Phase1: Individual Phase2: Institutional	1. Identify examples of collaboration with industry and societal partners that you take(took) part, in the field of: **a**) Education; **b**) Professional Practice; **c**) Research 2. What examples could be placed in two fields: Education & Professional Practice (**a+b**); Education & Research (**a+c)**; Professional Practice & Research (**b+c**)? 3. What examples could be placed in the three fields: Education & Professional Practice & Research (**a+b+c**)? 4. What is the Regional Impact of the activities described?	Authors own development
October 2024	Asynchronous	Design and prepare to explain the current learning innovation ecosystem of each HEI	1. Refresh memory on activity from August and November 2023 2. Use IPB ecosystem as benchmark 3. Reflect on the questions: • Who are the ecosystem agents and communities? • What are the existing partnerships, and what is the nature of the existing relationships? • Do they have common goals? • What are the motivations for partnership? • How do they interact with and where in the (internal or external) environment? • The partners have a shared vision? • What is driven learning? • The ecosystem promotes innovation? 4. Prepare a graphic description of existing innovation ecosystem	Based on: (OECD: Organisation for Economic Co-operation and Development, 2023; World Economic Forum, 2020)
November 2024	Face to Face in Pereira, Colombia	Participants organized by HEI deeply reflect and assess the current learning innovation ecosystem	1. Institutional alignment with inclusive economic growth 2. Partner adaptability and collaborative capacity 3. Shared and democratized data systems 4. Long-term, outcomes-based funding strategies 5. Equity and co-design with marginalized communities 6. Population-centred innovation strategies 7. Shared value proposition across the ecosystem 8. Ecosystem engagement in policymaking 9. Institutional investment in a culture of innovation 10. Permeable partnerships for lifelong learning and re/upskilling	(Education Design Lab, 2022)

3. HEI Individualized Development Plan Workshop

The face-to-face workshop in Pereira, November 2024, had two objectives: 1. To conclude the self-assessment, as described above (Table 1); 2. To prepare the Institutional Learning Innovation Ecosystem development plan. To guide all participants in the Intensive Workshop Series, a Booklet with objectives, methodologies and tools to use in each proposed activity was shared.

Adapting the methodology from Education Design Lab (Education Design Lab, 2022), after the self-assessment, a set of questions was presented and discussions facilitated to promote commitment of each individual and institution for "The next 30 days" to introduce some improvements to the innovation ecosystem.

Sharing results to collect peer constructive feedback was introduced. A "teams work tour" was used to have contributions from everyone to all teams.

Feedback was analysed and iteration introduced using three main questions: Who is missing; what is needed to have a better understanding; and what questions still need to be addressed (Education Design Lab, 2022).

The following phase was an internal analysis in each ecosystem, focusing the best skills and the ones that need to be further developed, the tool Innocards was used (Hero, 2024).

A Miro board journey map template was used to complete the development plan, by each institutional team. This journey map included:

- Selecting a name and brand for the innovation ecosystem
- Identifying areas of focus
- Selecting the main Users and the tools for communication with them (Touchpoints)
- Detailing the main tasks to be implemented during development phase, by who and when
- An option to add screenshots to validate each step achieved
- A box to add positive and/or negative quotes

The final activity of the workshop was a prototype and pitch. Each team was asked to iterate the first graphic description presented into the vision of the desired future learning innovation ecosystem.

4. Data Collection and Systematization

Data were collected from:

- Paper and digital (Google forms) completed assessment templates;

- Photographies of annotated templates and materials;
- Collaborative digital boards (miro.com) capturing real-time, collaborative inputs;
- Workshop feedback form.

Each institution's results were collated in a shared e-folder to sequence the results, which included initial state for the learning ecosystem, ecosystem self-assessment, commitments and development plan, final pitch, and proposed activities and deadlines for plan development.

5. Analytical Approach

The data were analysed in two phases:

- Within-case analysis: Data of each institution were analysed to identify institutional context, perceived gaps, and priority areas.
- Cross-case comparison: Themes were coded and thematized inductively to elicit similarity, divergences, and potentially models of good practice among the European and Latin American institutions.

This approach ensured contextual specificity and systematic comparison to allow for detailed insights into how HEIs assess and plan the evolution of their innovation ecosystems.

Results

Results of the workshops series were analysed per phase of the workshop, with discussions being presented also per institution throughout the overall process.

Self-Assessment phase 1: Brazil, August 2023

Each institution identified the ongoing activities that bring together academia and world of work. Results show (Annex 1) that there are five categories of activities:

1. Training of external Stakeholders: Cooperation and collaboration with external institutions in educational research, development, and teacher training at various educational levels.
2. Consulting & Services: Consulting for instructional design; Educational content production and software development.
3. Data Analysis and Research: Systematic research and analysis of data to generate insights, support research objectives, and inform practice or policy.
4. Internationalization: Shared classes with other institutions to internationalise the curriculum.

An initial reflection on the methodologies used to promote interaction between higher education and external stakeholders showed:

1. Individual, personal networks and investment: Interaction with external stakeholders is developed and maintained individually.
2. Professional, sectorial meetings, agreements and networks: Interaction with external stakeholders results from the partnerships and projects.
3. Community of practice and other academic initiatives: Community of practices and e-learning to promote multidisciplinary, and technical cooperation to promote online and face 2 face courses with external stakeholders.

Each HEI was asked to identify a "good challenge" to boost interaction between higher education and external stakeholders. Results showed that the individuals involved did not share the same concept of challenge, which led to have answers pointing communication strategies or terms of agreements. Answers were categorized in:

1. Partnerships and Communication strategies: Different strategies, such as webinars, presential meetings, promotion of collaborative proposals, and establishment of partnerships with companies to work in real context challenges.
2. Expectations management: Definition of clear roles, responsibilities, scope and goals.
3. Co-creation challenges and innovation methodologies: Needs identification, designing cross-sectoral challenges in a real context, and applying methodologies and co-creation to promote innovation.

Self-Assessment phase 2: Synchronous, November 2023

Each participant was asked to identify examples of collaboration with industry and societal partners in which the participant was taking part, in the fields of: Education, Professional Practice and Research; first isolated and then in the intersection of two or three fields. At the end, if the participants have that information, they are asked to answer as HEI.

All answers (Annex 2) were translated to English and organized for comparison.

Considering activities in the field of Education alone, all institutions emphasize teacher training and educational innovation, ranging from formal degrees (master's, PhDs) to practical workshops (bootcamps, programming, STEM, robotics). They also refer partnerships with public schools and community organizations are common, promoting inclusion (e.g., immigrants in IFSP, vulnerable populations in UFABC). The use of innovative teaching methodologies such as project-based

learning (IFES) and competence-based learning (UFABC) to enhance student engagement and skills development, were also referred.

In the field of Professional Practice alone there is a strong focus on internships and collaborations with companies, public institutions, and health sectors (UTP, UFABC). The vocational training aligned with labour market needs, e.g., photovoltaic panel installation at IFSP, telemedicine at IFES, was referred and the participation in the development and administration of educational technologies, platforms, and extension projects promoting real-world skills (IFES LEDS, UTP educational platforms).

In the field of Research, the applied research with direct links to societal and industry needs, were designated including agrarian reform (UFABC with INCRA), artificial intelligence (AREANDINA, IFES), and renewable energy (IFSP). All institutions identify research centres and groups focus on emerging topics like digital skills, cybersecurity, gender studies, agroecology, and health innovation, and publications and scientific outputs are generated through partnerships and student involvement, reinforcing the knowledge-production mission.

In the combination of Education, Professional Practice and Research, many interdisciplinary programs and Integrated approaches are referred, providing an holistic training and impact (e.g., UTP's "Computadores para Educar," IFES's LEDS projects), and the collaboration between academia, industry, government, and social sectors is seen as a key enabler for joint innovation and practical problem-solving across all institutions. The internships and research projects could be seen as vehicles for bridging theory and practice.

The HEIs were also asked to reflect about the Regional and Social Impact. Each institution reported initiatives targeted at regional development and community needs, such as supporting local industries (IFES, IFSP), promoting education in vulnerable areas (UFABC, IFSP), and enhancing public policy through research (UFABC). The networks and partnerships at city and state levels foster knowledge exchange and economic development (UTP's partnerships in Pereira, UFABC's ABC region network). The impact spans from training thousands of teachers nationwide (UTP) to enabling startups and technological advances in local industries (IFES).

In conclusion, the institutions are deeply engaged in bridging education with professional and research domains, enhancing skills, innovation, and regional development. Emphasis on collaborative and community-oriented approaches ensures their work is relevant, socially responsible, and sustainable. They provide models for how higher education can serve as a driver of technological advancement, workforce development, and social inclusion in Latin America.

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Self-Assessment phase 3: Asynchronous, October 2024

It was asked of the participants to present, in 2 or 3 slides, the current state of the HEI's innovation ecosystem. In order to refresh memory, about the previous activities, were sent to each HEI the answers related to collaboration with the world of work, IPB ecosystem as benchmark, and the identified examples of collaboration with industry and societal partners, in which the participant takes part, in the fields of education, professional practice and research, first isolated and then in the intersection of the fields. The results presented are in the figures 1 to 7.

Self-Assessment phase 4: Colombia, November 2024

The Intensive Workshops Series starts with the presentation of the current learning ecosystem from each HEI, including the HAMK Ecosystem (Figure 1) and the updated IPB Learning Ecosystem (Figure 2). Then, participants organised by HEI teams reflect and assess the current learning innovation ecosystem, using a self-assessment tool adapted from *Education Design Lab. (2022). Ecosystem Self-Assessment Workbook.*

Figure 1: Forms of collaboration in the HAMK Ecosystem
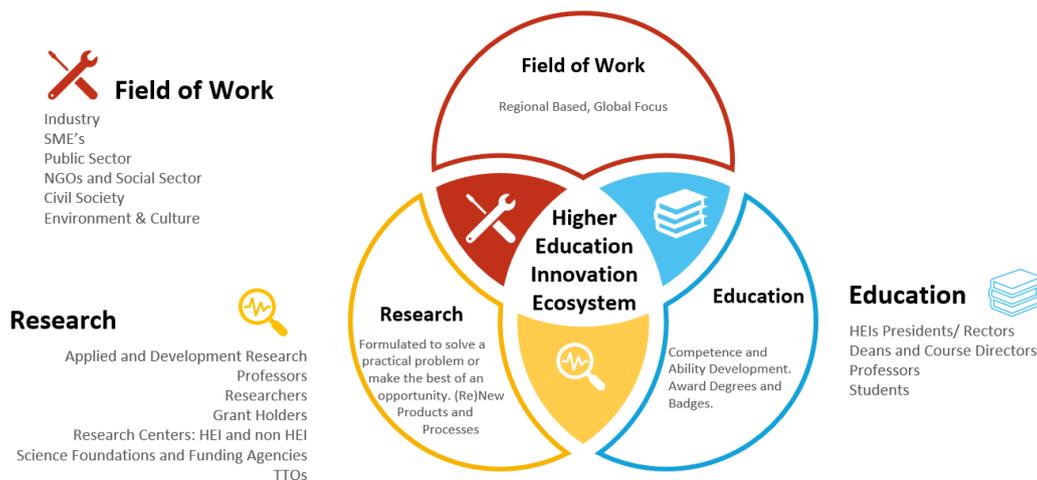
Figure 2: IPB Innovation Ecosystem

The **self-assessment** contains 10 topics about elements identified as future states, to answer in two dimensions:

- Where each participant believes the ecosystem of their HEI is currently, choosing one of the three options: "Not at All", "Somewhat", and "We're there/Close" abbreviated by "Close" in the resume table (Annex 3);
- How much of a priority actualising these elements is to the participant, using the Likert Scale from 1(not really) to 5 (urgent);

Additional information based on what the participant knows or needs to know about the learning ecosystem was also included.

For participants from **UTP**, in self-assessment, all elements are a priority. The highest priority is 4.00 in 5, in *T3- Shared and democratized data systems*, where the current state of ecosystem varies between Not at all, Somewhat and Close; and *T10- Permeable partnerships for lifelong learning and re/upskilling*, where the current state of the ecosystem varies between Somewhat and Close. The institution seeks to consolidate information and opportunities, but data fragmentation poses challenges, and the extension is the most consolidated area.

The lowest priority is 3.5 in 5, applied in five elements: *T4-Long-term, outcomes-based funding strategies* and *T6-Population-centred innovation strategies*, where the current state varies Not at all and Somewhat, and *T5-Equity and co-design with marginalized communities*, *T7-Shared value proposition across the ecosystem* and *T8-Ecosystem engagement in policymaking,* where the participants don't agree

about the current state of the ecosystem, varied between Not at all, Somewhat and Close, adding that they don't have significant information about the subject.

The participants from **AREANDINA** agreed about the priorities, being unanimous in the priority of the *T2-Partner adaptability and collaborative capacity (4.00), T4-Long-term, outcomes-based funding strategies (3.00) and T8-Ecosystem engagement in policymaking (3.00).* The highest priority, 4.67 in 5, was *T1- Institutional alignment with inclusive economic growth*, where they believe that the Ecosystem already is Somewhat/ Close, referring that AREANDINA promotes the employability and entrepreneurship of its students through partnerships with companies, internships, and its transformative seal focused on sustainable social development.

The lowest value, 2.83 in 5, obtained in *T3-Shared and democratized data systems, even the current ecosystem* where the learning ecosystem is classified with Not at all/Somewhat, although data and platforms are available within the institution, a lack of trust, limited system interconnection, and absence of coordinated communication hinder the efficient use of information—highlighting the need for greater integration, trust, and data sharing.

For **IFES** almost every element has an urgent priority as the lowest average priority obtained was 3.8 out of 5, in the *T8-Ecosystem engagement in policymaking*, where participants are divided between Not at all and Somewhat, considering the current state of the ecosystem. The highest average priority is 4.8 in *T1-Institutional alignment with inclusive economic growth*, in which some participants thought that the current ecosystem Somewhat/Close to achieve, referring the incubator AGIFES and Pólo de Inovação that work on research projects in cooperation with industrial companies, fulfilling one of the objectives of the Federal Institutes. They identified with the same priority *T10-Permeable partnerships for lifelong learning and re/upskilling,* about what all participants agreed that the current state of the ecosystem is Close, adding that it is part of the objectives of Federal Institutes. In the *T7- Shared value proposition across the ecosystem,* despite the average priority being 4.0, the answers are in the range [2, 5], which may be because the participants don't agree with the current status and vary between Not at all, Somewhat and Close.

Regarding priorities, in the **IFSP**, answers were very variable, since in the questions *T4-Long-term, outcomes-based funding strategies, T7-Shared value proposition across the ecosystem* and *T8-Ecosystem engagement in policymaking,* the range of the priority is [1, 5]. The highest priority is 3.83 in 5, for *T10-Permeable partnerships for lifelong learning and re/upskilling*, where the current ecosystem is Somewhat/Close, referring that IFSP needs to establish institutional innovation

policies and foster a research culture to seize opportunities, as current challenges like limited staff interest and team issues lead to missed chances.

The smallest priority was 2.33 in 5 for *T9-Institutional investment in a culture of innovation,* where the participants believe that the current ecosystem is Somewhat/Close, then projects and programs are generally short-lived, but those linked to research and the Pro-Rectorate of Innovation tend to have more continuity and institutional impact.

In the case of **UFABC** nothing has high priority since the highest priority, 2.86 in 5, was identified in the *T8-Ecosystem engagement in policymaking*, where the range of priorities marked is [1, 5] and the current state of ecosystem is classified as Not at all and Somewhat, as the institutional policies and external information, compounded by a vertical and unintuitive communication structure.

The smallest priority, 2.00 in 5, appears in *T3- Shared and democratized data systems*, *T5-Equity and co-design with marginalized communities and T10- Permeable partnerships for lifelong learning and re/upskilling,* where the current state in *T3* and *T5* was defined between Not at all and Somewhat and in *T10* was Not at all, Somewhat and Close, revealing different perspectives or knowledge on the subject.

In conclusion, the analysis of priorities and current ecosystem states across the institutions highlights significant variations in focus and challenges. While some institutions, such as AREANDINA and IFES, demonstrate higher alignment with specific priorities like institutional alignment with inclusive economic growth and permeable partnerships for lifelong learning, others, like UFABC, show lower prioritization across most elements, reflecting challenges in communication, data sharing, and policy engagement. Common themes across institutions include the need for greater integration, trust, and collaboration within ecosystems, as well as the importance of addressing data fragmentation and fostering innovation cultures. These findings underscore the necessity of tailored strategies to address institutional-specific gaps while promoting shared goals of ecosystem development and sustainability.

Development Plan: Colombia, November 2024

Reflecting on the self-assessment each HEI was asked to start the individualized **Development Plan.** The proposal was to work collaboratively in institutional teams and co-create the institutional innovative ecosystem using different tools; also considering work between all teams to give/receive constructive feedback and use feedback to review/improve the ecosystem, according to:

1. *Brainstorm* completing three sentences: one about organization, assuming a commitment to accomplish in one month; another about the individual

contribution to the ecosystem, defining an action to enhance an identified future element; and a collective action to develop ecosystem considering the context and a target group.

2. *Constructive peer feedback* in a teamwork tour by leaving post-its in four different quadrants: What did you like?, What can be improved?, Any doubts?, Any additional ideas.
3. *Iterate* the learning ecosystem according feedback obtained.
4. *Innovation competencies* identified by using InnoCards 2.0.
5. *Storytelling* based on the Innovation Journey Map.
6. *Prototype* to visualize the future innovation Ecosystem and the development plan.
7. *Pitch* to engage academic community and external stakeholders in the ecosystem.

As organization, **UTP** commits to policy socialization addressing student's participation and supports the effort in developing and innovating grow. Individually the participant enhances efforts to tell the students about opportunities in order to promote entrepreneurship and will reconsider the research about sources of funding to reduce the number of unemployed graduates. The ecosystem named CRIE, commits to relying on social networks (and similar) to unify the ecosystem, addressing benefits to the academic community to integrate with industry and improve the collaboration between all.

The feedback obtained enhance the value of the entrepreneurship, the protagonism of students; a newsletter could improve the promotion of the external community and the integration of research centres; think about the development of incubators and the involvement of teachers, and also the use of YouTube.

The UTP team considered themselves as an interdisciplinary team, with technological skills, adaptability to change and willing to take on new projects. They need to improve marketing skills.

InsPirA UTP (Figure 3) aims to foster a culture of innovation by creating synergies among students, professors, researchers, and strategic partners to generate knowledge, develop disruptive solutions, and train innovative leaders capable of transforming society. Its vision is to become a national and international benchmark in innovation and technological development, effectively integrating ecosystems within the university, such as *Barranqueros* and the *Soy Aliado* program, to build a cohesive and collaborative community.

The initiative focuses on three main areas: promoting a culture of innovation and entrepreneurship, talent development, and connecting stakeholders. Guided by values such as responsibility, respect, leadership, and solidarity, InsPirA UTP seeks to consolidate itself as a leading ecosystem for creative ideas and collaborative

projects. Its development plan includes diagnosing current ecosystems, structuring and organizing processes, implementing innovation strategies, marketing and communication efforts, and measuring results to ensure continuous improvement.

The UTP used paper and pens to graphic design their learning ecosystem (Figure 3) and pitch.
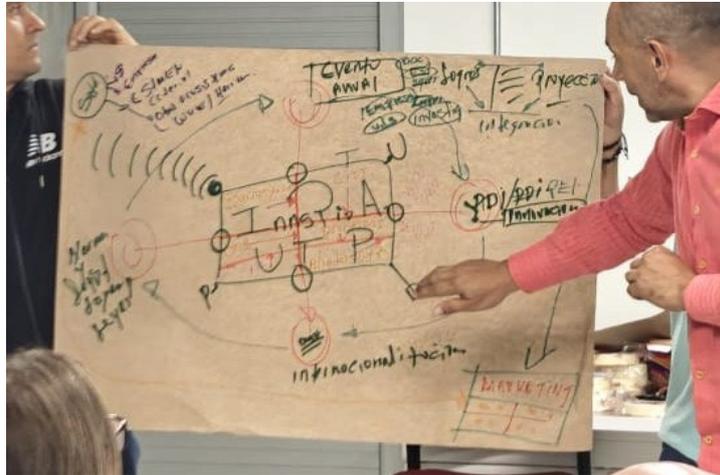

Figure 3: InsPirA UTP Ecosystem

AREANDINA team are committed to identifying actions, like workshops, to promote the articulation between the university, the state and companies, taking into account their educational role, professional preparation and research, improving the quality of life of the academic community and improving professional training in an integrated manner. Each participant is committed to identifying points of connection between their content and the context, working in an innovative way, reflecting on routine actions and increasing the link between institution and the environment in which it operates. Within the ecosystem NAI (Nova Areandina Inovación), they propose applied research actions in collaboration with commercial associations, industry and universities with a view to improving the employability of their students and training better professionals.

The peers give good feedback about the workshops and the platform integration; leave questions like how to align the curriculum with society and company demands?; and suggested to make a diagnosis of the region's needs.

The team has skills in creativity, innovation, development, for independent learning and technologies, and also leadership a teamwork competency. They believe that needed to improve ambition, delegation and be alert to new opportunities.

The mission and vision focus on connecting the innovation ecosystem (Figure 4) with the professional world by integrating classroom projects (PPA, PIS, PIF, and others), research initiatives, and social outreach into the labor market. This is

achieved through a quadruple helix model that combines these elements and incorporates them into the curriculum of each subject.

The goals include creating a safe environment for experimentation and creativity, providing opportunities for learning and growth, fostering collaboration with universities and companies, maintaining a commitment to continuous learning, and making environmentally responsible decisions. The focus areas are data analytics as a central element for interdisciplinary projects, sustainable productive projects that emphasize social and environmental responsibility, and fostering intersectoral collaboration, with AREANDINA acting as an integrator within the ecosystem.

The development plan involves identifying key stakeholders (companies, academic institutions, government, investors, and entrepreneurs), defining a shared vision with long-term goals, establishing a collaborative platform (physical or virtual innovation centers), promoting research and development through projects and partnerships, offering training and exchange programs, and disseminating results through events, research, and success stories.
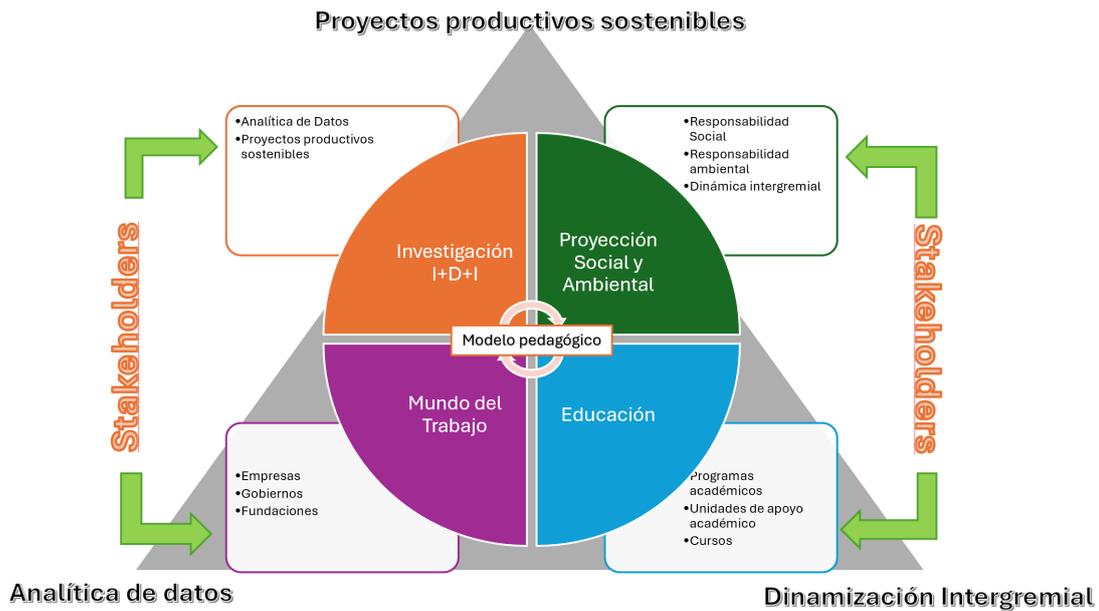
Figure 4: Areandina Innovation Ecosystem with the world of work

The IFES as organization commits to prepare an initial plan to connect the innovative ecosystem with the teaching area, addressing to support the Innovation Centre and integrate IFES with the world of work. Individually, they will enhance efforts to know the IFES innovation rules in order to articulate the innovation actions and rethink the educational practices in order to reduce the distance between theory and practice. The participants from IFES commits to plan the ecosystem understand their role and support the efforts in improving their engagement.

The obtained feedback value connecting research and development with the teaching process, and the initial plan of the ecosystem connected with the Innovation centre; referred the improvement of dissemination and the uniformization of the practical action of innovation connected with the world of work; and ask how to access the impact of the innovation plan, and how to reduce the distance between the theory and the practice; suggests the use of one campus to pilot the ecosystem and after disseminate the ecosystem and enhance interdisciplinarity.

The team has technological, teamwork and project management skills, ability of generate new ideas, resilience and increase the network. They need to improve marketing skills, communication in foreign languages and the capacity of transforming ideas into market-ready products.

The mission of this initiative is to promote the integration between IFES and the professional world by developing skills and innovative solutions that address social, professional, and market demands. Its vision is to establish IFES as a benchmark in

innovation and social impact, fostering sustainable and inclusive development through strong connections with the world of work. The initiative is guided by the values of innovation, collaboration, and holistic education, aiming to understand and publicise the institutional ecosystem effectively.

The development plan focuses on understanding the institutional rules and key agents involved in the integration process, such as the Vitória Innovation Hub and AGIFES, which acts as the Technological Innovation Centre in line with the Innovation Law. It also includes creating a graphic of the ecosystem, implementing strategies to disseminate it, and providing practical examples of its application to ensure its effective use and impact. INTEGRA IFES (Figure 6) was the presented Learning Ecosystem and Innovation remains the central focus of all efforts.
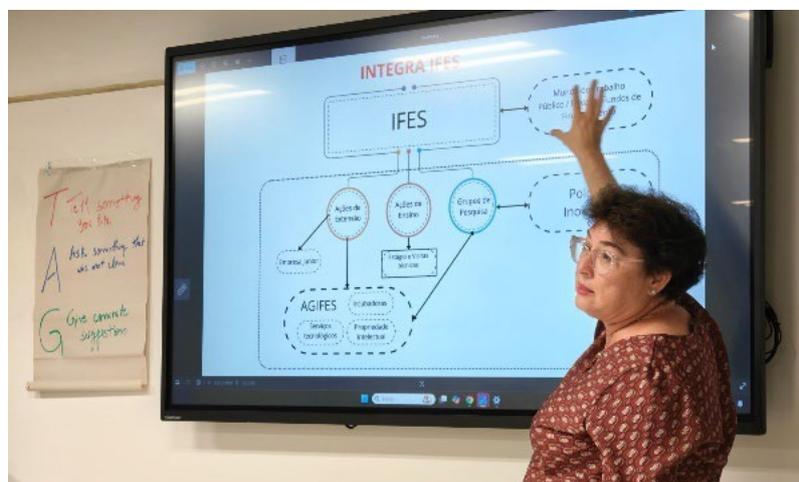
Figure 6: Integra IFES ecosystem

As organization IFSP commits to raise awareness among management "Trilha da Ciência: Inovação" which will support in addressing Pro-Rectory of Research and Postgraduate Studies (PRP), Innovation and Technology Transfer Agency (INOVA) and Pro-Rectory of Extension and Culture (PRX) and the academic community to make actions visible. Individually, they will contribute with a webinar and actions in diverse campuses to support the PRP, INOVA and social media to improve the dissemination and amply the final results. The existing ecosystem and innovation policies commits to disseminate by CONICT (Innovation, Science and Technology Congress) to support in addressing PRP, INOVA and Campus Barretos in the efforts of Coordination of Research and Innovation (CPIs), Prospecting and Innovation Agents (APIs), professors and directors.

The feedback obtained refer that is good idea to take profit of what already exists making more visible, and creating synergies between projects; most be improved the dissemination for students, teachers, technicians and community, and improve the communication between campus and not be so dependent on Councils; how the ecosystem proposed will change the educational practices and how to motivate teacher to participate; showcase the existing good practices, lesson learnt and recommendations, to share the existing relations with external actors.

The IFSP team is flexible and with collaborative competences, being able to make new partnerships, but they need to improve the construction of a business plan.

The mission of the IFSP INNO-ECO ecosystem (Figure 7) is to foster technological innovation, provide an environment for creation and co-creation, protect intellectual property, and promote entrepreneurship. The initiative is guided by goals such as technology transfer for innovation, scientific production management, ethical orientation, and transdisciplinarity. Its focus areas include diversifying communication about innovation, encouraging student leadership in research, and expanding access to the innovation ecosystem through effective communication of opportunities and challenges.

The development plan includes key events such as the CONICT (Innovation, Science, and Technology Congress) in late November, which promotes knowledge-sharing, collaboration, funding, and stakeholder engagement among researchers, students, and staff. Additionally, the "*Trilha da Ciência*" webinar supports research and innovation projects for student scholars, focusing on knowledge-sharing, international cooperation, and raising awareness. A workshop for tutor teachers is also planned, aiming to enhance teaching and learning practices, assessment, and support for students in distance learning or academic reinforcement projects.
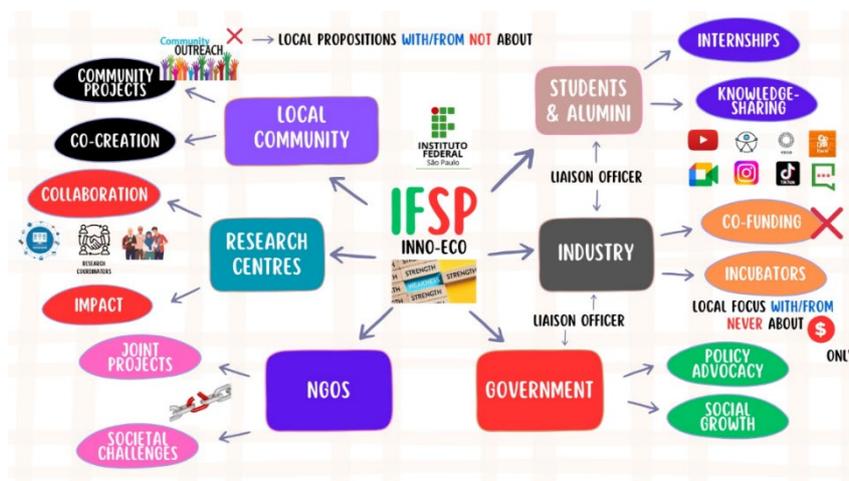
Figure 7: IFSP INNO-ECO ecosystem

The [UFABC](#) as organization in two months (not one as initially previewed) commits to data collection in order to map the state of art and support the efforts in building the ecosystem strategies. Individually each participant will collect data in different areas in order to support the design of the ecosystem based on evidence. They will rethink assumptions of the present state in order to reduce pulverized actions and policies. The ecosystem ENLACE (Figure 8) commits to elaborate the proposal of a model in order to support transdisciplinary experiences and support to connecting courses with different stakeholders.

The feedback obtained includes the value of the understanding of the situation is the foundation, evidence based, and connect the reality with education; there is a faulty connection in between islands across the institution, workshop to disseminate the policies and practices in the ecosystem; how works the evidence-based ecosystem and transdisciplinarity is quiet ambitious but great if it is or you can consider interdisciplinarity; organize a showcase of projects and techniques from research groups.

The team consider to have collaboration and cognitive skills, future thinking and achievement orientation. They need to improve competences in marketing, sales, entrepreneurship and planning skills, be more confident in difficult situation, change the approach according team work require and create new partnerships.

The mission is to create an ecosystem model for UFABC, ENLACE (Figure 8), with the vision of fostering a transdisciplinary collaboration between the university and the professional world to enhance the academic community's competencies. The initiative is guided by values such as interdisciplinarity, excellence, social inclusion, internationalization, and collaborative actions. Its goals include building ecosystem strategies, connecting educational programs with stakeholders, reducing fragmented actions and policies, leveraging ecosystem data to drive changes, and creating a safe and trustworthy work environment.

The development plan involves mapping and analyzing data from various university sectors and stakeholders, such as professors, students, companies, and government agencies, to identify existing collaborations and opportunities. After connecting stakeholders, a proposal for the learning ecosystem will be designed and piloted in selected disciplines. The pilot will be evaluated by professors, students, and companies, and the ecosystem will be refined based on their feedback to ensure its effectiveness and sustainability. Team prepare a paper prototype to pitch at the end of the week.

Figure 8: ENLACE ecosystem

Comparative Analysis of Innovation Ecosystems

The comparative analysis of the seven higher education institutions (HEIs) across Finland, Portugal, Colombia, and Brazil reveals common objectives and methodologies, as well as context-specific configurations in the development of higher education innovation ecosystems. Based on the ten dimensions of the self-assessment framework, this section resumes findings, highlighting similarities, divergences, and emerging topics.

Shared Structural Challenges Across Ecosystems

Across all participating institutions, several common challenges emerged, regardless of geographical or institutional context. First, fragmentation of partnerships was identified. While all HEIs reported the existence of collaborations with industry, government, and civil society, these were often described as project-based, short-term, or weakly institutionalized, limiting their long-term strategic impact. Second, institutions consistently highlighted limited systematization of practices and impact. Although data collection practices exist, there is a lack of shared, and decision-oriented data, constraining evidence-based governance and ecosystem coordination. Third, funding sustainability was a common concern. Most ecosystems rely heavily on project-based or externally competitive driven funding, with limited alignment between financial mechanisms and long-term ecosystem goals. This creates instability and restricts the scalability of innovation initiatives. Finally, all HEIs identified the need to strengthen a culture of innovation, particularly in terms of internal incentives, interdisciplinary collaboration, and institutional openness to experimentation and risk-taking, involving all actors: students, professors, researchers and external stakeholders.

Divergences Between European and Latin American Contexts

Despite these shared challenges, the analysis reveals distinct patterns between European and Latin American ecosystems, in specific in what concerns maturity,

governance, and strategic orientation. HEIs in Finland and Portugal demonstrated comparatively higher levels of institutional alignment and policy integration, especially in relation to regional innovation strategies such as Smart Specialisation (RIS3). These institutions tend to operate within more formalized governance structures, with clearer articulation between institutional strategies and regional development agendas. HEIs in Colombia and Brazil exhibited more adaptive and context-responsive ecosystem configurations, and strong social engagement missions. These ecosystems showed a greater emphasis on inclusion, community impact, and responsiveness to local socio-economic challenges, even when operating with more constrained resources. Additionally, while European institutions displayed stronger integration in policy-driven innovation ecosystems, Latin American HEIs demonstrated notable strengths in bottom-up innovation practices, particularly in engaging marginalized communities and fostering socially oriented innovation.

Emerging Priorities for Ecosystem Development

Despite contextual differences, a set of shared strategic priorities emerged from the development plans. These included strengthening long-term, strategic partnerships beyond project-based collaboration, developing systematized and integrated data collection processes to support evidence-based decision-making, enhancing institutional cultures of innovation through incentives and leadership support, expanding lifelong learning and reskilling pathways aligned with regional needs, and embedding equity and inclusion as core principles in ecosystem design and implementation. At the same time, institutions also articulated context-specific priorities, such as greater alignment with regional policy instruments in Europe, stronger community engagement and social innovation in Latin America, and the need to build institutional capacity for international collaboration across all contexts.

Categories of Innovation Ecosystems

Based on the comparative analysis, it is possible to identify emerging models of HEI innovation ecosystems:

1. Policy-aligned ecosystems (Finland, Portugal): Characterized by integration with regional strategies, formal governance, and structured partnerships. Also the involvement of students is embedded in institutional strategies and formalized, based on flexibility and personalization of academic pathways.

2. Socially embedded ecosystems (Colombia, Brazil): Defined by community engagement, collaboration models, and a focus on inclusion and local impact. Students participation is either informal and not recognized or

mandatory in a number of hours to be fulfilled in what is called as "extension activities", that are not always innovation related.

For the future a new model of hybrid ecosystems, that combine elements from both models has been identified as desirable, as it seeks to balance broader and structured policy with proximity, local engagement and social awareness.

Discussion and Conclusion

The findings of this study reinforce the recognition of higher education institutions as central actors in innovation ecosystems and also reveals important gaps between conceptual frameworks and institutional practice. Recent work has conceptualized universities as key intersections within multi-actor, multi-level innovation ecosystems and has called for more rigorous frameworks to link theory and practice in this domain (Ayandibu, 2023; Cai et al., 2020b; Heaton et al., 2019). The structured self-assessment process implemented within the EMBRACE project not only generated individual insights, but also functioned as a comparative tool, reflective and developmental mechanism, enabling institutions to better understand their ecosystem positioning and strategic potential, in line with broader moves toward institutional policies and ecosystem-based assessment approaches in higher education (Christou et al., 2024; Koroleva et al., 2023; Zhuang & Liu, 2022).

A key outcome across all participating institutions was the increased awareness of ecosystem thinking, particularly regarding the interdependence of actors at institutional (academia, public, private, social entities and civil society) and individual (professors, researchers, students, white and blue collar workers, retired experts) level, as well as the role of HEIs as facilitators of collaboration and knowledge exchange and valorization. This aligns with systemic perspectives on innovation ecosystems internationally presented, which emphasize HEIs' embeddedness and intermediary roles within broader socio-technical systems (Cai et al., 2020b; Heaton et al., 2019; Schiuma & Carlucci, 2018; Zhao & Yang, 2024). The results also suggest that, while awareness has improved, operationalization is uneven, with institutions differing significantly in their levels of maturity and strategic integration, an issued previously referred by other actors (Bayuo et al., 2020; Bosonnet, 2025; Liu et al., 2021; Zhuang & Liu, 2022).

The comparative analysis shared structural challenges, such as fragmented partnerships, limited data systematization and integration, unstable funding models, and context-specific strengths. Similar coordination and partnership challenges in university–industry–government relationships were already referred in the literature (Ayandibu, 2023; Bacon & Williams, 2022; Schiuma & Carlucci, 2018). Context-specific strengths were evident in Latin American-style or peripheral settings, where socially embedded and community-oriented approaches to

innovation and social value creation were dominant, often relying on informal governance and relational dynamics (Ayandibu, 2023; Bayuo et al., 2020; Lake et al., 2021). European institutions demonstrated stronger alignment with formal policy frameworks, such as Smart Specialisation Strategies, and explicit integration of HEIs within regional innovation systems, confirming previous studies results (Bosonnet, 2025; Cai et al., 2020b; Heaton et al., 2019).

A relevant finding of this project concerns the initial limited conceptualization of "challenge" within ecosystem practices. Across institutions, challenges were often framed in relatively narrow and operational terms, typically reflecting existing one-way collaborations or services provided by the university. This "flat" understanding of challenges contrasts with more advanced perspectives in the literature, which emphasize complex, mission-oriented, and future-driven challenges as drivers of transformative innovation and sustainability transitions (Bryant, 2024; Koroleva et al., 2023). The limited view of such perspective may constrain the capacity of HEIs to engage in deeper co-creation and to address systemic issues, despite universities being increasingly called to assume more ecological, socially responsible, and transformative roles (Bayuo et al., 2020; Cai et al., 2020b). This suggests a need to strengthen institutional capabilities in challenge codesign, including (future) foresight, (complex) systems thinking, and transdisciplinary collaboration (Koroleva et al., 2023).

Another important result is the identification of internationalization, particularly inter-HEI collaboration, as a key activity within regional innovation ecosystems. While international partnerships have traditionally been associated with academic mobility and research collaboration, participants in this study positioned them as mechanisms for knowledge exchange and valorization, benchmarking, and ecosystem development, echoing emerging views of HEIs as transnational co-innovation actors within regional ecosystems (Ayandibu, 2023; Cai et al., 2020b). At the same time, this raises important questions about how international collaboration can be effectively integrated with local and regional priorities so that global engagement strengthens rather than dilutes territorial impact, a tension previously identified in analyses of university roles in smart specialization and peripheral regions (Bayuo et al., 2020; Bosonnet, 2025; Schiuma & Carlucci, 2018).

From a methodological perspective, the Intensive Workshop Series proved effective in fostering participatory reflection, peer learning, and cross-cultural exchange, confirming other authors who suggested the value of collaborative, work-based and ecosystemic learning approaches in higher education transformation (Bryant, 2024; Lake et al., 2021). The workshops enabled institutions to move beyond isolated reflection toward collective sense-making and co-design; participants also highlighted the need for improved facilitation of inter-institutional dialogue and

more effective use of digital tools, consistent with trends and current research on digitally enabled higher education ecosystems and learning design ecosystems (Bryant, 2024; Zhao & Yang, 2024).

This study presents limitations that need to be addressed. First, the self-assessment approach relies on subjective perceptions, which may introduce bias and limit the comparability of results across institutions, a concern also noted in reviews of sustainability and ecosystem-oriented self-assessment tools in HEIs (Christou et al., 2024). Second, the relatively small number of participants per institution (2–6) may not capture the diversity of perspectives within each ecosystem. Third, the study reflects a specific moment in time and does not yet account for the long-term implementation or impact of the development plans generated, as mentioned before for longitudinal, stakeholder-inclusive research on educational and social innovation ecosystems in higher education (Bayuo et al., 2020; Lake et al., 2021; Zhuang & Liu, 2022). Finally, while the use of a common framework enabled comparison, contextual adaptations and linguistic differences may have influenced how questions and concepts were interpreted across countries, a challenge previously observed by other researchers in cross-national ecosystem and policy analyses (Bosonnet, 2025; Koroleva et al., 2023; Zhuang & Liu, 2022).

Future research should therefore focus on longitudinal analysis of ecosystem development, the integration of quantitative indicators to complement qualitative insights, and the exploration of advanced challenge-based and mission-oriented innovation models within higher education (Bayuo et al., 2020; De Boer et al., 2022; Koroleva et al., 2023; Lake et al., 2021). Additionally, further investigation is needed into how internationalization strategies can be effectively embedded within regional innovation ecosystems to support both global connectivity and local relevance, building on emerging work on HEIs' roles in regional resilience, peripheral regions, and digitally enabled ecosystems.

In conclusion, this study demonstrates that participatory self-assessment and collaborative learning processes can play a critical role in advancing higher education innovation ecosystems by combining reflection, comparison, and action planning. By highlighting both shared challenges and context-specific pathways, it contributes to a broader understanding of how HEIs can strengthen their role as drivers of innovation, inclusion, and sustainable development in diverse global contexts, in line with recent conceptualizations of higher education innovation ecosystems and the ecological university.

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ANNEX 1: Phase 1: F2F in Vitória, August 2023

In which higher education X external stakeholders interaction activities have you personally been involved?

Category	Description	Answers obtained
Training of external Stakeholders	Cooperation and collaboration with external institutions in educational research, development, and teacher training at various educational levels.	Journal Club cooperation (Learning cooperation). Teacher training in universities and schools (elementary and middle), building teaching projects, researching educational practices. Training of teachers from external entities. Oficinas 4.0 a Brazilian Vocational and Educational Training Program
Consulting & Services	Consulting for instructional design	I work as an instructional design consultant in EdTech companies, corporate education, and teaching systems (articulating my students' participation in projects involving partner institutions).
	Educational content production and software development	Extension projects: building software projects. I have extension projects producing educational content for the third sector and the public education network.
Internationalisation	Shared classes with other institutions to internationalise the curriculum	I have been involved in the internationalization of the curriculum of the Dentistry program in health sciences, conducting mirror classes where my students and students from other universities are connected at the same time with experts in Mexico and Argentina, I have also conducted virtual courses and stomatology medicine attendance at the Technical University of Manabí, University of Carabobo, National University of Mexico, University of La Plata Argentina. The Areandina University, where I work, is concerned about updating the study plan, which is why it continually invites international experts.
Data Analysis and Research	Systematic investigation and analysis of data to generate insights, support research objectives, and inform practice or policy	Big data analytics (at Hospitals) Research, business practices and technical visits. Several R&D collaboration projects hosted in my research lab.

What approach do you use to promote interaction between higher education and external stakeholders?

Category	Description	Answers obtained
Individual, personal networks and investment	Interaction with external stakeholders is developed and maintained individually	It's dependent on me to look for intuitions, get in contact with them, design and execute a plan of action, and so on. I receive demands through contact networks, mainly from the Google Educators Group and the Leaders Network of the Lemann Foundation.
Professional, sectorial meetings, agreements and networks	Interaction with external stakeholders results from the partnerships and projects	Knowledge transfer from both sides We have an extension project that promotes partnerships for the development of software with companies and entities Planning, monitoring, and collaborative proposal meetings. We do an active search for companies' demands for project-based solutions in partnership
Community of practice and other academic initiatives	Community of practices and e-learning to promote multidisciplinary, and technical cooperation to promote online and face 2 face courses with external stakeholders	E-learning I almost always use a community of practice approach. Technical cooperation to promote online and face-to-face courses The objective of these activities in the program and my classes is to approach in a multidisciplinary way, problems associated with oral health and health in general with expression in the mouth, highlighting that this pedagogical practice based on learning in Challenges and Problems is implemented in all the academic programs of the AREANDINA university

What are the characteristics of a good challenge to boost interaction between higher education and external stakeholders?

Category	Description	Answer obtained
Partnership and communication strategies	Different strategies, such as webinars, presental meetings, promotion of collaborative proposals, and establishment of partnerships with companies to work in real context challenges	International e-seminars and face-to-face meetings Partnership Have a relationship with companies in real projects Maintain constant contact and good management of the process stages Meetings for planning, monitoring and collaborative proposals
Expectations management	Definition of clear roles, responsibilities, scope and goals.	Well-defined deliveries and responsibilities Have clear objectives and know the scope and goals
Co-creation challenges and innovation methodologies	Needs identification, designing cross-sectoral challenges in a real context, and applying methodologies and co-creation to promote innovation.	How to identify the needs of the local productive arrangement, especially those of institutions that do not actively share their internal challenges. I believe that creating ecosystems and communities of practice can be pertinent and efficient. Connecting real-world problems to foster professional training, along with solving together as a team, stakeholders demand

ANNEX 2: Phase 2: Online, November 2023

COLOMBIA: UTP (8 individual answers)

Translated and organized

<table>
<tr>
<td rowspan="3">One Field</td>
<td>Education</td>
<td>

- Ministry of Education: Training school teachers in ICT
- Ministry for the Information and Communications Technologies
- Ministry of Science, Technology and Innovation
- Work with elementary/secondary institutions and trustees
- Train Companies' employees
- Train teachers and implement Cisco Networking Academy (other universities)
- Data networks and Cybersecurity
</td>
</tr>
<tr>
<td>Professional Practice</td>
<td>

- Development/admin of educational platforms
- Business internship office
- Ministry of Labor internships in the public sector
- Incubators
- Tutoring data network instructors
</td>
</tr>
<tr>
<td>Research</td>
<td>

- Educational innovation methodologies
- Information Systems in Education
- MENTA (computational thinking) research group
- STEM research group
</td>
</tr>
<tr>
<td rowspan="2">Two Fields</td>
<td>Education & Professional Practice</td>
<td>

- Educational innovation projects with technical/methodological student support
- Internship office coordinating academic, business, and research internships
- Internships/practices in clinics and hospitals (health students)
- Company internships for final semester students
</td>
</tr>
<tr>
<td>Education & Research</td>
<td>

- Research incubators that support student academic and social development
- "Computadores para Educar": teacher training & research
- Laboratories offering services via student research activities
- Courses aligned with research groups, participation in events, generation of research products
</td>
</tr>
</table>

Three Fields	Professional Practice & Research	• University internships linked to research groups recognized by the Ministry of Science • Network Linux and Cybersecurity
	Education & Professional Practice & Research	• Industry analytics leading to Lean Execution • Students support ICT teacher training via help desks (technical/methodological) • "Computadores para Educar" (cross-cutting initiative) • "Pereira Virtuosa" project (whole community + city government) • Entrepreneurship projects and a business incubator.
	Regional Impact	• Industries in the Pereira metropolitan area • Training for school teachers (Cisco academy agreements) • Improving teaching practices nationwide • Over 100,000 teachers and 300,000 students impacted in STEM • Training low-income students via collaboration with local government • Instructors trained to create new data network courses across cities • Job creation, outreach impact, collaboration with K-12 institutions

Original Data

		Individual answers
One Field	Education	Ministerios de educación TIC, MinCiencias. We have participated with government companies training school teachers in the use of ICT in the classroom. Some companies have sought us out to train employees on computer topics or on some other topics thanks to our available educational platforms. Ministerio de Educación, MinTIC, instituciones de básica y media, además de fiduciarias que administran recursos para el sector educativo. Diseño y desarrollo de contenidos para la formación de docentes de educación básica, media y superior en colaboración con Ministerio de Educación Nacional y de Tecnologías así como fundaciones y empresas. Supporting other Universities of the country and training its teachers in Cisco Networking Academy program (helping them to implement the program) CiberSecurity Data Networks NA
	Professional Practice	Apoyo en el diseño de recursos educativos digitales, procesos de diseminación de información, Apoyo técnico y tecnológico UTP has a business internship office that provides different opportunities for students to finish their academic program with an internship in a company. We also have business incubators. Desarrollo de contenidos y administración de plataformas educativas.

		La Universidad realiza proyectos tales como la Convocatoria Estado Jóven: Prácticas Laborales en el Sector Público proyecto que es liderado por el Ministerio del Trabajo en coordinación con el Departamento Administrativo de la Función Pública y la Unidad Administrativa Especial del Servicio Público de Empleo, que facilita a jóvenes estudiantes, el paso del ciclo de aprendizaje al mercado laboral, a través de incentivos para la realización de sus prácticas profesionales en el sector público. Igualmente cuenta con convenios de prácticas profesionales en empresas privadas Advise students in the development of their professional practices with the industry CiberSecurity Tutoring data network instructors NA
	Research	Metodologias de innovación educativa There are research groups like Menta that delve into ICT issues. Resultados del mejoramiento de habilidades de los docentes en sus prácticas educativas y la transferencia de conocimiento a sus estudiantes Dentro de los proyectos que desarrollamos realizamos procesos de investigación relacionados a la formación de docentes en tecnología en especial en áreas STEM, adicionalmente hacemos parte del grupo de investigación MENTA. No Work in this area none yet NA NA
Two Fields	Education & Professional Practice	Estudiantes que participan en la ejecución de proyectos relacionados con la innovación educativa. Su función es apoyar en varios frentes: Apoyó técnico, tecnológico, Metodológico Internships in companies for final semester students La universidad cuenta con un área de prácticas empresariales que permite que los estudiantes se integren con las organizaciones, practicas estado joven son las que los estudiantes pueden trabajar con el estado, un modelo interno que se denomina estudiantes para que permite que laboren en las oficinas de nuestra propia institución. La oficina de prácticas al interior de la universidad permite diferentes modalidades de prácticas entre esas las académicas, empresariales y de investigación todas con un objetivo distinto y con entidades o empresas relacionadas. No Apply ummmm Network security NA
	Education & Research	La universidad a través de semilleros de investigación apoya procesos de trabajo sociales y empresariales. Los semilleros de investigación contribuyen a la formación integral del estudiante, donde pueda fortalecer y poner en práctica los conocimientos propios de area disciplinar Projects such as "Computadores para Educar" (Computers to Educate) where teachers are trained and research is carried out during the process Diferentes laboratorios que prestan servicios a la sociedad integrando actividades de los estudiantes, participación de diferentes grupos de investigación en articulación con contrataciones externas analizando los resultados de la ejecución de contratos, participación en eventos de divulgación del conocimiento y generación de productos resultados de investigación o actividades científicas.

			Participación de diferentes grupos de investigación que articulan las asignaturas a los grupos de investigación. Así mismo la posibilidad de participar en eventos de socialización y generación de productos resultados de actividades científicas. No Apply mine? I know a bunch of networking linux and cibersecurity NA NA
		Professional Practice & Research	- Participation of students in research groups or with programs such as Technological Development Modalidad de las prácticas universitarias conducentes a grado Esta es otra modalidad dentro de las posibles al interior de la practicas de la Universidad, en esta los estudiantes apoyan actividades o se vinculan en un proyecto de investigación de un grupo o semillero de investigación registrado en una entidad legalmente reconocida por Ministerio de Ciencia, Tecnología e Innovación. Dicha práctica deberá estar enmarcada en un área de conocimiento alineado al programa académico al cual pertenece el estudiante. No Apply Machine learning NA NA

COLOMBIA: AREANDINA (3 individual answers)

Translated and organized

One Field	Education	• Master's in Education and ICT • Bootcamps for Programming Skills
	Professional Practice	• Educational computing teacher • SCRUM Orientator
	Research	• Student-centred methodologies • Information Systems in Education
Two Fields	Education & Professional Practice	• Research projects within educational programs addressing industry challenges • Training process and academic research • Data analytics
	Education & Research	• Research in digital teaching and digital skills • Collaborative research projects between academia and industry • Formative research embedded in curricula
	Professional Practice & Research	• Artificial intelligence and Machine Learning in education • Collaborative research projects between academia and industry • Contextual interactions to build a common ground
Three Fields	Education & Professional Practice & Research	• Training in artificial intelligence for the regional context. • Regional Education Development Programs • Ecotourism Training and Conservation Research • Renewable Energy Education and Implementation • Cultural Heritage Preservation Project
	Regional Impact	• Establish networks with industry, academia, associations, and students to solve regional issues (e.g., agriculture, tourism, renewable energy) • Industries in the metropolitan area of Pereira, Colombia

Original Data

		Individual answers
One Field	Education	Master's in education and TIC; Magister; Bootcamps for Programming skills.
	Professional Practice	Educational computing teacher System Ing. SCRUM orientator
	Research	Student-centred methodologies Information Systems in Education Still in consideration (So, the program was paused)
Two Fields	Education & Professional Practice	14 years in training processes in Areandina and academic research Example: Integrating research projects within educational programs that address current challenges in the industry, allowing students to contribute to advancing knowledge while gaining practical experience. The same applies to internships and practices in clinics and hospitals for students in the health area. Data Analytics
	Education & Research	Research in digital teaching and digital skills Facilitate collaborative research projects between academia and industry, fostering a culture of research and discovery of joint solutions. Formative research embedded in curricula
	Professional Practice & Research	Artificial intelligence in education Facilitate collaborative research projects between academia and industry, fostering a culture of research and discovery of joint solutions. Contextual interactions to build a common ground
Three Fields	Education & Professional Practice & Research	Training in artificial intelligence for the regional context; Regional Educations Development Programs; Ecotourism Training and Conservation Research; Renewable Energy Education and Implementation; Cultural Heritage Preservation Project"
	Regional Impact	Research with TIC Education and the region Pereira - Colombia City and metropolitan area Only local in Arendina Establish networks with industry and academia, professional associations and with students that focus on regional issues, promoting collaboration and problem solving in different sectors such as agriculture, tourism, renewable energies, etc. to address the unique challenges facing the local context in Pereira - Colombia Industries through the metropolitan area (case Pereira, Colombia)

BRASIL: IFES (3 individual answers)

Translated and organized

One Field	Education	• Federal vocational training network with a Project-Based Learning methodology • Partnership with the Federal University of Espírito Santo (AI at Institute of Applied Computational Intelligence) • LETER (Educational Technologies and Robotics Lab): teaches programming and robotics to public elementary students, trains teachers for Brazilian Robotics Olympics • LEDS (Extension Laboratory in Solution Development): links academia and industry, applying optimization algorithms
	Professional Practice	• Telemedicine extension project: online training for health professionals • Development of autonomous vehicles (car, truck, airplane, eVTOL) • LEDS: software development in partnership with companies, with company contributions in equipment and student scholarships
	Research	• Applied research with companies using digital technologies to boost productivity and safety • Research on visual cognition, autonomous mobility, and intelligent interaction • Scientific output generated from LEDS/LETER projects: course completion projects and scientific publications
Two Fields	Education & Professional Practice	• Educational courses and scientific initiation tied to practical application • LEDS: student-driven software development for regional companies
	Education & Research	• All research projects with companies contribute to both education and research • Scientific initiation, research, and final projects • LEDS and LETER: generate content used in scientific publications
	Professional Practice & Research	• Research projects with companies • Scientific initiation and course completion work • LEDS: software project at GB Lavanderia using genetic algorithms to solve real problems
Three Fields	Education & Professional Practice & Research	• Most research projects with companies fall here, especially where student involvement and learning are integrated • Artificial intelligence and autonomous vehicles projects provide deep integration across all fields • GB Lavanderia software project (via LEDS) — strong example of all three axes working together
	Regional Impact	• Most projects have local or regional impact • Research and training activities have led to the formation of tech startups and new faculty careers

		• LEDS: brings real-world problems from companies to the classroom, boosting regional company competitiveness • LETER: outreach to public schools boosts programming/robotics interest and future enrollments • Real-world problem solving in courses directly impacts society and the labor market • Company beneficiaries receive competitive tech solutions, while students gain professional exposure

Original Data

		Individual answers
One Field	Education	We are currently responsible for ongoing initiatives involving the federal vocational training network, whose pillars are learning methodology based on Project Based Learning, partnership with companies which provide real-world problems, and the use of digital technologies. I work in partnership with the Federal University of Espírito Santo at the Institute of Applied Computational Intelligence, focusing on Artificial Intelligence. "At IFES Colatina, I participate in the Teaching of Educational Technologies and Robotics Laboratory (LETER); in this project, we partner with state and municipal schools to teach programming and robotics to elementary school students in the public network. We are currently working on a project to train 40 teachers from the state network to train students to participate in the Brazilian Robotics Olympics, in which our Campos Colatina team is the current Brazilian champion. Still in relation to teaching, I believe that LEDS brings academia and industry much closer, as we incorporate knowledge in optimization algorithms into some projects that would probably not be possible through the private sector.
	Professional Practice	I was the head of an extension project in the field of Telemedicine. One of our main activities was to prepare online courses helping health professionals in their professional practice. I work in the development of autonomous vehicles (car, truck, airplane, eVTOL, ...) I was coordinator of the Teaching and Solutions Development Laboratory (LEDS), where we carried out projects in partnership with companies for software development. In these projects, the company returns the time committed by the professor and the operating cost of the laboratory used to develop the software to the institution in the form of equipment donations and pays the scholarships for the students.
	Research	I have been working in several applied research projects in partnership with companies. Broadly speaking, the subject are related the use of digital tecnologies in the work process aiming at increasing productivity, improving safety and reducing costs. I research artificial visual cognition, autonomous mobility, and intelligent autonomous interaction. The execution of these projects, whether on Leter or Leds, generates rich content for writing and publishing course completion projects and scientific articles. We've had both.
Two Fields	Education & Professional Practice	All examples I have presented could be place here. The courses taught and the scientific initiation promote education and an educational practice, when considered in this way. At LEDS, we develop software for companies in the region, using students as labor.

	Education & Research	All the research projects in parternship with companies could be place here. Scientific initiation, research projects, and course completion works, etc. In both LEDS and LETER, these are projects whose execution generates information that can and is used in publications
	Professional Practice & Research	All the research projects in parternship with companies could be place here. Scientific initiation, research projects, and course completion works, etc. At Leds, we developed software for sequencing production lines at GB Lavanderia, in which students applied a genetic algorithm with multiple objectives to solve the problem. This example fits into professional practice, education and teaching in my opinion.
Three Fields	Education & Professional Practice & Research	All the research projects in partnership with companies could be placed here, but the impact is normally local. I believe that our work in artificial intelligence and autonomous vehicles provides an excellent opportunity to integrate the four axes. No Leds, o desenvolvimento de software para o sequenciamento de linhas de produção da GB Lavanderia, aplicando algoritmo genético com múltiplos objetivos, se enquadra na prática profissional, na educação e no ensino, na minha opinião
	Regional Impact	The impact is either local or regional. From the research and courses conducted, several startups have been established, actively developing cutting-edge technology nationally. Additionally, some of those involved in the research contribute to academia as professors, disseminating the acquired knowledge. "Bringing students and teachers closer to the world of work, in the case of LEDS. The application of techniques to . problems that would hardly be known by regional development companies. We are increasing the competitiveness of regional companies, as we provide tools to facilitate the execution of their activities. At Leter, training of public school students in programming logic and robotics. This training indirectly increases the demand for courses at the institution, as we visit several elementary schools. It depends on the project scale. Most of them have local impact. If you address real-world problems from the workplace in your educational activities, you will bring impacts to society. The company that now has a software product that can be a competitive differentiator, the students and teachers who approach the world of work, the software developed was developed applying techniques that would be difficult to apply by companies outside academia

BRASIL: IFSP (1 individual answer, Institutional answer)

Translated and organized

		Individual Answer	Institutional answer
One Field	Education	• Portuguese as an Additional Language course for immigrants (Bolivia, Venezuela, Haiti) to assist in visa applications.	• Support for the implementation of Oficinas 4.0 at campuses in São Carlos, Guarulhos, and Itaquaquecetuba (Fomento SETEC).
	Professional Practice	• FIC (Initial and Continuing Training) course on photovoltaic panel installation for workforce inclusion.	• Cooperation agreement with Universia (Santander Group's education/employability company).
	Research	• Research partnerships with companies like Enel (energy) and Heart Institute (healthcare)	• Lithium battery research (IFSP São Bernardo do Campo + Energy Source)
Two Fields	Education & Professional Practice	• Electrical systems and installation of specialized equipment	• LabSol IFSP Birigui + City Hall: event during National Female Entrepreneurship Week
	Education & Research	• Control & Automation applied to artificial organ evaluation/creation	• Evaluation of STEM-based educational models in basic education (IFSP Campinas + LSI-TEC)
	Professional Practice & Research	• Renewable energy	• Innovation projects via IA² program (MCTI), with Inova + Inoventures IT company
Three Fields	Education & Professional Practice & Research	• Renewable energy	• Multidisciplinary Center for Brewing Technology (IFSP Sertãozinho): Labs and experts developing applied brewing sector solutions
	Regional Impact	• 38 active campuses, each connected to its local productive ecosystem • Recognized need for stronger industry collaboration.	• SVSA (IFSP Salto + Social Welfare Dept of Salto-SP): recognized nationally by the Ministry of Citizenship • Diagnosis and innovation model for Birigui-SP's Metallurgical and Furniture APLs (IFSP Birigui + City Hall)

Original Data

Individual answers

One Field	Education	Around the campus, we have immigrants from Bolivia, Venezuela, and Haiti; as a sample; one of the actions is called Portuguese as an additional language to assist in the application for a permanent visa to attend the Federal Police.
	Professional Practice	In different areas, we have courses called FIC. One example in my area, we have a course on the installation of photovoltaic panels to help the inclusion of people in the job market.
	Research	We have research groups and some work with companies such as Enel (electric power company), Heart Institute (hospital).
Two Fields	Education & Professional Practice	Electrical systems and installation of specific equipment
	Education & Research	Control & Automation & Evaluation/Creation of Artificial Organs.
	Professional Practice & Research	Renewable energy
Three Fields	Education & Professional Practice & Research	Renewable energy
	Regional Impact	We have approximately 38 active campuses, each one works with the local productive arrangement. We need to improve interaction with the industry. I don't have an analysis of the impact.

Institucional answer

One Field	Education	23437.000051.2023-10 Apoio à Implementação das Oficinas 4.0 sobre dos campus: São Carlos, Guarulhos e Itaquaquecetuba (Fomento Setec)
	Professional Practice	https://www.ifsp.edu.br/component/content/article/17-ultimas-noticias/2659-ifsp-e-universia-%20lancam-portal-de-empregabilidade (IFSP e Universia)
	Research	23311.000624.2018-56 - Análise, classificação e detalhamento de baterias de Lítio parceria entre o IFSP SBV com a Energy Source

Two Fields	Education & Professional Practice	23429.001327.2021-14 MULHERES EMPREENDEDORAS – LabSol IFSP BRI com a Prefeitura Municipal de Birigui https://bri.ifsp.edu.br/index.php/informativos/3097-labsol-promove-a-1-semana-nacional-do-empreendedorismo-feminino
	Education & Research	23305.006128.2021-91 Avaliação do uso de um modelo educacional utilizando ferramentas de STEM em escolas da educação básica. Parceria do IFSP Campus Campinas com o LSI-TEC.
	Professional Practice & Research	3305.008291.2020-15 Colaboração em projetos de Pesquisa e Inovação aprovados no programa IA² do MCTI - Ministério de Ciência, Tecnologia e Inovação. Parceria Inova com Inoventures Tecnologia da Informação
Three Fields	Education & Professional Practice & Research	https://srt.ifsp.edu.br/centro-multidisciplinar-de-tecnologia-cervejeira Caso queira mais ou melhores exemplos pode verificar em https://docs.google.com/spreadsheets/d/e/2PACX-1vTstM7sddyUvBklHSTZouuipQKIqFlVYyfOfFe6bGG6k5I2vT3FxwFHXAhpLWgabSwdnB2WqeE-sDJW/pubhtml#
	Regional Impact	https://svsateste.itapetininga.sp.gov.br/svsa-web/ O SVSA surgiu de um projeto de pesquisa e inovação desenvolvido pelo Instituto Federal de São Paulo (IFSP), Câmpus Salto, em parceria com a Secretaria de Assistência Social e Cidadania (SASC) do município de Salto-SP. Foi selecionado como uma das melhores experiências em Vigilância Socio Assistencial pelo Ministério da Cidadania. 23429.001441.2021-36 Diagnóstico e modelo de interação para a inovação - APLs Metalúrgico e Moveleiro de Birigui-SP, parceria do Campus Birigui com a Prefeitura Municipal de Birigui.

BRASIL: UFABC (5 individual answers and Institutional answer)

Translated and organized

		Individual Answers	Institutional answer
One Field	Education	• Casa Neon Cunha (NGO), Early Childhood and Basic Education Schools, Agroecology Studies Center partnerships • Educational activities with EJA students in public schools/universities • Teacher insertion in training to collaboratively solve problems	• REDAES – Network of public higher education institutions in São Paulo state
	Professional Practice	• Service provider via INCRA to rural settlements (mostly MST) • Schools, hospitals, management engineering professor • Mentoring students in internships with companies/industries	• Education internships in public schools in the ABC region • Hundreds of companies hosting internships
	Research	• Research at ITAIPU Technology Park (Ajuricaba Biogas Condominium) • Collaboration with Ministry of Health, public/private research institutions, hospitals • Innovation in operations management	• Hospitals, Federal research institutions (e.g., CENIPEN) • UFABC Innovation Agency projects • Industry/Academic Doctorate Program • Units for Gender Studies, Agroecology, African and Afro-Brazilian Studies
Two Fields	Education & Professional Practice	• Study centers for Agroecology and Gender, schools • Undergraduate and specialization courses (including company courses till 2009) • Partnerships with universities, public sector, and industry for internships and training	• Education internships in public schools (ABC region)
	Education & Research	• Work with INCRA, schools • Research and publications on undergraduate learning processes and methodologies	• Industry/Academic Doctorate Program • Units for Gender Studies, Agroecology, African and Afro-Brazilian Studies

		• Research supporting public policy development in education • Teacher training driving research and new investigative questions	
	Professional Practice & Research	• Work with INCRA, hospitals • Flipped classroom and competence-based learning recognized internationally (Reimagine Education Award) • Collaborative research reports aligning educational goals with labor market demands and social/environmental responsibility	• Hospitals • Industry/Academic Doctorate Program • Units for Gender Studies and Agroecology
Three Fields	Education & Professional Practice & Research	• Work in the Agroecology and Gender Centers • Collaboration on teaching committee for Brazilian Physics Society (SBF) reports analyzing physics teaching nationally	• Units for Gender Studies, Agroecology, African and Afro-Brazilian Studies
	Regional Impact	• Coordination of UFABC Agroecology Studies Center, participation in Gender Studies Center • Collaboration with City Secretary of Education • Studies with Brazilian Physics Society for improving physics education in Brazil • Developed educational courses for vulnerable populations with social organizations • Active participation in municipal legislative proposals and local/regional social, economic, and environmental development efforts	• Network spanning 7 cities in the ABC region, a historic industrial hub in São Paulo state

Original Data

		Individual answers
One Field	Education	Sociedade: Casa Neon Cunha (ONG), Escolas de Educação Infantil e Básica, Diversas associações de produtores de alimentos agroecológicos via Núcleo de Estudos de Agroecologia da UFABC. City Secretary of Education, public and private schools. PhD Parcerias com escolas públicas e universidade [em disciplinas de graduação] para promover atividades pedagógicas com estudantes EJA [Educação p jovens e adultos] Insertion of teacher in training in schools so that together we can develop solutions to the problems identified.
	Professional Practice	Sociedade: prestadora de serviços via INCRA aos assentamentos rurais de responsabilidade federal do estado de São Paulo, em sua grande maioria do MST. Schools and Hospitals. Professor of Management Engineering - Mentoring of students doing internships in enterprises and industries.
	Research	Sociedade: Parque Tecnológico de ITAIPU, pesquisa sobre o Condomínio de Biogás Ajuricaba. Ministry of Health, Public Universities and Private Research Institutions, and Hospitals Innovation and Innovativeness on Operations Management - I'm not personally involved in any research collaborations at the moment.
Two Fields	Education & Professional Practice	Os Núcleos de Estudo (Agroecologia e de Gênero) Schools Undergraduation and Especialization (in company courses until 2009) Parcerias entre universidade, setor público e/ou indústria para estágios e programas de treinamento de estudantes. I'm not involved in any collaboration in this level
	Education & Research	Trabalho junto ao INCRA Schools I made some research and small publications in order to learn and better understand the challenges of the undergraduate learning process and methodologies Elaboração de pesquisas que possibilitem o desenvolvimento de políticas públicas para a melhoria da qualidade de serviços prestados tanto no setor público como privado (educacional) Teacher training practices develop research practices and motivate novel questions of investigation and methodologies.
	Professional Practice & Research	Trabalho junto ao INCRA Hospital

		Fliped class and competence-based learning practices from 2014 until 2021 when I got international recognition in this field (Reimagine Education Award) Relatórios de pesquisa elaborados de forma colaborativa entre diferentes setores sociais que mobilizem demandas do mundo do trabalho e os objetivos formativos das universidades, assim, buscando uma formação de qualidade com responsabilidade social e ambiental. [SBF] I'm not involved in any collaboration at this level.
Three Fields	Education & Professional Practice & Research	Trabalho junto aos Núcleos de Agroecologia e de Gênero Public schools. I did not understand " three/four fields" Colaboração na comissão de ensino na SBF para promoção de relatórios com dados de pesquisa para analisar e mapear as escolas brasileiras no que se refere ao ensino de física no Brasil. Promovendo documentos/dados para subsidiar políticas públicas em educação. I'm not involved in any collaboration in this level.
	Regional Impact	Sociedade: Núcleo de Estudos de Agroecologia da UFABC (Coordenadora Técnica) e Núcleo de Estudos de Gênero da UFABC (participante da área de C&T). City Secretary of Education, Local Estudos colaborativos com a Sociedade Brasileira de Física [SBF] para promover relatórios sobre o ensino de física nas escolas brasileiras na comissão de ensino Together with a social organization, we developed a course to Foster education to people in vulnerable situations. Os Núcleos de Estudo (Agroecologia e de Gênero) City Secretary of Education small impact at that time Aproximação entre universidade e SBF para elaboração e/ou proposição de ações que visem a melhoria dos problemas locais e regionais das regiões como participação nas câmaras municipais ou propostas de leis. Buscando o desenvolvimento econômico com o engajamento social e ambiental responsável. I'm not involved in any collaboration in this level.

Institucional answer

One Field	Education	REDAES - Network of public institutions of Higher Education of Sao Paulo State.
	Professional Practice	Education internship in public schools of ABC region Hundreds of companies for internship (https://prograd.ufabc.edu.br/estagios/convenios#:~:text=Conv%C3%AAnios%20de%20coopera%C3%A7%C3%A3o%20de%20Est%C3%A1gio)
	Research	Hospitals Federal Research Institutions (e.g. CENIPEN)

		Projects of Innovation Agency of UFABC Industry/Academic Doctorate Program Unit for Gender Studies Unit of studies for Agroecology	
Two Fields	Education & Professional Practice	Education internship in public schools of ABC region	
	Education & Research	Industry/Academic Doctorate Program Unit for Gender Studies Unit for Agroecology Studies Unit for African and Afro-Brazilian Studies	
	Professional Practice & Research	Hospitals Industry/Academic Doctorate Program Unit for Gender Studies Unit for Agroecology Studies	
Three Fields	Education & Professional Practice & Research	Unit for Gender Studies Unit of Studies for Agroecology Unit for African and Afro-Brazilian Studies	
	Regional Impact	Consórcio Intermunicipal do Grande ABC. Network of the 7 cities composing the ABC region (they were an industrial pole at the state of Sao Paulo).	

ANNEX 3: Phase 4: F2F in Pereira, November 2024

Topics	Category	UTP	AREANDINA	IFES	IFSP	UFABC
T1-Institutional alignment with inclusive economic growth	The ecosystem is…	Somewhat/Close	Close	Somewhat/Close	Somewhat/Close	Somewhat
	Priority average	3,83	4,67	4,8	3,17	2,57
	Range of priority	[3, 4]	[4, 5]	[4, 5]	[2, 4]	[2, 3]
T2- Partner adaptability and collaborative capacity	The ecosystem is…	Somewhat/Close	Somewhat/Close	Somewhat/Close	Somewhat/Close	Not at all/Somewhat
	Priority average	3,83	4	4,75	3,33	2,29
	Range of priority	[3, 5]	[4, 4]	[4, 5]	[3, 4]	[1, 4]
T3-Shared and democratized data systems	The ecosystem is…	Not at all/Somewhat/Close	Not at all/Somewhat	Somewhat	Not at all/Somewhat/Close	Not at all/Somewhat
	Priority average	4,00	2,83	4,80	3,67	2,00
	Range of priority	[3, 5]	[2, 3]	[4, 5]	[2, 5]	[1, 3]
T4-Long-term, outcomes-based funding strategies	The ecosystem is…	Not at all/Somewhat	Somewhat	Somewhat/Close	Not at all/Somewhat	Not at all/Somewhat
	Priority average	3,50	3,00	4,20	3,00	2,43
	Range of priority	[2, 5]	[3, 3]	[3, 5]	[1, 5]	[1, 5]
T5-Equity and co-design with marginalized communities	The ecosystem is…	Not at all/Somewhat/Close	Somewhat	Not at all/Somewhat/Close	Somewhat/Close	Not at all/Somewhat
	Priority average	3,50	3,17	4,80	2,50	2,00
	Range of priority	[3, 5]	[3, 4]	[4, 5]	[1, 3]	[1, 3]
T6-Population-centred innovation strategies	The ecosystem is…	Not at all/Somewhat/Close	Somewhat/Close	Not at all/Somewhat/Close	Not at all/Somewhat	Not at all/Somewhat/Close
	Priority average	3,50	3,33	4	3,50	2,71
	Range of priority	[2, 5]	[3, 4]	[3, 5]	[3, 5]	[2, 4]
T7- Shared value proposition across the ecosystem	The ecosystem is…	Not at all/Somewhat	Somewhat/Close	Not at all/Somewhat/Close	Not at all/Somewhat/Close	Not at all/Somewhat
	Priority average	3,50	3,17	4	3,17	2,71
	Range of priority	[3, 4]	[2, 4]	[2, 5]	[1, 5]	[2, 4]

T8-Ecosystem engagement in policymaking	The ecosystem is…	Not at all/Somewhat/Close	Somewhat/Close	Not at all/Somewhat	Not at all/Somewhat/Close	Not at all/Somewhat
	Priority average	3,50	3	3,8	3,33	2,86
	Range of priority	[1, 5]	[3, 3]	[3, 5]	[1, 5]	[1, 5]
T9-Institutional investment in a culture of innovation	The ecosystem is…	Somewhat/Close	Not at all/Somewhat/Close	Somewhat/Close	Somewhat/Close	Not at all/Somewhat
	Priority average	3,67	3,17	4,6	2,33	2,43
	Range of priority	[2, 5]	[2, 4]	[4, 5]	[1, 3]	[2, 3]
T10-Permeable partnerships for lifelong learning and re/upskilling	The ecosystem is…	Somewhat/Close	Somewhat/Close	Close	Somewhat/Close	Not at all/Somewhat/Close
	Priority average	4,00	3,67	4,8	3,83	2,00
	Range of priority	[3, 5]	[3, 5]	[4, 5]	[3, 5]	[1, 4]

Red: highest priority average
Green: lowest priority average
Yellow: answer covers all range
Blue: all participants agreed on the priority level