BiCI STRATEGY

For the incorporation of a Public Engagement with Research and Development approach into Universidad de los Andes

Universidad de los Andes

Bidirectional Commitment in Innovation

innovación>uandes

Santiago, 2025

CONTENT

I.- Introduction

Universidad de los Andes (UANDES) is a higher education institution rooted in Christian values, known for its academic excellence, holistic student development, and deep commitment to serving society. The university offers a diverse array of academic programs and continuing education opportunities, with over 11,000 enrolled students. It holds full accreditation in all areas—teaching, management, quality assurance, research, and community engagement—by the National Accreditation Commission through 2028.

In its Institutional Strategic Plan (ISP), the university aims to be recognized by 2026 for its social commitment, with collaboration and interdisciplinarity as core pillars, especially in the realm of research and development (R&D) (1). In line with this vision, the university's Community Engagement Policy defines engagement as a dynamic, mutually beneficial relationship between UANDES, other higher education institutions, and the broader local, national, and international communities. This policy encourages the university community to recognize both internal and societal needs, using its strengths to foster collaborative, reciprocal benefits. UANDES has identified applied research, development, and technology transfer as key pathways to realizing this engagement (2).

In this institutional context, the BiCI project—short for *Bidirectional Commitment in Innovation*—was initiated by the Vice Chancellor's Office for Research through its Innovation Department. The aim of BiCI is to integrate a socially committed approach to research and development (I+Dc), internationally recognized as *Public Engagement with Research*. This approach focuses on tackling social, economic, and production challenges through active collaboration with stakeholders who are directly impacted by or have decision-making influence over these issues. I+Dc emphasize research that is not just *for* society, but *with* society.

BiCI is funded by Chile's National Research and Development Agency (Agencia Nacional de Investigación y Desarrollo – ANID) through its InES I+D fund and began in November 2022. The project also includes collaborative partnerships with Universidad de La Frontera (UFRO) and Universidad Católica del Norte (UCN), with each institution engaging through its respective innovation departments.

In its first year, the BiCI team extensively explored both academic literature and real-world experiences[1] from universities and research organizations in Europe and North America, regions at the forefront of developing strategies and departments dedicated to Public Engagement with Research. Institutions in the UK[2], New Zealand, Ireland, Canada, and the U.S. have established

[1] A comprehensive documentary review was conducted of scientific and technical sources on Public Engagement with Research, its conceptual development, and international experiences of implementation within higher education institutions. In parallel, the project received visits from two leaders in Public Engagement from the Universities of Cambridge and Bristol, Lucinda Spokes and Kate Miller.

[2] In the United Kingdom, from 2008 onwards, there was significant public investment through Research Councils UK, in partnership with the UK Funding Councils and the Wellcome Trust, which launched the Beacons for Public Engagement initiative. This initiative supported the development of Public Engagement units in six universities across the country, conceived as institutional "beacons", and has since continued to generate annual competitive funding to strengthen these areas. This has positioned the UK at the global forefront of the field.

frameworks and methodologies to embed a culture of socially engaged research from the very start of their projects.

Their experiences demonstrate that I+Dc not only amplifies the positive societal impact of research but also brings significant benefits to the institutions themselves. It enhances the visibility, quality, and reach of scientific work; fosters the development of new skills among researchers and students; and builds greater public trust in academia. Additionally, this approach supports institutional accreditation processes, helping institutions attract and retain students while securing external funding.

More recently, these institutions have developed evaluation frameworks to objectively monitor and assess the impact of I+Dc on scientific excellence, student development, public perception of academic work, and the long-term societal impacts of research[3] (3-7).

Building on this global context, the BiCI team recognized the importance of formally integrating I+Dc into institutional policies. To this end, UANDES issued an Institutional Declaration of Commitment to I+Dc and updated its Research and Innovation Policy to align with this approach.

A governance system was established to oversee the coordinated implementation of I+Dc at the institutional level. This system includes clearly defined roles and responsibilities, an Institutionalization Committee consisting of university leadership in research, innovation, and engagement, and an Engagement Advisory Board made up of experienced professionals and entrepreneurs in socially engaged innovation (detailed in Section VII). This governance structure has been operational since the launch of BiCI.

Building on this progress, the next crucial step is to systematize and communicate to the university community the principles, pillars, and key actions that will guide the implementation of I+Dc—along with the mechanisms for monitoring and assessing the process over time. These elements are formalized in this Institutional Strategy for the Adoption of Engaged Research and Development at UANDES.

It's important to note that this strategy is intended to be dynamic. It will evolve annually in response to:

a) insights gained through implementation,

b) new networks and collaborations with I+Dc experts, and

c) internal or external changes (in institutional priorities or national science and technology policies) that may affect its execution.

[3] Each institution develops its own reference frameworks and indicators to measure such impact. A notable example is the framework developed by the UK Research Excellence Framework (REF), the body responsible for assessing the quality of research in higher education institutions in the UK. In the document *Panel criteria and working methods – Annex A: Examples of impacts and indicators* (2019), the REF proposes examples of indicators for assessing the impact of research on society across different thematic areas. These indicators are grouped into domains such as human and animal health, wellbeing, commerce and the economy, public policy, and the environment, among others. For instance, one indicator of impact in health is: "improved quality of life for individuals who have used new or improved products arising from university research".

II.- Purpose of the Strategy

The BiCI Strategy aims to amplify the societal impact of research and development at UANDES by embedding a Public Engagement in Research and Development (I+Dc) framework into applied research processes, graduate education, and the evaluation of academic performance.

Internally, the strategy seeks to enhance the university's community engagement systems and increase the social relevance of its research activities. It will also foster the development of skills and capabilities among researchers and students. As a result, the strategy will establish key performance indicators to assess quality, supporting the university's institutional accreditation processes in alignment with the standards set by Chile's National Accreditation Commission (CNA).

III.- Objective and Scope of the Strategy

The BiCI Strategy aims to integrate the I+Dc approach across all research areas, disciplines, and scientific education at Universidad de los Andes. It offers a comprehensive framework for short- and medium-term planning, while also establishing a system for evaluating outcomes. This approach facilitates continuous feedback and drives ongoing improvement.

The strategy encompasses the entire university community**,** including researchers, students, and support staff involved in research and innovation**,** as well as the broader socio-productive environment, which acts both as a collaborative partner and the ultimate beneficiary of the strategy's impact.

IV.- The Concept of Public Engagement in Research and Development

Publicly Engaged Research and Development (I+Dc) is a methodological approach to science-driven innovation that emphasizes a two-way relationship between academia and its broader social context[4]. Its central aim is to ensure that research and development outcomes meaningfully contribute to societal well-being (8-10). In practice, this involves more than just sharing information; researchers are expected to listen, engage in dialogue, collaborate with stakeholders, and, in some cases, share decision-making power throughout the process (11-13).

In the context of I+Dc, the "relevant environment" refers to all societal groups that have an interest in, are involved in[5], or are directly or indirectly impacted by the outcomes of research. These may include companies, policymakers, public sector entities, students, formal institutions, grassroots civil society groups, academic stakeholders (both national and international), or end-users of innovations (14).

I+Dc is put into practice in spaces of co-creation and collaboration where mutual learning can take place and where research and development actions are designed or carried out jointly. This

[4] Some authors refer to it simply as the non-scientific community
[5] Involved either voluntarily or by virtue of a policy responsibility, as is the case with governmental bodies.

approach poses a challenge, especially for the scientific community, as it requires moving away from a traditionally top-down model to a horizontal dialogue that values the expertise of all participants: researchers contribute technical knowledge, while stakeholders offer experiential and contextual insight (e.g., as users, decision-makers, business leaders, etc.). Despite the challenges, the mutual benefits are significant. +Dc not only lends greater legitimacy and validation to scientific research but also enhances the societal relevance of its outcomes, improves the likelihood of adoption, fosters new research pathways, builds researchers' skills, increases public trust in science, and stimulates broader interest and understanding of scientific work (15-17).

In practice, I+Dc can take many forms depending on the nature of the project, its objectives, and the characteristics of the stakeholders involved. Engagement activities may vary in the level of participation, ranging from consultative formats, such as online surveys that collect stakeholder input without necessarily incorporating it into the research, to highly participatory models, such as citizen committees, where stakeholders are empowered to make key decisions independently of the researchers (18-20).

V.- Foundational Principles for Public Engagement in I+Dc

At UANDES, Publicly Engaged Research and Development (I+Dc) must be grounded in eight core principles. These align with the university's mission and strategic plan, and they aim to ensure the quality, integrity, and inclusiveness of the research process.

- **TRANSPARENCY AND HONESTY** Stakeholders must have a clear understanding of the purpose of the engagement activities, why their participation is being sought, and the methods that will be used. This includes setting realistic expectations regarding their level of involvement and any potential benefits. Regardless of the results, research outcomes—whether favorable or not—should be communicated back to participants. Maintaining transparency throughout the process is essential to building trust and managing expectations effectively (21-23).
- **RESPECT FOR DIVERSITY AND INCLUSIVE PARTICIPATION.** An inclusive environment should be fostered, where the diverse perspectives of participants are actively heard, valued, and incorporated into the process—particularly those that may radically challenge the ideas driving the project. This requires a clear strategy to ensure the meaningful participation of individuals who are often marginalized, silenced, or dissenting (23). It is also essential to avoid discursive practices that could sway or direct participants' opinions toward a predetermined line of thought.

  This principle is deeply tied to the concept of "epistemic justice"[6] and achieving it demands expertise in participatory methods from those leading the I+Dc processes (23). It ensures the legitimacy and credibility of the actions and outcomes of R&D projects (25-26).

[6] A principle that promotes the recognition, respect for, and equitable integration of diverse perspectives, forms of knowledge, and experiences in R&D processes. It implies valuing not only academic knowledge, but also the practical, territorial, and experiential

- **ETHICS.** I+Dc must uphold the rights of all participants, including the protection of data privacy and confidentiality. Ethical standards for scientific research must be strictly followed, including securing institutional ethics approval, obtaining informed consent, and requesting parental permission when involving minors. Additionally, when working within hierarchical organizations, researchers should inform and coordinate with relevant supervisors or authorities (27-29).
- **COMMITMENT TO SCIENTIFIC EXCELLENCE AND IMPACT.** Engaging with key stakeholders should improve the quality of research and its outcomes, such as publications, theses, policy proposals, or intellectual property, while also amplifying its potential to make a positive impact on individuals and communities (30, 31).
- **INTERDISCIPLINARITY.** Societal challenges are multifaceted and seldom confined to a single academic discipline. I+Dc should foster collaboration between researchers from diverse fields and community members to build a more comprehensive understanding of issues and co-create innovative, effective solutions. The convergence of different perspectives, knowledge, and experiences facilitates the understanding and development of solutions to real-world problems (32, 33).
- **PROMOTION OF DIALOGUE.** I+Dc goes beyond simple dissemination or participant consultation. It fosters meaningful dialogue—structured within a clear framework and using methods adapted to each stakeholder group—while remaining horizontal, free from predefined hierarchies. In this environment, the concerns of all participants are valued as they work toward a shared goal. Ideally, this process also grants participants a degree of decision-making power over both the process and its outcomes. Special attention should be given to ensuring that the language and tools employed (such as visuals, platforms, and group dynamics) are accessible and comprehensible to everyone involved (15, 22, 34).
- **RELEVANCE.** Projects should focus on issues that are meaningful to both researchers and the communities involved. This requires engaging stakeholders from the outset, particularly during the project design phase, to define or validate the key themes to be explored (21, 29).
- **STRATEGIC NETWORK BUILDING.** Given that the BiCI initiative is a pioneering effort in Chile, it is essential for those involved in I+Dc projects to actively engage in ongoing interaction and collaboration within networks that include stakeholders who influence the Science, Technology, Knowledge, and Innovation ecosystem (for example, decision-makers from science and technology organizations). This approach, known as "High-Level Networking," aims to expand and accelerate the integration of I+Dc into the broader ecosystem, involving other universities and both public and private funding bodies (35).

knowledge of different actors, while creating the conditions for all to participate, be heard, and contribute on equal terms to the development of solutions.

VI.- Pillars for Incorporating I+Dc at UANDES

Most international universities that have advanced in integrating and formalizing Public Engagement with Research have established clear strategies to guide their efforts and focus institutional resources effectively. While these strategies differ depending on the country, institutional size, and specific priorities, they generally converge around three core areas: a) training programs for students to develop engagement-related skills and support their curricular development; b) dissemination of I+Dc activities and outcomes; and c) internal funding for small-scale I+Dc projects (36).

Drawing on the experience of leading international institutions in Public Engagement with Research, along with UANDES's current strengths and priorities, the guiding principles for implementing I+Dc, and the framework set by BiCI's funding body, seven foundational pillars have been proposed to support the integration of I+Dc into the university. These pillars aim to foster a committed and enriching culture where the university community (professionals, researchers, and students) collaborates with society to maximize the impact of research (see Figure 1).

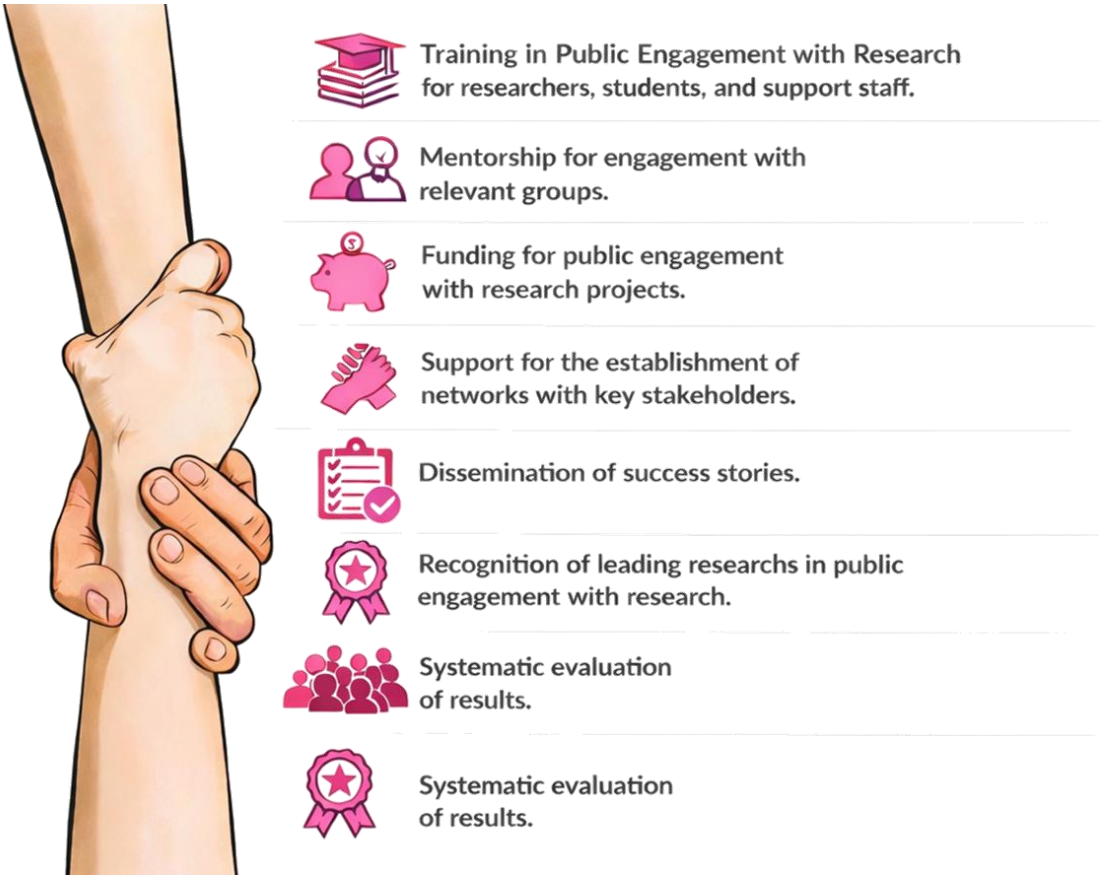

Figure 1. Strategic pillars for the incorporation of I+Dc at UANDES.

(Source: Authors' own elaboration)

It is worth noting that, in this initial phase, the strategy is primarily funded by BiCI and implemented by permanent staff within the Innovation Department. Looking ahead, the goal is to secure institutional funding to ensure its long-term continuity and to develop a level of self-sustainability. As a point of reference, universities that have adopted a Publicly Engaged Research and Development (I+Dc) model—particularly in the UK and the U.S.—typically allocate between 2% and 16% of their annual budgets to support and expand these efforts. Research by Weert and Hudson (36) found that U.S. public and private universities, as well as community colleges, dedicate between USD $1 million and $7 million annually to cover staffing and activities related to training, outreach, and support for Public Engagement with Research.

A description of each of the seven strategic pillars is detailed below.

6.1 Training and Capacity Building

Training plays a crucial role in successfully embedding I+Dc into a university's culture. Theoretical and practical knowledge drawn from other experiences helps stakeholders understand and appreciate how the I+Dc approach contributes to both science and social well-being (37). Moreover, putting I+Dc into practice requires specific skills and competencies, such as **effective communication** with non-academic audiences, **adapting technical language**, and **creating accessible content**, skills which are generally not taught or developed during undergraduate and graduate studies. Training equips researchers, students, and professionals with the necessary tools to engage horizontally and effectively with society, and to communicate their knowledge and ideas in ways that are easy to understand. Without this preparation, scientists may struggle to communicate their ideas effectively, which could hinder opportunities for collaboration. In the worst-case scenario, it could further alienate community groups that have long felt excluded from the scientific sphere (38, 39).

At the institutional level, developing training programs internally can help build a stronger and more coherent institutional identity. Cohesion and collaboration around these objectives are strengthened when a university community shares a common understanding of the I+Dc values and goals (40, 42).

With this in mind, the BiCI Strategy aims to establish a permanent training system at the university to equip the community with the foundational skills to understand, lead, and/or manage I+Dc processes. Initially, partnerships will be formed with international leaders in the field, adapting their offerings to UANDES's needs and delivering them in both synchronous and asynchronous online formats. Over time, these training opportunities are expected to be enriched with UANDES's own practical experiences in I+Dc and made permanently available to anyone interested.

It's also worth noting that offering I+Dc training to graduate students will help strengthen their academic and professional profiles by providing them with the knowledge and skills to effectively engage with society. The objective in the long-term is to integrate I+Dc training into postgraduate curricula, contributing positively to institutional accreditation processes as a form of curricular innovation which, in alignment with the university's mission and global trends, responds to the growing needs of society.

6.2 Methodological Mentorship for Effective Engagement

The term “mentoring” refers to the support provided to researchers by a professional or team of professionals throughout each stage and task involved in engaging with external stakeholders in I+Dc projects (43). The role of mentors can be described as that of facilitators who help define strategies and plan activities, ultimately optimizing the time required and increasing the likelihood of success in tasks related to engaging the priority groups identified in an I+Dc project (44).

The interdisciplinary BiCI team will take on the responsibility of guiding and supporting researchers who take on the challenge of implementing I+Dc, whether through BiCI’s internal funding or other sources. This mentoring will focus on helping them plan and carry out engagement efforts within their projects in a way that reflects the principles of I+Dc, aligns with the project’s purpose, responds to the characteristics of the involved groups, and fits the local context. This ensures that engagement efforts lead to the expected outcomes.

To this end, a standardized methodology has been developed based on a set of nine steps inspired by the extensive experience of the University of Cambridge (45). These steps have been adapted to UANDES’s institutional context (see Figure 2). The planning process is addressed through four mentoring sessions, during which practical activities involving reflection and participatory analysis will be conducted with each project’s implementation team, supported by guided work materials.

At the end of the mentoring process, each team will produce a Stakeholder Engagement Plan. This plan will include everything from the analysis of the problem or challenge the project seeks to address, to the operational aspects of each engagement activity with the interest groups involved.

On a practical level, the mentoring will support key project decisions, such as:

- Identifying and prioritizing stakeholder groups,
- Determining the level of engagement appropriate for each group,
- Selecting suitable engagement activities tailored to the group’s characteristics,
- Choosing the right time and place for each activity,
- Defining actions needed to successfully carry out each engagement effort,
- Assigning team roles for each activity,
- Proposing indicators to assess the success of the engagement process.

It’s important to note that both the Engagement Plan and each mentoring session will be tailored to the specific characteristics of the project and the experience and capacity of the implementation team in stakeholder engagement.

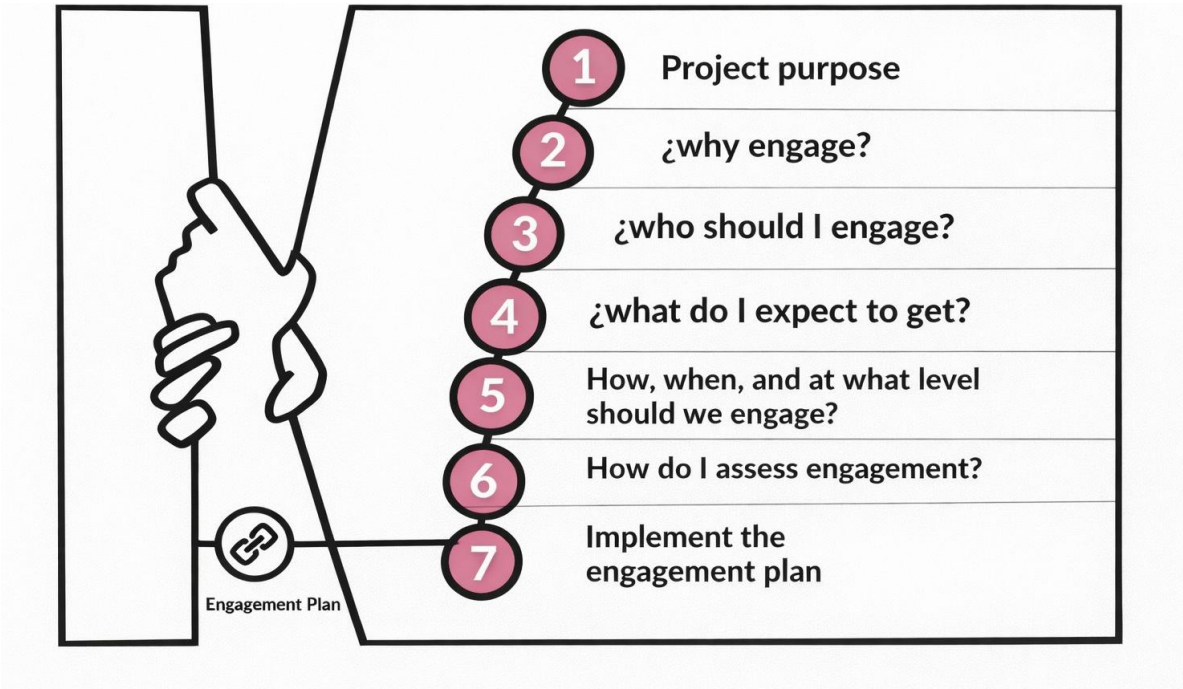

Figure 2. Stages of the mentorships for I+Dc inspired by the process proposed by the University of Cambridge.

Source: adapted from Spokes, 2023 (45)

6.3. I+Dc Funding

Most international universities committed to I+Dc offer funding for researchers to carry out small research projects that incorporate this approach. In some cases, these internal funds are designed to help advance research projects with the goal of later leveraging larger-scale external funding sources. Some noteworthy examples include:

- Queen Mary University (London, UK) offers four funding options to boost I+Dc: a) *Public Engagement Small Grants*: offers £1,000 monthly to faculty or students for projects that engage the (non-industry) community with research or teaching. Projects must demonstrate mutual benefit. b) *Patient Engagement Small Grants*: offers £1,000 monthly for initiatives that engage patients, caregivers, or service users in the university's health-related research or teaching. c) *Community Engagement Small Grants*: provides £1,000 monthly work with grassroots social organizations that have formally expressed a need that can be addressed through university-led research or training. d) *Large Grants*: offers up to £10,000 for more ambitious or larger-scale projects expected to contribute to the university's strategic priorities.
- University of Bath (Bath, UK) has two Public Engagement Funds: a) *Engage and Involve Grants*: offers up to £2,000 to faculty and PhD students for projects that aim to share research results with the community, validate findings, collaborate through citizen science, or host events in community spaces that help answer research questions. b) *Participate Grants Funding Call*: funds projects at three levels: <£1,000; <£10,000; and £10,000. These

projects emphasize participatory and equitable collaboration between the university and community organizations in southern England to generate scientific knowledge that addresses those communities' needs. Proposals must be submitted by community organizations and sponsored by a University of Bath researcher (47).

Other universities offering annual Public Engagement funding include the University of Bristol, University of Cambridge, and University of London, among others (48-50).

Using these valuable international experiences as reference and guide, and in line with the strategic aim of promoting I+Dc across the university community and scaling it to the national level, UANDES has established two initial funding lines:

a) BiCI Fund Researcher Track: it will provide up to CLP $12 million/year for two years to carry out interdisciplinary projects that address a clearly defined societal need using an I+Dc approach. Open to all disciplines, projects must identify and prioritize relevant stakeholder groups, engage with them from early stages, design dialogue, consultation, or co-creation engagement activities aligned with the project's goals and the nature of each group. Undergraduate and graduate student participation will be highly valued in this funding line.

b) Collaborative Funds: These are joint and co-funded grants with BiCI partner universities UFRO and UCN to strengthen institutional partnerships and expand BiCI's territorial reach:

- With UCN: The jointly developed "**Conecta I+D** " grant connects researchers from UCN and UANDES to collaborate on early-stage projects addressing a social challenge. The goal is to later apply for additional funding to scale the initiative. This fund provides CLP $6,000,000 for six months of execution. While not mandatory, stakeholder engagement is encouraged and will be positively evaluated.
- With UFRO: The "**Inicia tu Centro**" grant supports network-building between UFRO and UANDES researchers to co-develop a proposal for a joint R&D center focused on a cutting-edge topic. The proposal will be submitted to one of the ANID Centers Subdirectorate grants. This fund provides CLP $12,000,000 for a five-month execution period. Projects must identify relevant stakeholder groups affected by or interested in the center's future results and carry out participatory activities to jointly define or validate the center's research focus.

6.4 Showcasing Success Stories

One key component in all institutional strategies relating to Public Engagement with Research is dissemination (51-53).

Sharing success stories of projects or other initiatives that have fostered meaningful collaboration between academia and society toward a common goal is considered essential. These stories inspire other academics to adopt the I+Dc approach and also improve the public's perception of scientific work, encouraging broader community participation.

At the institutional level, it is also important to disseminate I+Dc strategies and annual I+Dc management reports, create dedicated spaces on the university website to invite public participation

(e.g., contact forms, chat features, event announcements), and organize annual events, among other actions.

As part of the BiCI Strategy, key outreach and dissemination actions will include:

- Ongoing documentation of BiCI-funded projects to produce audiovisual materials and create "success story" videos that can inspire other researchers. These stories will be shared not only through traditional channels (website, social media) but also integrated into training activities for the UANDES community.
- Regular promotion of public activities and key milestones, such as project launches or awards, the start of training programs, lectures, seminars, and experts visiting UANDES.
- Continuous updates to the BiCI website, including team information, roles, contact details, and clear guidance on how researchers can access support for engagement or make general inquiries.
- Highlighting technologies developed with an I+Dc approach within the UANDES technology portfolio. This early validation through engagement with users and stakeholders will increase their value, particularly for companies.
- Creating technical literature in Spanish to document I+Dc project experiences and the university's progress in adopting the approach and making this information accessible to a broad audience.
- Presenting success stories at national and international conferences as speakers or panelists.
- Organizing annual events to showcase progress in implementing the BiCI Strategy at UANDES and highlight success stories. These events will feature national and international experts in I+Dc and include activities that encourage networking among attendees.

6.5. Network Building Support

Building networks and collaborating with the relevant environment is one of the greatest challenges of I+Dc, requiring significant effort and carrying a high degree of uncertainty (there are no guarantees of success). At the same time, it is a *sine qua non* condition for its proper development and for ensuring the quality, applicability, scalability, and sustainability of its outcomes (54).

Ideally, engaging and recruiting key stakeholder groups should occur before or during the initial stages of an I+Dc project. This is because the entire process of defining the methodological and operational aspects of engagement (see Section 6.3) hinges on the assumption that these groups are committed to participating.

The ability of research teams to build effective networks varies widely, depending on factors such as their training background[7], research focus, level of seniority, individual social capital[8], involvement

[7]European-level studies show that researchers from the social sciences, humanities, and the arts tend to demonstrate a higher degree of engagement with their local communities. In relation to engagement with public policy and the media, disciplines such as law, business, and human and animal health also stand out in comparison with other fields.

[8] The social resources that a person possesses in terms of connections, relationships, and personal networks.

in non-academic activities, and innate social skills (55). Additionally, the success of networking efforts is shaped by external factors, including the public perception of the hosting institution, the characteristics of the local context, and the nature of the community groups with which researchers aim to collaborate.

Given this variability, most institutions with Public Engagement departments incorporate formal support mechanisms for network-building within their institutional strategies (56). Key activities outlined in these strategies typically include hosting and participating in events, joining and participating in national and international networks, and most importantly, helping researchers connect by leveraging existing contacts and networks held by Public Engagement staff or departments.

Within the BiCI framework, the following actions will be taken to facilitate network-building with relevant stakeholders:

- At the start of each I+Dc project funded by BiCI, a *strategic mentor* will be assigned from the Engagement Board (see Section 7.2.2). Mentors will be chosen based on their thematic alignment or potential contribution to the project. In addition to providing strategic guidance, they will help facilitate access to their own networks, which may support project execution, the maturation and scaling of results, and eventually transfer to relevant users or sectors.
- Each year, the Innovation Directorate will organize a public-facing event focused on I+Dc, inviting relevant public and private actors who may be interested in participating in, transferring, or adopting I+Dc project results. These events will include networking activities-both for researchers to share their own experiences and contacts, and to create new connections directly with stakeholders from the social and productive sectors.
- Networks formed through BiCI-funded projects will be documented and consolidated into a shared database, accessible to future projects. These future teams will be able to request assistance from the BiCI team to initiate contact with registered organizations.
- Universidad de los Andes is also leading the formation of the *BiCI Alliance*, a network that brings together institutions of higher education and research aligned with the I+Dc approach. One of the Alliance's main roles will be supporting inter-institutional networking-connecting researchers and professionals to share best practices, generate positive synergies, accelerate innovation, and enhance the quality of outcomes. The Alliance will also advocate for the gradual inclusion of I+Dc in national government policies and programs within the science, technology, knowledge, and innovation (CTCI) ecosystem.

On a more informal level, BiCI team members will make their personal and professional networks available to I+Dc project teams throughout the course of their work.

6.6. Continuous Assessment of Engagement

The assessment of engagement in I+Dc projects is a process designed to evaluate both the effectiveness and efficiency of the engagement efforts, that is, whether the objectives were met and the results aligned with the planned goals and allocated resources. To do this, key indicators are

defined, and both quantitative and qualitative data are collected, analyzed, and reported to measure progress against each indicator (57). The assessment outcomes not only provide continuous feedback to refine engagement methodologies and practices but also generate evidence to showcase the achievements and their long-term impact to funding bodies (58).

The assessment of engagement can be done at two levels:

a) At a macro level, it evaluates the success of formally integrating engagement into research and development processes, and the outcomes of this integration in terms of positioning and quality criteria related to accreditation (this evaluation will be addressed in Section VIII of this document).

b) At a case/project level, this aims to assess the effectiveness and efficiency of engagement actions in terms of achieving the objectives set for each project. This evaluation system is designed as an integral part of the Engagement Plans for I+Dc projects and, therefore, its development is addressed in the final stages of the Methodological Mentorships (Section 6.2).

Various authors suggest that the evaluation of engagement in an I+Dc project can be approached from three different key areas (Figure 3):

- Evaluate the design of engagement activities, focusing on determining whether the design took into account key aspects to ensure the subsequent efficiency and effectiveness of implementation. Some key questions in this type of evaluation are: Did the activity design incorporate the I+Dc principles defined by the institution? Was it tailored to the characteristics of the stakeholder groups? Were contingency plans created to address unforeseen issues?

- Evaluate the implementation (process) of engagement activities and the immediate results (outputs) achieved. Key questions for this evaluation include: Were we able to successfully engage the identified stakeholder groups? Was there any participant dropout between activities within the same group? Did the activities meaningfully enhance the project outcomes? Did the engaged groups' understanding of the project topic improve? How do participants rate the activities conducted?

- Evaluate the impacts of engagement, referring to the positive, direct, or indirect changes generated by the projects after their implementation. This evaluation requires medium- to long-term follow-up with the beneficiaries of these initiatives. Naturally, it also involves defining the expected impacts at the outset of the project.

  Some examples of impact indicators (tailored to each specific initiative) include: a reduction in mortality rates following the implementation of a public policy, improved oral health outcomes after the introduction of protocols in public health centers, and enhanced perceptions of inclusion for neurodiverse individuals in educational institutions, among others.

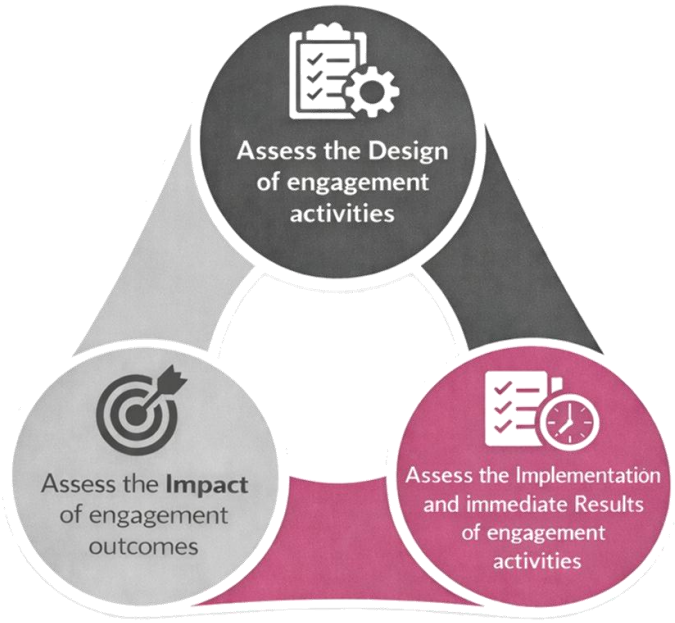

Figure 3. Three key areas for evaluating engagement in I+Dc projects
Source: Reed et al., 2018 (8)

In the BiCI context, the most effective way to evaluate the quality of engagement in an I+Dc initiative is through implementation indicators and their short-term outcomes. This is because the design of engagement is an aspect that is covered during the BiCI methodological mentorships (Section 6.2).

Evaluating impacts would typically require post-project follow-up, which is not always feasible due to resource limitations. However, conducting an evaluation at an intermediate stage, during the formal execution of a project, provides evidence of sound design and helps establish the foundation for actions that can secure medium-term impact.

The indicators for evaluating engagement, along with the measurement tools, should be developed on a case-by-case basis, as the expected outcomes are unique to each I+Dc initiative.

The tools for measuring these indicators vary widely. They can be applied in both group or individual settings, either in person or remotely, and may be used during the activities themselves or at a later stage.

Some examples of possible tools to use include interviews, questionnaires, media analysis, drawings, cards, or Post-it notes, among others (57).

6.7 Recognition for I+Dc

Studies examining the factors that motivate or hinder the integration of engagement in the work of researchers at higher education institutions suggest that a lack of recognition from both host organizations and funding bodies is one of the key barriers to adopting this approach (17, 59).

In contrast, the establishment of recognition systems has frequently been identified as a key facilitator of public engagement. Consequently, in leading countries, such systems have gradually become an integral part of the agenda. For instance, in the United Kingdom, the National Coordinating Centre for Public Engagement (NCCPE) and the “Six Beacons for Public Engagement”[2] program offer funding to universities to reward the participation, support, and leadership of community members in I+Dc projects. One notable example is the "Provost’s Awards for Public Engagement" at University College London (UCL), which honors senior and junior academics, students, support staff, and community members for their exceptional contributions to I+Dc projects (59). Similarly, in the United States, the American Association for the Advancement of Science (AAAS) has made awards and incentives a central element of its strategy to encourage public engagement in the scientific work of its members. These awards, which are categorized for senior and junior researchers, provide both public recognition and a monetary incentive (60).

Meanwhile, at several universities in leading I+Dc countries, involvement in I+Dc projects is increasingly valued for academic career advancement. However, it is still generally seen as a secondary consideration compared to formal recognition and rewards (61, 62).

Drawing from these refences, the BiCI strategy will consider two actions:

- Beginning in 2024, the "*Espíritu BiCI*" award will be added to the annual recognitions presented by the Innovation Department, celebrating the researcher who has demonstrated exceptional involvement in I+Dc projects. To facilitate this, an engagement evaluation system has been created for I+Dc projects coordinated by the Innovation Department. This system involves semi-structured interviews with project directors and a rubric that assigns scores, focusing on three key aspects that assess the level of engagement achieved by each initiative.
- In the medium term, the aim is to establish community engagement as a recognized merit for academic careers, with plans to formally integrate it into the University’s Faculty Regulations. Looking ahead, this could eventually become a key criterion in the evaluation of academic staff, aligning with institutional accreditation processes.

VII.- Institutional governance and advisory bodies for the management of the Strategy

The BiCI Strategy is overseen by an interdisciplinary internal team at UANDES, with its execution being continuously shaped, communicated, and supported by two advisory bodies: the Institutionalization Committee, which coordinates internally, and the Engagement Board, an external body composed of members closely connected to the University.

7.1. Internal Governance

The strategy for integrating I+Dc into the University is managed through a governance system headed by the director of the BiCI project, who also serves as the Director of Innovation at UANDES. This director is responsible for making strategic decisions related to the governance of the strategy, as well as establishing key partnerships to ensure its long-term sustainability and the broader scaling of I+Dc within the Science, Technology, Knowledge, and Innovation ecosystem. Additionally, the director represents BiCI in both internal and external meetings, events, and negotiations.

The project director is supported by the International Alliances Manager, who oversees relationships with key stakeholders from universities and other leading organizations in Public Engagement with Research, particularly in Europe.

At an intermediate level, the Director's strategic vision is translated into action plans by the BiCI Executive Director, who also serves as the Deputy Director of Technological Development and Commercialization at UANDES. The Executive Director leads and oversees the effective implementation of these plans, coordinating the various internal teams involved, ensuring proper budget management, and providing support to the coordinator in decision-making and conflict resolution.

The BiCI Coordinator is in charge of organizing activities, engaging directly with the university community, and managing the operational support team, which is structured into three key areas:

- Public engagement support professionals, who assist researchers through methodological mentorships in developing and operationalizing engagement plans (Section 6.2).
- Data science team, offering cross-disciplinary support to UANDES researchers in analyzing and managing data generated through I+Dc, with the goal of accelerating innovation development.
- Open Lab, which is a dedicated space for interdisciplinary collaboration and innovation within the UANDES community, supported by 3D technologies. Managed by a professional, the lab coordinates activities that promote cross-disciplinary interactions, oversees the use of space, and offers assistance to researchers, staff, and students in utilizing 3D modeling and printing equipment and software.

The coordinator's work is also supported by two administrative professionals: the BiCI Communications Officer, responsible for managing communication efforts, and the Budget

Execution Officer, who oversees the financial management of the initiative and internal projects funded by BiCI.

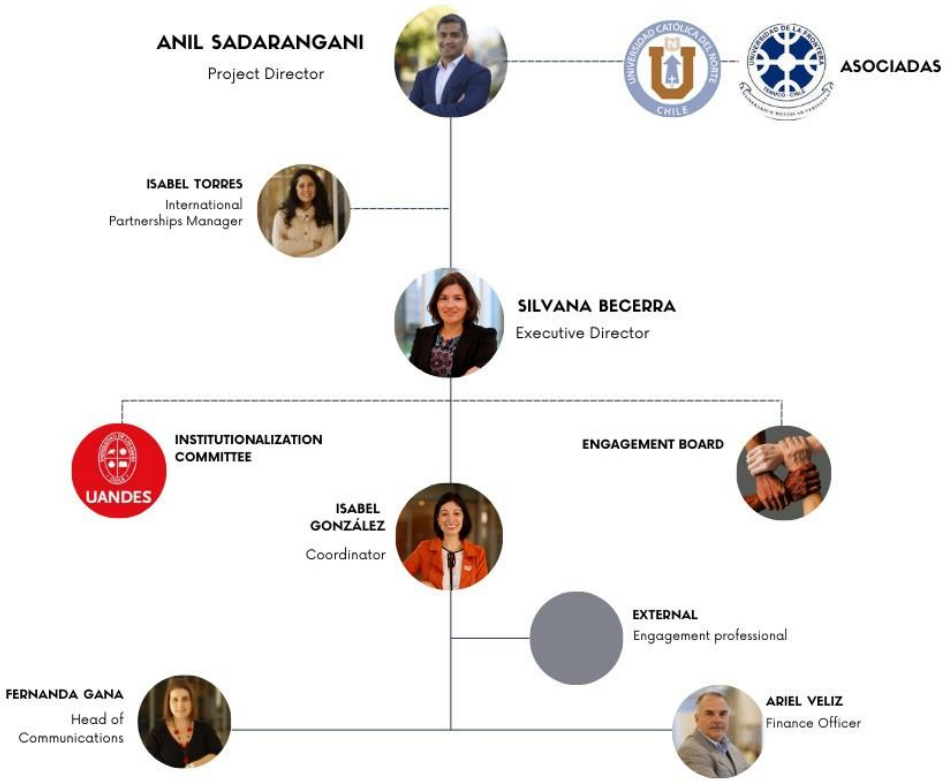

Figure 4. Governance of the BiCI Strategy Framework.

7.2. Advisory Bodies

7.2.1. Institutionalization Committee

The Institutionalization Committee, comprised of university leadership, meets monthly to review progress on the BiCI initiative. Its members are responsible for sharing updates with their respective areas, providing strategic feedback, and supporting decision-making related to the BiCI strategy. The Committee is chaired by the Vice Chancellor for Research.

Members:

- Vice Chancellor of Research.
- Vice Chancellor of Communications.
- Vice Chancellor of University Relations.
- Director of Innovation.
- Director of Research
- Dean of the Faculty of Communications.

- Dean of the Faculty of Social Sciences.
- Dean of the Faculty of Education.
- Dean of the Faculty of Medicine.
- Dean of the Faculty of Philosophy and Humanities.
- Dean of the Faculty of Nursing and Obstetrics.
- Dean of the Faculty of Engineering and Applied Sciences.
- Dean of the Faculty of Dentistry.
- Economic Vice Dean of the Faculty of Economic Sciences and Business
- Director of IMPACT Center.
- Director of Biomedical Research and Innovation Center (CII).
- Research Director of ESE Business School.
- Director of Library.
- Deputy Director or Technological Development and Commercialization.
- Head of Teaching and Research at Universidad de los Andes Hospital.
- Head of Community Engagement.

7.2.2. Engagement Board

The Engagement Board is made up of external experts, professionals and entrepreneurs from various sectors, and the innovation directors of the universities involved in the BiCI initiative: Universidad de La Frontera and Universidad Católica del Norte.

Its primary role is to advise the Executive Director and contribute to closing the gap in building effective engagement with the social, economic, and productive sectors.

In this context, the Board is expected to offer strategic guidance on the actions required to implement and scale I+Dc within the Science, Technology, Knowledge, and Innovation ecosystem. Additionally, the Board is kept informed and actively engages as strategic mentors for the internal I+Dc projects funded and developed under the BiCI framework—ensuring their strategic relevance, fostering meaningful external engagement during implementation, and leveraging their experience and networks to support the projects' long-term sustainability and scalability (Section 6.5).

This board is chaired by the Director of Innovation and meets every three months.

VIII- Indicators for Monitoring the Implementation of the Strategy

As part of the strategy to integrate I+Dc at UANDES, customized indicators have been developed to reflect the institutional context and assess the effectiveness of embedding this approach within the university's research activities. The purpose of these indicators is to:

a) Continuously refine the strategy and work plans in areas where progress is falling behind.

b) Obtain reliable data to demonstrate progress in implementing the strategy to funding agencies and the university community, while also supporting the strengthening of external engagement, teaching, and training processes in preparation for institutional accreditation.

c) Promote the scaling of the I=Dc model across the national Science, Technology, Knowledge, and Innovation ecosystem by showcasing demonstrable results.

An initial set of institutional indicators for UANDES was developed (see Table 1), drawing on a review of scientific and technical literature on indicators established by European institutions (54, 63–65). This preliminary framework was further refined and enriched through collaboration with international advisor Laura Cream, former head of Public and Community Engagement at University College London.

The indicators were categorized into three key areas or phases associated with integrating the I+Dc strategy into the university and the Science, Technology, Knowledge and Innovation ecosystem: a) Institutional enabling conditions for I+Dc, b) Strategy implementation, and c) Impact of implementation and scaling within the Science, Technology, Knowledge and Innovation ecosystem.

Each selected indicator was defined by its objective, concept, metric, and measurement frequency, accompanied by a tailored methodology for measurement and interpretation adapted to the institutional context.

A baseline is planned to be established in 2024, with annual evaluations thereafter to monitor progress in implementing the approach.

Table 1. Prioritized Institutional Indicators.

I. Indicators Related to Institutional Enabling Conditions for I+Dc

N° indicator	Result	Indicator	Unit	Formula	Method	Verification
1.1	Increasing integration of I+Dc in the institutional mission and governance.	Percentage of institutional regulatory documents related to research, innovation, and education that reference engagement with the external environment.	Percentage (%)	$\left(\frac{N° \text{ of } docs. \, that \, incorporate \, I+Dc}{Total \, N° \, docs. \, in \, existence}\right) * 100$	Review of institutional policies, regulations, and standards.	Policy documents, regulations, and institutional standards.
1.2	Increased incorporation of the concept of Public Engagement as part of research processes, in both internal and external communications.	Percentage of mentions of I+Dc or public engagement in science, within external or internal communications related to research.	Percentage (%)	$\frac{N° \, of \, mentions \, of \, I+Dc}{Total \, N° \, communications} * 100$	Count of mentions of I+Dc or public engagement in science across news articles, audiovisual materials, radio/TV appearances, opinion columns, social media posts, and similar media.	Record of news articles or mentions on social media.
1.3	Creation of mechanisms to recognize researcher and student leadership in I+Dc projects.	Number of formal recognitions awarded for leadership in I+Dc	Awards	n/a	Count of recognition at the central level or by Faculty / School / Center that acknowledge researchers for their public engagement in R&D processes.	News articles, event records, or mailings highlighting awarded researchers.

N° indicator	Result	Indicator	Unit	Formula	Method	Verification
1.4	Increase in training opportunities in I+Dc for researchers, professionals, and postgraduate students.	Number of training programs offered by UANDES.	Programs	n/a	Count of training programs offered by the Innovation Office.	Record of instructional designs and the publication of the program offerings.
1.5	Ongoing access to internal funding for researchers to develop I+Dc projects.	Total amount awarded during the period to researchers for funding I+Dc initiatives, by funding instrument.	Pesos	∑ (Amount granted to internal project xx funded through grant xx for I+Dc support)	Systematization of information on open internal funding opportunities and the total budget awarded for each.	Signed grant contracts.
1.6		Number of I+Dc projects funded annually through internal mechanisms, by funding instrument.	Projects	n/a		
1.7	Continuity and strengthening of the I+Dc support team.	Full-time equivalent workdays of I+Dc support professionals.	Full time equivalent	∑ (% of working hours of professionals hired to support I+Dc)	Systematized record of hiring of I+Dc support professionals.	Work contracts.

II.- Indicators related to the implementation of the I+Dc strategy

N° indicator	Result	Indicator	Unit	Formula	Method	Verification
2.1.	Increase in engagement with relevant external groups in UANDES scientific events/activities.	Number of scientific events/activities that include formal participation of external stakeholders.	Events per year	n/a	Record of research or innovation activities involving participation of external stakeholders (activities from the Office of Research and Innovation, compared with activities reported to the Vice Rector for Research) and the number of participants.	Record of events. List of attendees and their affiliations.
2.2.		Number of external participants (non-academic, non-UANDES) in UANDES activities.	Participants per year	n/a		
2.3.	Increase in the critical mass of researchers and students trained in I+Dc.	Number of researchers, professionals, and postgraduate students trained in I+Dc.	# of people trained per year	n/a	Record of individuals who have completed their training programs.	Record of training certificates awarded.
2.4.	Ongoing support for the design and planning of engagement processes.	Number of mentorship sessions for external engagement conducted annually.	# of sessions per year	n/a	Record of sessions conducted by support professionals for engagement with I+Dc project teams.	Visual records of the sessions. Documents and engagement

N° indicator	Result	Indicator	Unit	Formula	Method	Verification
						plans generated.
2.5.	Increase in awareness among postgraduate students about the role of I+Dc as a pathway to creating impact through science.	Average level of importance that postgraduate students assign to I+Dc as a pathway for societal impact.	Points (Likert scale)	$\frac{\sum \text{Final score given by each participant}}{Total\ number\ of\ participants}$	Measurement of perception regarding the importance of I+Dc based on a survey instrument.	Survey results
2.6.	Increase in awareness among researchers about the role of I+Dc as a pathway to creating impact through science.	Average level of importance that researchers assign to I+Dc as a pathway for societal impact.				
2.7.	Ongoing promotion of I+Dc among researchers and students.	Number of activities and events designed to promote I+Dc within the UANDES community (researchers, students, staff).	Events per year	n/a	Record of events designed to promote I+Dc (talks, festivals, seminars, funding information sessions, project closures, innovation lunches, etc.).	Event programs, photographic records, social media appearances.

N° indicator	Result	Indicator	Unit	Formula	Method	Verification
2.8.	Ongoing dissemination of institutional activities and achievements in I+Dc.	Number of media appearances related to activities and achievements in I+Dc (social media, online news, radio/TV appearances, news in other press outlets).	Mentions per year	n/a	Record of media appearances referencing engagement with the external environment in I+Dc processes. These may include references to specific projects or institutional activities aimed at strengthening the approach.	Supporting documents, links, videos, audios, etc.

III.- Indicators related to the impact of strategy implementation and scaling within the STI ecosystem (likely in 2025)

N° indicator	Result	Indicator	Unit	Formula	Method	Verification
3.1.	Increase in the number of research and innovation outcomes that incorporate the I+Dc approach as a methodology and pathway for impact.	Number of research outcomes (papers, white and grey papers, books, conference documents, intellectual property (IP) registrations) generated through I+Dc.	Results	n/a	Based on the results of 2.5, extract the outcomes obtained from those projects that incorporate the PE.	Official documents generated

N° indicator	Result	Indicator	Unit	Formula	Method	Verification
3.2.	Increase in leveraging external resources for I+Dc.	External resources leveraged for projects or events that incorporate the I+Dc approach.	Pesos $	∑ (Amount leveraged per project focused on I+Dc)	Data collection to document the inclusion of I+Dc in projects awarded by the Innovation Office. This will be done through an evaluation instrument measuring the level of engagement.	Results of the engagement evaluation interview.
3.3.	Increase in the transfer of knowledge and innovation products from UANDES to society thanks to the I+Dc strategy.	Number of innovation products developed based on I+Dc, transferred to society.	Products	n/a	Break down by type: licenses (with or without commercial compensation), company creation (B2B or B2C).	Documents formalizing the mechanisms for technology transfer or spin-off creation.
3.4.	Expansion of I+Dc into the Science, Technology, Knowledge and Innovation ecosystem	Percentage of ANID instruments or other government funding sources that value the incorporation of a societal engagement approach in research	Percentages %	$\frac{N\ of\ research\ funding\ grants\ that\ include\ Public\ Engagement}{Total\ number\ of\ grants\ available\ for\ R+D} * 100$	Review of ANID and other platforms. Review of competition databases and proposal evaluation rubrics.	Analysis table of the competition guidelines.

N° indicator	Result	Indicator	Unit	Formula	Method	Verification
		and development processes.				
3.5.	Improvement in public perception of universities' role in generating positive social impact through R&D.	Average increase in the score measuring public perception of universities' role in generating social impact through research.	Points (Likert scale)	$\frac{\sum(\text{Final evaluation score given by each participant} - puntaje\ inicial)}{Total \text{ number of participants}}$	Evaluation through an instrument sent to participants of UANDES I+Dc projects and activities.	Tabulated survey results.
3.6.	Positioning of UANDES as a national leader in I+Dc at the international level.	Number of UANDES community members in international I+Dc networks (professionals, students, researchers).	Members UANDES.	n/a	Survey of UANDES staff and researchers regarding their participation in I+Dc networks.	Supporting documents (acceptance emails, letters, etc.).

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