CATALISI

Catalysation of institutional transformations of Higher Education Institutions through the adoption of acceleration services

POLICY RECOMMENDATIONS
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Abstract	This policy recommendations document, developed within the CATALISI project, presents strategic guidance for HEIs, university alliances, and policymakers at institutional, national, and European levels. It synthesizes evidence from CATALISI case studies, predictive studies, and stakeholder consultations to address key challenges in research and innovation, including governance, talent development, digital transformation, and sustainability. The recommendations aim to foster institutional transformation, interdisciplinary collaboration, and societal impact, providing a robust framework for enhancing research excellence and driving meaningful change across the European higher education landscape.
Keywords	Policy Recommendations, Institutional Transformation, HEIs Challenges

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CATALISI consortium			
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4	EUROPEAN NETWORK OF LIVING LABS IVZW	ENoLL	BELGIUM
5	KAUNO TECHNOLOGIJOS UNIVERSITETAS	KTU	LITHUANIA
6	UNIVERSITAT JAUME I DE CASTELLON	UJI	SPAIN
7	LUISS LIBERA UNIVERSITA INTERNAZIONALE DEGLI STUDI SOCIALI GUIDO CARLI	LUISS	ITALY
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EXECUTIVE SUMMARY

This document is a public project report and does not constitute an official project deliverable. It presents the main outcomes of the CATALISI project and the policy recommendations that arise from them, in line with T.4.5. The recommendations are intended to provide strategic guidance to universities, university alliances, and policymakers at institutional, national, and European levels. They are designed to support structural and institutional changes that will maximize the value and impact of research within the European Research Area.

The methodology underpinning this document is robust and multidimensional. It combines a thorough analysis of the current context for European HEIs, a review of relevant literature and policy, and, crucially, evidence gathered from case studies, predictive studies, ongoing formative evaluation, and a final Policy Validation session during the project's final conference. The process was participatory and iterative, involving extensive stakeholder consultations, interviews, and collaborative validation with project partners, external experts, and representatives of sister initiatives.

Key phases included:

- **Contextual analysis** of the European HEI landscape, informed by literature and policy review.
- **Case studies** focusing on the experiences of the seven implementing universities and their interventions in Human Capital, Research Modus Operandi, and Finance.
- **Stakeholder consultations**, including interviews with implementers, facilitators, and representatives from sister projects and European University Alliances.
- **Consultation of the D3.3 of Predictive Studies on Transversal Skills Development** - future labor market needs and skills.
- **Formative and summative evaluation**, co-creating strategic KPIs and monitoring progress in real time
- **A Policy Validation session** at the Final Conference, where recommendations were reviewed and refined with input from a broad range of stakeholders.

This participatory and iterative process ensured that the recommendations are grounded in the lived experiences of HEIs, reflect the diversity of European contexts, and are validated by a wide range of experts and practitioners.

The recommendations are structured to guide both HEIs and policymakers. Among the key recommendations are:

- **Adopt flexible and adaptive governance models** that foster interdisciplinary collaboration and continuous improvement.
- **Create inclusive and supportive environments** that value diversity and equity, ensuring all voices are represented in research and education.
- **Leverage digital technologies** and launch targeted initiatives to explore how artificial intelligence can accelerate change in HEIs.
- **Promote Open Science practices** and the sharing of research resources and platforms to enhance transparency, reproducibility, and societal impact.
- **Empower individuals as drivers of change** enabling motivated staff and students to lead transformation, providing resources and recognition for change agents.

- **Foster stakeholder collaboration and cross-institutional learning** to break down silos and encourage collective action.
- **Implement data-driven decision-making** and robust monitoring and evaluation frameworks to guide continuous improvement.
- **Develop multidisciplinary approaches** creating flexible curricula and research programs that combine multiple disciplines to address complex challenges.
- **Enhance Monitoring and Evaluation Frameworks** to establish formative and summative evaluation systems, including KPIs and feedback loops, to assess and improve institutional change.
- **Promote Sustainability in Research and Operations** and talent development, aligning institutional strategies with long-term societal needs.
- **Diversify and Strengthen funding opportunities by** expanding and stabilizing funding sources, including public, private, and collaborative mechanisms, to support long-term transformation.
- **Understand Labor Market Dynamics for Strategic Planning** to ensure graduates and researchers are equipped for future challenges.
- **Ensure high-level administrative engagement** from the outset of transformation projects to secure strategic alignment and institutional commitment.
- **Empower individuals and communities of practice** as drivers of transformation, recognizing the importance of motivated champions and peer learning.
- **Reduce the Number of Acceleration Services** for greater clarity, focus, and reproducibility across institutions.
- **Limit the number of Domains and Intervention Areas to ensure overlap and reproducibility** focusing on fewer domains and intervention areas to foster shared learning and replicable models across institutions.
- **Foster Integrated and Multidimensional Transformation Approaches** encouraging collaboration across domains, embed transformation in strategic documents, and support continuous learning and adaptation throughout the institution.

These recommendations are the result of a comprehensive and collaborative process that brought together diverse perspectives and expertise from across Europe. The strategic priorities outlined above are directly informed by the experiences and lessons learned throughout the CATALISI project. CATALISI project is a Horizon Europe project aimed at fostering institutional transformations within HEIs by leveraging innovative acceleration services. Its primary goal is to enhance the capabilities of HEIs in promoting interdisciplinary collaborations and increasing the societal impact of research. This initiative is part of a broader effort to strengthen European University Networks and promote European values and drive excellence in research and education. By addressing disparities in research and innovation performance, CATALISI aims to create a cohesive and competitive higher education environment across Europe. Unlike projects that follow a rigid blueprint, CATALISI is conceived as a dynamic and adaptive framework, an ongoing experiment in how acceleration services can catalyze meaningful change in HEIs. The project brings together a diverse consortium of eleven partners from eight EU Member States, including both facilitators and implementers. The facilitators are: Agenzia Per La Promozione della Ricerca Europea (**APRE**), EY Advisory Spa (**EY**), European Network for Living Labs (**ENoLL**), and F6S Network Ireland Limited (**F6S**). These facilitators work alongside leading universities: Kaunas University of Technology (**KTU**), Universitat Jaume I de Castellon (**UJI**), Libera Università Internazionale

degli Studi Sociali (**LUISS**), University of Gdansk (**UG**), University College Cork – National University of Ireland (**UCC**), Aristotle University of Thessaloniki (**AUTH**), and STICHTING VUMC (**VUMC**). Notably, UCC has a dual role within the project, both as an implementer of change within the HEI and as leader of the evaluation and impact assessment activities. The implementers have piloted new approaches to institutional transformation in a variety of national and institutional contexts, ensuring that the project's outcomes are relevant and adaptable across Europe.

The CATALISI project's legacy is a set of actionable, evidence-based recommendations and a replicable framework for institutional transformation. By following these guidelines, HEIs, alliances, and policymakers can enhance research excellence, drive innovation, and contribute to a more inclusive, resilient, and impactful higher education sector in Europe.

This document serves as both a roadmap and a call to action, inviting all stakeholders to engage in the lessons of CATALISI and to work collaboratively toward a future where European higher education leads in research, innovation, and societal progress.

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ABBREVIATIONS

D	Deliverable
DoA	Description of Action
EU	European Union
T	Task
WP	Work-Package
GA	Grant Agreement
CA	Consortium Agreement
DC	Dissemination and Communication
LL	Living Labs
SME	Small and Medium Enterprise
CoP	Community of Practice
HEIs	Higher Education Institutions
EAB	External Advisory Board

1. INTRODUCTION

The landscape of higher education in Europe is undergoing significant transformation, driven by the need to address complex societal challenges and the rapid pace of technological advancement. As centers of knowledge creation and innovation, HEIs play a pivotal role in shaping the future of research and education. However, they face numerous challenges that hinder their ability to effectively contribute to societal progress. Recognizing these challenges, the European Commission has identified Institutional Change as a crucial strategy for tackling the complexities of Responsible Research Innovation (RRI).[1] This approach emphasizes the importance of managing and guiding transformations in science and innovation, necessitating the implementation of institutional changes within research organizations.

[1] European Commission (2020), *Institutional Changes towards responsible research and innovation: Achievements in Horizon 2020 and recommendations on the way forward*, https://research-and-innovation.ec.europa.eu/system/files/2020-07/ec_rtd_swafs_report-rri.pdf

The CATALISI project emerges as a vital initiative aimed at assisting HEIs in successfully navigating these transformations. By focusing on the governance of HEIs, CATALISI is to help and support HEIs to successfully implement a strategy and individual pathway for institutional transformation through the adoption of acceleration services. The project is structured around two interrelated dimensions, implemented by each HEI (referred to as implementers) with the support of experienced facilitators. CATALISI identifies three key domains that are essential for institutional transformation: Research Careers and Talent Support, Research Modus Operandi, and Sustainable Research and Education. Each of these domains addresses specific needs that HEIs have identified as critical for enhancing their research capabilities and overall impact.

The purpose of this document is to present a comprehensive overview of the CATALISI project, its objectives, and the policy recommendations that arise from the main outcomes of the project and the experiences of the Implementers. The recommendations aim to provide strategic information to universities, university alliances, and policymakers at local, national, and European levels.

The recommendations are designed to achieve two primary aims:

1. **Share principles to guide structural changes**. The recommendations will assist universities and research institutions in identifying and implementing the necessary structural changes to enhance their research capabilities. This includes adopting new governance models, improving organizational culture, and leveraging digital technologies to support research activities.
2. **Supporting Policymakers**. The recommendations will provide insights for policymakers at various levels, helping them understand the challenges and opportunities faced by research institutions in order to identify the R&I sectors and topics that need more investments and funding opportunities. This understanding will enable the development of targeted policies that support the growth and sustainability of research activities.

The primary recipients of these policy recommendations include:

- **HEIs, Research Performing Organizations (RPOs) Research Funding Organizations (RFO's) and Implementers (of change)**. The recommendations will benefit research institutions and implementers involved in the CATALISI project. They can utilize the insights and best practices shared in the recommendations to enhance their research processes and outcomes.
- **Universities and University Alliances**. These institutions can leverage policy recommendations to improve their research capabilities and impact. By adopting the suggested structural changes and best practices, universities can enhance their research output, foster innovation, and contribute to addressing societal challenges.
- **Policymakers at Local, National, and European Levels**. Policymakers can use recommendations to support structural changes and foster an environment that maximizes the value of research. By understanding the needs and challenges of research institutions, policymakers can develop targeted policies that promote research excellence and innovation.

In summary, the CATALISI project represents a significant step toward enhancing the capacity of HEIs to drive innovation and contribute to societal progress. By focusing on institutional transformation, inclusivity, and the effective use of digital technologies, the project aims to position HEIs as key players in shaping the future of research and education in Europe.

2. THE FOCUS OF THE CATALISI PROJECT

Universities today face significant challenges in adapting to a rapidly evolving research and innovation landscape. The **CATALISI project** was created to help HEIs implement effective strategies and tailored pathways for institutional transformation through acceleration services. These services aim to speed up change in research and innovation, strengthen collaboration among European universities, and position university alliances as beacons of European values.

CATALISI explores how HEI governance can evolve, viewing governance as the interaction between societal and state actors to transform science, technology, and innovation systems. The methodology is structured into several work packages (WPs) that enable:

- Co-design and implementation of **Living Labs (LLs)**
- Knowledge sharing and mutual learning programs
- Long-term sustainability of institutional transformations

Progress is continuously monitored through formative and summative evaluations, supported by dedicated toolkits for tracking institutional change.

The project brings together 11 partners from 8 EU Member States, including three widening countries (Poland, Lithuania, Greece). The consortium combines diverse expertise and experience, ensuring impactful results. Partners are organized into two groups:

- **Facilitators** (acceleration service providers): APRE, EY Advisory, ENoLL, F6S
- **Implementers** (HEIs): KAUNO TECHNOLOGIJOS UNIVERSITETAS (KTU), UNIVERSITAT JAUME I DE CASTELLON (UJI), LUISS LIBERA UNIVERSITA INTERNAZIONALE DEGLI STUDI SOCIALI GUIDO CARLI (LUISS), UNIWERSYTET GDANSKI (UG), UNIVERSITY COLLEGE CORK - NATIONAL UNIVERSITY OF IRELAND, CORK (UCC), ARISTOTELIO PANEPISTIMIO THESSALONIKIS (AUTH) and STICHTING VUMC (VUMC)

This collaboration promotes knowledge transfer and leverages the unique strengths of each partner. Key outcomes and tools employed by the project to help accelerate change in the HEIs, with the main importance on the Acceleration services, include:

- **Design lab for transformational pathways**. Each implementing HEI developed a customized transformation pathway through a structured Design Lab process. This involved collaborative planning with facilitators and stakeholders, resulting in tailored Action Plans that set clear priorities and timelines for institutional change. These pathways form the basis of the project's case studies.

- **Living lab**. The Living Lab provided a participatory setting where HEIs, together with staff, students, and external partners, co-created and tested new approaches in real-world contexts. This framework enabled the development and refinement of targeted action plans within selected intervention areas, ensuring practical relevance and stakeholder engagement.

- **Counselling.** Throughout the project, counseling was offered as a cross-cutting service, providing ongoing mentoring, coaching, and expert guidance. This support helped HEIs address specific challenges, share best practices, and maintain momentum across all phases of their transformation journey.

- **Capacity Building and outreach.** Through this acceleration service, targeted training, workshops, and outreach activities were delivered to strengthen institutional skills in Responsible Research and Innovation (RRI). The project promoted knowledge sharing, peer learning, Twinning, and tailored webinars, fostering a collaborative environment for sustainable change and alignment with labor market needs.

- **Predictive study on skills anticipation.** Through this acceleration service, a predictive study was conducted, with the aim of analyzing labor market trends and identifying essential future skills. The findings informed curriculum development and supported lifelong learning, reskilling, and upskilling initiatives for researchers, ensuring HEIs remained responsive to evolving challenges.

- **The CATALYST Hub.** The Catalyst Hub facilitates connections between HEIs, industry, and funding opportunities. By bridging research outputs with market needs, it supported increased R&D investment and fostered long-term academic-industry collaboration.

- **Community of Practice (CoP)**: Community of Practice was established, bringing together academics and quadruple helix actors. This platform enabled members to collaboratively address challenges, exchange insights, and co-develop methodologies, supporting continuous improvement and strategic alignment at regional, national, and European levels.

CATALISI uses an innovative evaluation approach based on the Theory of Change, combining real-time formative assessments with strategic KPIs co-created with partners. This ensures effectiveness and sustainability while informing policy recommendations through evidence-based insights and best practices

Initiatives such as **The Catalyst Hub** emphasize connecting universities to funding opportunities and resources. Policymakers can thus recommend establishing centralized funding platforms or incentive structures to facilitate easier access to financial support for universities and sustain long-term transformation, rendering it sustainable for institutions. Also, reducing bureaucratic barriers is another essential component highlighted by tailored counseling services, which assist universities in navigating complex administrative processes. Moreover, there is a strong need for more streamlined or flexible legal and administrative frameworks to facilitate collaboration and reduce bureaucratic barriers. As reported in the interviews, alliances often lack legal personality, which makes it particularly challenging to manage relationships among numerous partners and to secure commitments through formal agreements. Policy recommendations informed by this insight should aim at simplifying procedures, streamlining funding applications, and reducing regulatory burdens, allowing

researchers to devote greater focus to research rather than administrative hurdles. Moreover, talent retention and attraction are also critical areas influenced by the outcomes of Living Labs and capacity-building initiatives. These initiatives illustrate how tailored strategies can effectively attract and retain top research talent. Consequently, policies might recommend incentivizing universities to enhance career development pathways, foster competitive research environments, and facilitate cross-border mobility to retain exceptional talent within Europe. Additionally, promoting sustainability and green research has been increasingly recognized as crucial. The experience of Living Labs underscores the significance of aligning research with global sustainability goals. It is important to note that the concept of sustainability was interpreted in different ways by the implementers; therefore, it is valuable to reference not only the promotion of sustainability and green research, but also the broader sustainability of research and innovation operations. Policymakers can leverage these insights to recommend policies such as dedicated funding streams for sustainability-focused research and mandates encouraging universities to integrate environmentally sustainable practices within their research infrastructure. Finally, fostering digital transformation has become indispensable, as demonstrated through Living Labs, where universities actively experiment with emerging digital technologies. Policies should therefore encourage greater investment in digital infrastructure and skill development, ensuring universities possess the necessary capabilities to thrive in a rapidly evolving digital research landscape.

3. METHODOLOGY

The methodology employed in the development of these policy recommendations is grounded in an integrated and multidimensional approach, aimed at ensuring that the recommendations are based on concrete evidence and effective practices. This approach encompasses several phases, including:

- Contextual analysis
- Stakeholder consultations
- Case study outcomes
- Consultation of the D3.3 Predictive Studies on Transversal Skills Development
- The innovative approach to evaluation and impact assessment as a tool to enrich the data considered in this document

Initially, the methodology involved a comprehensive analysis of the current state of HEIs across Europe. This analysis was informed by a review of recent literature and existing reports that detail the landscape of research and higher education, with a particular focus on the challenges and opportunities that have emerged in this rapidly evolving context. The literature review provided a foundational understanding of the systemic issues faced by HEIs, such as funding disparities, bureaucratic complexities, and the need for interdisciplinary collaboration.

A significant component of the methodology was the examination of case studies led by University College Cork (UCC), who was also responsible for the project's evaluation and impact assessment, carrying out ongoing formative evaluation through surveys, bilateral interviews, and workshops. This approach ensured that policy considerations were continuously integrated, with real-time feedback directly informing the project's policy recommendations and aligning them with the needs of participating institutions.

A significant component of the methodology was the examination of case studies conducted by University College Cork (UCC), a partner in the CATALISI consortium. These case studies are 7 stories and pathways of the 7 HEIs implementers of the CATALISI consortium, which focuses on specific interventions within the domains of **Human Capital**, **Research Modus Operandi**, and **Finance**, provided concrete examples of institutional transformation and successful practices that could inform the policy recommendations. The insights gained from these case studies were instrumental in shaping **the understanding of effective strategies** for **institutional change**, particularly in relation to capacity improvements in open science practices and the strengthening of human capital, particularly in relation to capacity improvements in open science practices and the strengthening of human capital.

Following the analysis of case studies and including the insights from the assessment data, the methodology progressed to a phase of **stakeholder consultation** from the quadruple helix, which was crucial for validating the findings and recommendations. This involved conducting a series of interviews, with the participation of 18 representatives with a diverse range of stakeholders, including the consortium of CATALISI project:

- Representatives from CATALISI 7 implementers,
- Representatives from CATALISI 2 facilitators,
- Representatives from HEIs Governance
- Representatives from 2 sister projects
- Representatives from European University Alliances.

These interviews were designed to capture the perspectives of each stakeholder group regarding institutional change, which is central to the focus of the CATALISI project. Each set of questions was tailored to reflect the unique insights and experiences of the participants, allowing for a comprehensive understanding of the challenges and opportunities they face in relation to the institutional transformation process.

The questions posed during the interviews specifically centered on the perspectives of the participants regarding institutional change and the role of acceleration services in facilitating this transformation. By exploring the viewpoints of various stakeholders, the methodology aimed to identify good practices and areas for improvement in the implementation of these services. This participatory approach ensured that the recommendations were grounded in the real-world experiences of those directly involved in transformation efforts.

Additionally, methodology accounted for the predictive study (D3.3 Predictive Studies on Transversal Skills Development) conducted at the beginning of the project, which generated knowledge about future labor market evolutions and the skills that will be important in navigating changes within the sector. This predictive study, along with the insights from the case studies, informed the strategy and agenda setting necessary to support the long-term sustainable institutional transformations of each HEI through a Living Lab methodology.

Importantly, the innovative evaluation and impact assessment methodology developed by UCC. This methodology focused on the Theory of Change and involved a formative and summative approach of real time evaluation in consultation with the implementing partners as well as summative type evaluation and monitoring. The focus of the approach is to maximize impact and UCC worked closely with the implementers to co-create meaningful key performance indicators that were strategic in nature and impactful, and that would bring the implementers closer to the change and impact that they desired. The monitoring and evaluation framework was established to ensure the effectiveness and sustainability of the

transformations. This included the development of monitoring toolkits to track progress and assess the impact of policy recommendations. Regular feedback from stakeholders was collected to adapt to the recommendations and services offered based on emerging needs and challenges. The approach is aligned with the CATALISI methodology of exploring, co-design, implement and evaluate.

The acceleration services as outcomes of the CATALISI project, together with the methodology implemented by UCC, directly influence the policy recommendations by providing evidence, tools, and best practices that guide the necessary changes to enhance the European higher education landscape.

As the final step in the CATALISI methodology, a dedicated Policy Validation session was held during the project's Final Conference in Amsterdam on November 10th and 11th. Key stakeholders, including the Project Officer, project partners, external experts, and representatives from sister projects were brought together to review, discuss, and validate the policy recommendations developed throughout the project. The session began with an introduction to its objectives and policy context, followed by the presentation of the Policy Brief (D6.3), which consolidated recommendations from the three sister projects CATALISI, aUPauEU, and Accelerate Future HEI. Each recommendation was examined in depth by a panel of experts and the wider audience, who engaged through interactive tools, raised questions, provided feedback, identified gaps, and helped prioritize the most impactful ideas. The session concluded with a synthesis of the main discussion points and a clear outline of next steps for finalizing and disseminating the validated recommendations. This collaborative process ensured that the final policy outputs were robust, actionable, and reflective of a broad range of perspectives within the European Research Area.

In conclusion, this integrated and participatory methodology not only aims to ensure that the policy recommendations are grounded in concrete evidence but also promotes a sustainable and inclusive transformation process within HEIs. By engaging in contextual analysis, utilizing case study outcomes, and conducting stakeholder consultations, the CATALISI project seeks to address the current and future challenges faced by HEIs in Europe, ultimately enhancing their capacity to drive innovation and contribute to societal progress.

4. ANALYSIS OF THE CURRENT CONTEXT AND CHALLENGES

European universities and research centers hold a notable position in the global landscape of knowledge creation and innovation. They contribute significantly to scientific production, educate a large and diverse student population, and play a crucial role in social development. However, they operate in a complex and rapidly changing global context, characterized by increasing competition, technological advancements, demographic changes, and urgent social challenges such as climate change and inequality.[2]

This chapter aims to provide a detailed examination of the current state of HEIs and of the research compartment within European HEIs, who are vital players in the global landscape of knowledge creation and innovation. It will analyze their significant contributions to scientific production, the education of a diverse student population, and their crucial role in addressing

[2] Universities without walls A vision for 2030, (EUA 2021), universities20without20walls2020a20vision20for2020301.pdf

pressing social challenges such as climate change and inequality. The chapter will identify the main challenges faced by these institutions, including funding disparities, bureaucratic complexities, and the need for interdisciplinary collaboration. Furthermore, it will explore the impact of regional disparities on research capabilities and the ongoing struggle to attract and retain top talent in a competitive global environment.

In addition to outlining the challenges, this chapter will also highlight the numerous opportunities available to European universities, such as international collaboration, innovation, and the potential of digitalization. The importance of open science practices and policies will be emphasized, showcasing how they enhance transparency and accessibility in research. The chapter will also address the evolving skills needed in the higher education sector to adapt to rapid technological advancements and changing job market demands. By examining existing policies that influence research and its impact, this chapter will provide a foundational understanding of the landscape in which the CATALISI project operates, ultimately aiming to foster a more resilient and adaptive research ecosystem in Europe.

4.1 WHAT IS THE CURRENT STATE OF HIGHER EDUCATION INSTITUTIONS IN EUROPE?

As Europe stands at a crossroads shaped by environmental urgency, digital evolution, and demographic shifts, the role of universities has never been more essential. The COVID-19 pandemic has further underscored the need for a resilient higher education sector that can adapt to evolving societal demands. European universities, with their diverse and rich educational landscape, play a pivotal role in fostering innovation, research, and social development. They are not only centers of learning but also vital actors in achieving the European Education Area (EEA) and the European Research Area (ERA).[3] In this direction, European universities face several challenges that can affect their ability to conduct high-quality research.

4.1.1 SUSTAINABILITY IN RESEARCH FUNDING (C1)

Despite the existence of EU funding programs, many European universities struggle to secure adequate resources to support their research activities[3], particularly those located in less developed economies. In fact, although European HEIs actively participate in funding programs such as Horizon 2020 and Horizon Europe, which provide support for collaborative and innovative research projects with budgets of 80 billion[4] for the former and €95.5 billion[5] for the latter, there are significant disparities between countries and institutions in terms of available resources, research infrastructure, and access to funding[6]. Despite these fundings, available resources fail to keep pace with the expanding educational and research demands, creating an uneven playing field and increasing competition among institutions for limited

[3] *Siri B. Borlaug, Jens Jungblut (Springer Nature, 2024), "The Limits of Universities' Strategic Capacity for Steering Research", pp. 95 - 104*
[4] *https://cinea.ec.europa.eu/news-events/news/horizon-2020-evaluation-published-benefits-worth-five-times-investment-2024-01-29_en*
[5] *European Commission (2020) "European Research Area Progress Report", page 5.*
[6] *European Commission (2024) "Horizon Europe Strategic Plan", page 33.*

resources[7]. The growing reliance on a project-based funding model, allocated competitively, tends to favor established researchers and universities, limiting opportunities for emerging talent and shifting focus toward short-term results rather than long-term strategic goals. Additionally, the basic state contribution, which constitutes the majority of institutional budgets, is often insufficient to meet the increasing responsibilities of universities. In the case studies carried out by CATALISI, the University of Gdansk (UG) mentioned a general lack of funds and no remuneration in horizontal projects, while Universitat Jaume I (UJI) pointed to a lack of institutional and economic support for public engagement and citizen science activities. Moreover, the University College Cork (UCC) confirmed low research investment, an over-reliance on a limited number of large-scale research centers creating financial risk, and inadequate institutional overheads to cover the full cost of research projects. UCC also highlighted a lack of mechanisms to retain overhead funds for strategic initiatives and challenges in securing pre- and post-award grant support as well as the increasing pressure exerted by external funding agencies on research priorities, which limits the HEI's ability to pursue institutionally driven research agendas. Finally, the Aristotle University of Thessaloniki (AUTH) reported an insufficient budget for intellectual property (IP) related issues. All this reveals how crucial it is to increase public investment, especially in Southern and Eastern European countries, to ensure that universities can compete globally and invest in advanced research infrastructure[9]. Without adequate financial support, universities risk failing to attract top talent and may limit their potential for innovation and growth. The European Commission has published thematic reports providing overviews of public engagement in research and innovation in Europe. These reports describe policies, frameworks, and projects aimed at promoting public engagement practices to increase the societal impact of research[8]. By effectively communicating research findings to the public and policymakers, universities can increase the societal impact of their research and foster a greater understanding of science. This can also help build public trust in scientific research and encourage informed decision-making and, indirectly, it can create opportunities for increasing financial resources.

4.1.2 BUREAUCRACY AND REGIONAL DISPARITIES IN EUROPEAN AND NATIONAL RESEARCH FUNDING (C2)

The complexity of bureaucracy and regulations, combined with significant regional disparities, poses substantial challenges for the European HEIs. Bureaucratic requirements and intricate regulations can slow down research processes and inflate administrative costs[9], diverting valuable time and resources away from scientific work. This was confirmed in the case studies, where AUTH and UJI voiced the need to avoid bureaucratic delays, while UG lamented that bureaucracy is too constraint, and UJI reported concern about the possibility of increasing bureaucratic tasks for researchers as new initiatives are implemented. In addition, regional disparities exacerbate these challenges, particularly affecting universities in Eastern European countries, which often lack the same level of research infrastructure and access to funding as their Western counterparts[10]. This disparity results in unequal

[7] https://www.unesco.org/gem-report/en/articles/unesco-paper-shows-governments-not-keeping-pace-growing-demand-higher-education
[8] https://op.europa.eu/en/publication-detail/-/publication/6f3a03af-f2fb-11ee-8e14-01aa75ed71a1/language-en
[9] Peter Maassen, Bjorn Stensaker (Higher Education Quarterly, John Wiley & Sons Ltd, 2019), "From organised anarchy to de coupled bureaucracy: The transformation of university organization", pp. 456 – 468.
[10] Mark Whittle, James Rampton (2020). "Towards a 2030 Vision on the Future of Universities in the field of research and Innovation in Europe, Policy Report".

opportunities for researchers, limiting their ability to compete effectively within the European research landscape. The European Tertiary Education Register (ETER) highlights these funding inequalities, showing that public HEIs in Northern and Western European countries typically receive more resources per student compared to those in the Eastern European countries[11]. As a result, addressing these bureaucratic complexities and regional disparities is crucial for enhancing the overall competitiveness and effectiveness of research across Europe, ensuring that all institutions can thrive and contribute to the continent's knowledge economy.

4.1.3 ATTRACTING AND RETAINING TALENT (C3)

Attracting and retaining talent is a critical challenge for European universities, especially as they compete on a global scale with institutions from other parts of the world[12]. Many researchers are drawn to universities that offer better career opportunities and access to superior research resources, often leading to a brain drain phenomenon where highly skilled individuals leave Europe for more attractive prospects abroad[13]. This is particularly evident among workers, students and researchers from Central and Eastern Europe, who migrate to Western Europe or other regions in search of improved conditions[14][15]. For example, the University of Gdansk reported a lack of support and monitoring in building the career path of a scientist as one of its challenges. Factors influencing this mobility include the availability of funding, research infrastructure, career development opportunities, immigration policies, and work-life balance. The EU is also focusing on making research careers more appealing through efforts within the European Research Area (ERA), such as "a different students/employees status of doctoral candidates across Member States, frequent lack of open, transparent, and merit-based recruitment, precarity linked to short-term project-based contracts, unsatisfactory equal opportunities, work-life balance and wellbeing measures, and weaknesses of social protection tools, including difficulties with the portability of entitlements between sectors and Member States"[16]. However, disparities in funding and career opportunities across member states contribute to the ongoing challenge of brain drain. While Europe boasts about renowned universities and research programs, the uneven distribution of resources, the demographic decline and less attractive career prospects in certain regions hinder the development of a robust research ecosystem. To remain competitive, European universities must enhance their strategies for attracting and retaining talent, ensuring that they provide the necessary support and opportunities for researchers to thrive. This concern was shared by multiple institutions in case studies. While UCC explicitly mentioned brain drain and attracting and sustaining a pipeline of research talent among their major challenges, related issues where risen more broadly, namely the need for a secure and supportive environment for research, thereby attracting and retaining top talent (Amsterdam UMC), the institution of attractive mobility programs for young and senior researchers (KTU) and the

[11] *European Tertiary Education Report (2019) "How are European HEIs funded? New evidence from ETER microdata", page 23.*
[12] *European Commission (2023) "Council Recommendation on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe", page 1.*
[13] *European Commission (2023) "From brain drain to brain circulation: the PSF supports national policy-makers in designing major R&I reforms", page 1.*
[14] *M. Ginnerskov-Dahlberg (Routledge, 2022) "Student Migration from Eastern to Western Europe", page 4.*
[15] *A. Strockmeijer, P. De Beer, J. Dagevos (Journal of Ethnic and Migration Studies, 2019) "Should I stay or should I go? What we can learn from working patterns of Central and Eastern European labour migrants about the nature of present-day migration", page 3.*
[16] *European Commission (2023) "Council Recommendation on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe", pp. 16-18.*

need to adopt better policies and incentives under programs like MSCA and ERC to support talent circulation/mobility (LUISS).

4.1.4 STIMULATING INTERDISCIPLINARY RESEARCH FOR ADDRESSING COMPLEX SOCIAL CHALLENGES (C4)

Interdisciplinary and international interdepartmental research plays a crucial role in addressing complex global challenges that have significant social implications. These challenges, ranging from climate change to public health crises, require collaborative efforts that transcend traditional academic boundaries. However, interdisciplinary research often faces substantial institutional barriers, as traditional academic structures and funding mechanisms frequently do not provide adequate support for these collaborative projects, making it difficult for researchers to secure the necessary funding and recognition[17]. Universities already struggle to develop robust methodologies for assessing the broader impact of their research, which can directly influence funding decisions and policy support. This lack of effective evaluation can hinder the advancement of innovative solutions to pressing societal issues. As sustainability and green research gain prominence in the context of environmental degradation and climate change, universities must align their research agendas with sustainability goals[18]. This alignment requires significant investment in new technologies and methodologies that can drive impactful research. Additionally, the rapid pace of digital transformation presents both opportunities and challenges for academic institutions. While digital tools can enhance research capabilities and collaboration, they also necessitate substantial investments in infrastructure and skills development. Ultimately, fostering interdisciplinary research is essential for effectively addressing these multifaceted issues and promoting meaningful societal change[19]. Breaking down silos and encouraging collaboration of diverse disciplines within a single university, as well as across multiple universities and their respective fields play a crucial role in addressing the challenges of today's world. For this reason, University alliances and EU funding programs promote international collaboration, allowing universities to share resources and knowledge. These collaborations can lead to the pooling of expertise and resources, resulting in more impactful research outcomes.

4.1.5 RESPONSE TO DEMOGRAPHIC CHANGES AND EVOLVING SOCIAL NEEDS (C5)

The World Health Organization (WHO) projects that by 2050 one fifth of the population will be over 60 years old. The coupled tendencies of the demographic crisis and the aging population are putting Western societies under increasing pressure with their evolving societal demands. Within this context, HEIs are uniquely positioned to act as transgenerational institutions. They offer intergenerational environments where students, faculty, alumni, and local communities interact and collaborate. Moreover, as enduring

[17] *E. Berkes, M. Marion, S. Milojevic', B.A. Weinberg (PNAS, 2024) "Slow convergence: Career impediments to interdisciplinary biomedical research", page 2.*
[18] *M.R. Munaro, V.M. John (Elsevier, 2025) "Towards more sustainable universities: A critical review and reflections on sustainable practices at universities worldwide", page 3.*
[19] *Pradeep Kumar Misra (Weekly Journal of Higher Education, 2024) "Fostering Interdisciplinary Research: Benefits and Pathways", page 40.*

institutions, they function as custodians of knowledge, cultural memory, and value systems that extend beyond the lifespan of individuals or cohorts. Embracing this transgenerational identity requires institutional commitment to navigate generational change—not only by managing generational diversity within their communities, but also by designing policies and pedagogies that actively engage intergenerational learning, dialogue, and responsibility. First, revolve around hiring strategies and talent retention to ensure the career pathways of young scholars. The second includes mentoring, volunteering, and mixed-age collaboration. The success of these initiatives depends on institutional factors like policies, culture, and memory, as well as psychological traits among staff and students, including trust, motivation, and knowledge of self-efficacy. Creating a supportive environment that values these elements is key to fostering meaningful intergenerational exchange.[20]

4.1.6 ADDRESSING DIGITAL TRANSFORMATION: IMPACT OF DIGITAL TECHNOLOGIES AND ARTIFICIAL INTELLIGENCE (C6)

Universities face several challenges related to the integration of AI technologies into their research and educational frameworks. One significant barrier is the lack of expertise, as there is often a shortage of qualified personnel skilled in AI and machine learning[21]. The development of the right skillset is fundamental to addressing the labor market implications of AI. To face AI-driven reallocations needs, a combination of technical (data management, data security and data literacy)[22], and transversal (leadership, governance and problem-solving)[23] skills is required nowadays. Additionally, ethical and regulatory concerns, such as data privacy and algorithmic bias, complicate the adoption of AI, requiring universities to navigate complex landscapes while ensuring compliance[24]. Resistance to change among faculty and administration can also hinder AI integration, as concerns about job displacement and the complexity of AI systems arise[25]. Funding limitations pose another challenge, as securing financial securing financial support for AI initiatives is challenging, especially when competing with other institutional priorities. This financial constraint can slow down the adoption of AI technologies.[26] Furthermore, traditional academic structures may not facilitate the interdisciplinary collaboration necessary for effective AI research. Lastly, developing scalable AI solutions that can be applied across various research domains remains a significant hurdle. Addressing these barriers is crucial for universities to fully leverage AI's transformative potential in research and education. In fact, Universities can play a key role in innovation and technology transfer, collaborating with industry and other stakeholders to translate research into practical applications. Many European universities and University alliances, such as the European Alliance of Universities STARS EU[27], have technology transfer

[20] *Leon, R.-D. (2023). Intergenerational learning in private HEIs: strategies and factors of influence, Journal of Professional Capital and Community, 8(3), 145-164. https://doi.org/10.1108/JPCC-02-2023-0009.*
[21] *Fastweb & EY Advisory Spa (2024) "Intelligenza Artificiale e trasformazioni delle organizzazioni e del lavoro: Sfide e opportunità in otto settori", page 87.*
[22] *Fastweb & EY Advisory Spa (2024) "Intelligenza Artificiale e trasformazioni delle organizzazioni e del lavoro: Sfide e opportunità in otto settori", page 51.*
[23] *European Commission (2024) Discussion paper 210 "Artificial Intelligence: Economic impact, Opportunities, Challenges, Implications for Policy", page 23.*
[24] *Attila Dabis, Csaba Csaki (Humanities & Social Sciences Communications, 2024) "AI and ethics: Investigating the first policy responses of HEIs to the challenge of generative AI", page 3.*
[25] *Fastweb & EY Advisory Spa (2024) "Intelligenza Artificiale e trasformazioni delle organizzazioni e del lavoro: Sfide e opportunità in otto settori", page 87.*
[26] *European Commission (2024) Discussion paper 210 "Artificial Intelligence: Economic impact, Opportunities, Challenges, Implications for Policy".*
[27] *The Knowledge and Technology Transfer Office (K&TTO) https://starseu.org/knowledge-and-technology-services/*

offices that support the commercialization of research findings. These offices help bridge the gap between academia and industry, facilitating the development of new products and services based on scientific discoveries.

4.1.7 EMBRACING OPEN SCIENCE IN HIGHER EDUCATION INSTITUTION (C7)

The Covid-19 pandemic has highlighted the importance of Open Science practices, such as open access to scientific publications and the sharing of scientific data[28]. Indeed, these activities can accelerate research and strengthen the relationship between scientific policies and societies. In recent years, the European Commission has significantly invested in Open Science, developing comprehensive policies and initiatives to promote open access to scientific publications, the sharing of research data, and the creation of collaborative platforms like the European Open Science Cloud (EOSC) and Open Research Europe (ORE), an open access publishing venue for European Commission-funded researchers across all disciplines, with no author fees. These efforts aim to enhance the efficiency, transparency, and impact of scientific research across Europe, fostering greater collaboration and innovation within the scientific community and beyond.[29] However, embracing Open Science in HEIs is not simple. There are several challenges to address: absence of incentives to promote Open Science activities; concerns over the legal framework; concerns over increased costs; different disciplinary practices; limited awareness at institutional level of the benefits of Open Science; resistance to making data available or to sharing data; technical complexity; lack of expertise and skilled staff on different areas of Open Science at institutional level; absence of policies or guidelines at national level. In the case studies, LUISS reported a lack of infrastructure around open data, while AUMC identified that employees have little knowledge of relevant research integrity (RI) issues, open science, and data management, alongside a lack of training for seniors. Moreover, AUTH notes that living labs lack mechanisms for recognizing their contributions to Open Science. AUTH also struggles with ensuring the free availability of suitable resources and points to an underutilization of shared data and findings due to a lack of awareness among researchers and the community. These issues are intensified by conventional measures of academic achievement that emphasize publications in prestigious journals rather than the transparent and collaborative approaches promoted by Open Science[30]. In conclusion, while the transition to Open Science presents numerous challenges, the potential benefits for research efficiency, research opportunities, transparency, and collaboration are significant. By addressing these challenges head-on, HEIs can play a pivotal role in fostering an open and innovative scientific landscape that ultimately benefits society. For this reason, the European Commission emphasizes open science as central to European research policy, aiming to make science more efficient, transparent, and responsive to societal needs. This includes practices like early and open sharing of research, open collaboration, and ensuring reproducibility of research outputs.[31] In

[28] E.G. Tse, D.M. Klug, M.H. Todd, (F1000Research, 2020) "Open Science approaches to COVID-19".
[29] https://data.europa.eu/en/news-events/news/european-open-science-cloud-how-initiative-advancing-open-data-and-collaboration
30 CATALISI (2024) "Predictive studies on transversal skills development preparing young researchers for the dynamic European labour market", page 41.
31 https://research-and-innovation.ec.europa.eu/strategy/strategy-research-and-innovation/our-digital-future/open-science_en

fact, Open science practices can enhance the reproducibility of research findings and facilitate the dissemination of knowledge to a broader audience.

4.1.8 SKILLS AND COMPETENCIES (C8)

As the demand for skills rapidly evolves due to technological advancements and globalization, HEIs face increasing pressure to adapt. Europe faces a shortage of skilled graduates from HEI and vocational training, and it falls short in facilitating upskilling and reskilling the workforce. Additionally, the continent struggles to attract talent in global competition for skilled professionals[32]. The European Commission's Union of Skills initiative emphasizes the need for an EU-wide effort to foster both basic and advanced skills, promote lifelong learning, and ensure education systems align with labor market demands[33]. These shifts highlight the necessity for HEIs to be agile, inclusive, and focused on future-oriented competencies. To address these lacks, universities must align their curricula with the skills and competencies demanded by the labour market[34], particularly in bridging the gap between researchers' skills and employer expectations. Through the acceleration service of Predictive Study for Skills Anticipation, From September 2024 to May 2024 EY conducted a study on "Transversal Skills Development: Preparing Young Researchers for the Dynamic European Labour Market" (D3.3) which reveals a significant mismatch between the skills researchers believe they possess and those valued by employers. While researchers rate themselves highly in research and cognitive abilities, employers prioritize project management, impact generation, and public communication. Based on the recommendations of the Predictive Study to enhance researcher readiness, HEIs can integrate digital skills training – including AI, data analytics, and communication tools – into doctoral programs, while promoting entrepreneurial thinking and interdisciplinary collaboration. By doing so, they can ensure that graduates, young researchers, and professors are equipped with relevant knowledge and practical abilities, enhancing their employability, for graduates and young researchers, and contributing to a workforce that meets the evolving needs of industries. This alignment not only benefits students but also strengthens the overall economy by fostering a more skilled and adaptable labor force.[35] Further, training in policy engagement and open science, along with stronger emphasis on public communication, can align research with societal needs. Building project management and leadership skills, while cultivating institutional cultures that support continuous development and collaboration, will ensure researchers are equipped for a dynamic and impactful career path. This was matched by HEIs perceived challenges on public engagement and outreach to society. UJI reported researchers' lack of knowledge and willingness to participate in citizen science and public engagement projects, as well as a distance between the university and civil society. UCC identified a disconnect between research systems and societal actors, funding bodies, and policymakers. UG highlighted a lack of understanding of market needs, an inability to establish partnerships with businesses, and "bad experiences" in past cooperation, along with a lack of relationships between

[32] *European Commission (2025) "Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: the Union of Skills", page 1.*
[33] *European Commission (2025) "Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: the Union of Skills", pp. 7-8.*
[34] *OECD (2024) "Insights from Skills Strategies in the European Union: lessons learnt for developing and implementing effective skills policies", page 57.*
[35] *OECD (2024) "Insights from Skills Strategies in the European Union: lessons learnt for developing and implementing effective skills policies", page 28.*

researchers. As far as the relationship with stakeholders is concerned, AUMC identifies challenges in redeveloping training and building stakeholder networks due to resistance to change and legal complexities. UJI is particularly concerned with a need for better connection with external stakeholders and ensuring enough actions for short-term goals. Through these initiatives, HEIs can position themselves as key players in promoting a culture of continuous learning and innovation, ultimately preparing students for the challenges of the future. By offering flexible learning opportunities and professional development programs, universities can help individuals adapt to the rapidly changing job market and technological advancements. This can also enhance the employability of graduates and contribute to a more resilient workforce. The European Commission has been actively promoting lifelong learning to empower citizens to adapt to the rapidly changing job market. Initiatives include fostering participation in education and training throughout life to enhance employability and social inclusion.

4.1.9 FUNDAMENTAL ACADEMIC, SOCIAL, AND DEMOCRATIC VALUES (C9)

Fundamental academic and democratic values are increasingly under pressure in today's higher education landscape. The rise of populism, misinformation, and societal polarization has led to challenges that threaten the integrity of academic institutions and the principles they uphold. In this context, diversity, inclusiveness, and gender equality have emerged as critical focal points for universities striving to maintain their commitment to these core values. The higher education sector must recognize that fostering a diverse and inclusive environment is not merely a moral imperative but a necessity for academic excellence[36]. Diverse perspectives enrich the learning experience, promote critical thinking, and drive innovation. Gender equality is essential for creating a balanced academic environment where all voices are heard and valued[37]. Moreover, universities play a vital role in shaping democratic values by preparing students to engage thoughtfully and responsibly in society. By prioritizing diversity and inclusiveness, institutions can cultivate a generation of leaders who are equipped to navigate complex social issues and advocate for equity and justice[38]. However, achieving these goals requires intentional efforts and systemic changes within academic institutions. This includes implementing policies that promote equal opportunities, addressing biases in hiring and promotion practices, and creating supportive environments for underrepresented groups. As universities face external pressures, they must remain steadfast in their commitment to uphold fundamental academic values while embracing diversity and inclusiveness. By doing so, they can not only enhance their educational mission but also contribute to the resilience of democratic societies. Ultimately, the pursuit of diversity, inclusiveness, and gender equality is integral to the future of higher education and the preservation of its foundational values[39].

[36] *J. Llorca, V. Royuela, C. Evans, A. Diaz-Guilera, R. Ramos (Humanities & Social Sciences Communications, 2025) "Fostering interdisciplinarity and collaboration: the role of challenge-driven research in European University Alliances through the CHARM-EU experience", page 5.*
[37] *UNESCO (2024) "Global Education Monitoring Report 2024/2025", pp. 192-193.*
[38] *UNESCO (2024) "Global Education Monitoring Report 2024/2025".*
[39] *CATALISI (2024) "Predictive studies on transversal skills development preparing young researchers for the dynamic European labour market", page 20.*

5. THE ROLE OF INSTITUTIONAL TRANSFORMATION IN HIGHER EDUCATION INSTITUTIONS

5.1 WHAT IS AN INSTITUTIONAL TRANSFORMATION IN HEI?

Institutional Transformation is defined as a type of change triggered in an organization and characterized by four main dimensions: a) it is irreversible - visibly rooted and last in time; b) it is comprehensive - capacity to exceeding the changes only on rules and procedures but including other areas; c) it is inclusive, resulting from a collective process including all stakeholders; and d) it is contextualized - considering the background of the research organization and tailoring specific measures for unique organizations. The implementation of Institutional Transformations requires a combination of the social and organizational approach. The first one is more a bottom-up approach, starting from the modification of social patterns such as cognitive, emotional, relational, etc. which are largely shared by the people within the organization, and it supposes a major personal commitment of people to change their own behaviors, views and mindset[40][41]. The social approach needs a certain level of stabilization of the new "behavioral" arrangement, which may be crystalized in clear norms, procedures and structures. Meanwhile, the organizational approach requires a certain level of consensus and involvement to legitimize the changes.

Institutional transformation within HEIs is increasingly recognized as essential for responding effectively to global challenges and the rapidly changing landscape of research and innovation. According to the European Commission, traditional academic structures and processes frequently prove inadequate for addressing contemporary societal demands, highlighting the necessity for comprehensive institutional changes.[42] The European Commission also emphasizes that traditional academic structures must evolve to address contemporary challenges and this is exemplified by the European Universities Initiative, which aims to establish alliances between HEIs across Europe, fostering systemic cooperation in education, research and innovation to promote interdisciplinary collaboration and knowledge creation.[43]

Institutional transformation in higher education is a fundamental change in an institution's culture, operations, and organization. It can involve structural reorganization, behavioral changes, and new units, and it is a long process which needs time for its overall implementation. This transformation is not merely an incremental change; rather, it involves a holistic rethinking of governance structures, organizational culture, operational processes, and stakeholder engagement to create a more dynamic and responsive research environment.[44]

At the core of institutional transformation in HEIs lies the need for a governance model that is both flexible and adaptive. This involves rethinking leadership roles and decision-making structures to ensure transparency, inclusivity, and responsiveness to rapidly evolving

[40] Berger, P. L., and T. Luckmann. 1966. The Social Construction of Reality: A Treatise in the Sociology of Knowledge. Garden City, NY: Anchor Books

[41] North, Douglass C. and Alt, John, Institutions, Institutional Change, and Economic Performance (1990). University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship

[42] EUR-Lex - 52022DC0016 - EN - EUR-Lex

43 Report on the outcomes and transformational potential of the European Universities initiative - Publications Office of the EU

44 https://eige.europa.eu/gender-mainstreaming/tools-methods/institutional-transformation?language_content_entity=en#:~:text=Institutional%20transformation%3A%20an%20online%20tool%20for%20public%20institutions,as%20a%20consequence%2C%20also%20affects%20the%20outside%20environment.

academic and societal demands. As Eckel (2002)[45] underscores, the success of transformation processes depends on aligning institutional frameworks with a culture of shared responsibility and broad stakeholder engagement. Adaptive leadership is key in this context, as it promotes organizational resilience and enhances collaboration across institutional boundaries. Furthermore, inclusive governance practices contribute significantly to institutional agility and long-term effectiveness, providing mechanisms that are better equipped to anticipate and respond to external pressures such as policy changes and innovation challenges[46] (Association of Governing Boards of Universities and Colleges [AGB], n.d.). Embedding adaptability and inclusivity within governance structures thus becomes a strategic imperative for HEIs pursuing sustainable transformation.

Building upon adaptive governance, institutional transformation in HEIs necessitates reconfiguring knowledge of production and dissemination. Central to this shift is the promotion of interdisciplinary collaboration, enabling institutions to change traditional academic culture and integrate diverse perspectives. Such collaboration enhances research methodologies and strengthens the capacity to address complex societal challenges with innovative, holistic solutions. This approach is instrumental in strengthening HEIs' roles within the European Research Area (ERA), where seamless knowledge circulation and interdisciplinary engagement are key priorities[47]. Engaging a broad spectrum of stakeholders, including faculty, students, industry partners, and civil society help cultivate a vibrant research ecosystem attuned to real-world needs.

Simultaneously, the digital transformation of research practices accelerates this institutional shift. Strategic adoption of digital technologies facilitates efficient data management, broadens collaborative opportunities across borders, and supports real-time, evidence-based decision-making. Digital platforms also expand the reach and impact of academic work by enabling researchers to communicate findings to diverse audiences beyond academia.[48]

Lastly, a truly transformative institutional model drives inclusivity at its core. Ensuring underrepresented groups are actively empowered in research processes strengthens academic rigor and social relevance. Such inclusive practices resonate with European policy frameworks like the European Skills Agenda and the Digital Education Action Plan, which underscore the value of diverse competencies and equitable participation in the knowledge economy.

In conclusion, institutional transformation in HEIs is a comprehensive and strategic initiative that seeks to enhance research effectiveness and societal impact through innovative governance, interdisciplinary collaboration, digital integration, and a commitment to inclusivity. By embracing these transformative changes, HEIs can position themselves as leaders in research and innovation, driving progress and contributing to the advancement of knowledge and societal well-being in an increasingly interconnected and rapidly evolving global landscape.

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[45] Eckel, P. D. (2002). Institutional transformation and change: Insights for faculty developers. American Council on Education. https://quod.lib.umich.edu/t/tia/17063888.0020.003/--institutional-transformation-and-change-insights-for?rgn=main;view=fulltext

46 Association of Governing Boards of Universities and Colleges. (n.d.). Transforming shared governance into an engine for agility. AGB. https://agb.org/trusteeship-article/transforming-shared-governance-into-an-engine-for-agility/

47 Tight, M. (2023). Incentivising interdisciplinary research collaboration: evidence from UK higher education. Journal of Higher Education Policy and Management, 45(1), 1–17. https://doi.org/10.1080/1360080X.2023.2267719

48 Tight, M. (2023). Incentivising interdisciplinary research collaboration: evidence from UK higher education. Journal of Higher Education Policy and Management, 45(1), 1–17. https://doi.org/10.1080/1360080X.2023.2267719

5.2 WHERE IS INSTITUTIONAL TRANSFORMATION NEEDED TO RESPOND TO THE CHALLENGES THAT UNIVERSITIES ARE FACING?

Building on the points outlined in the previous chapter, institutional transformation in Higher Education Institutions (HEIs) centers on three critical areas: governance, organizational culture, and operational processes.

- **Governance**. Transformation requires adopting flexible and adaptive governance models capable of responding to the evolving research and innovation landscape. This includes fostering interdisciplinary collaboration and embedding a culture of continuous improvement.
- **Organizational Culture**. A shift toward inclusivity and support is essential to encourage diversity and equity in research. Institutions must rethink values, norms, and behaviors to create an environment that promotes innovation, collaboration, and openness.
- **Operational Processes**. Leveraging digital technologies is key to enhancing research capabilities and streamlining administrative workflows. Digital transformation enables efficiency and strengthens institutional capacity for high-quality research.

It is important to recognize that change and transformation can occur at multiple levels within HEIs: at the individual level (such as researchers adopting new practices), at the department or faculty level (through local initiatives and leadership), and at the wider strategic, university-wide level (through comprehensive institutional policies and reforms). Addressing transformation across these interconnected levels ensures that change is both deep and sustainable.

These changes are driven by the need to address societal challenges, adapt to the rapidly changing research and innovation ecosystem, and enhance HEIs' ability to deliver impactful, high-quality outcomes.

In alignment with this vision, the CATALISI model has been developed to facilitate and accelerate institutional transformation within HEIs. It is structured around two core pillars: facilitators and implementers. The model is operationalized through two interlinked dimensions: domains and acceleration services. The three strategic domains: Human Capital, Research Modus Operandi, and Finance, define key areas where transformation is most needed. Within each domain, specific intervention areas have been identified, guiding institutions in designing and implementing reforms that align with their unique needs and contexts.
Human Capital represents the backbone of a university's capacity for Research and Innovation (R&I). This domain focuses on fostering excellence, inclusiveness, and adaptability within academic communities. CATALISI identifies the following intervention areas to promote transformation:
First, the recognition of qualifications and research careers is essential for ensuring alignment across national systems to promote transparent and fair recognition, ultimately enhancing researcher mobility and career development. The digitization of the higher education sector follows as a priority, with the integration of digital technologies aimed at improving learning environments, teaching quality, and administrative efficiency.

The reform of research assessment constitutes another key area, steering institutions toward more responsible, transparent, and diverse evaluation criteria that place greater value on openness, collaboration, and societal impact. Promoting talent circulation and mobility is also central, encouraging cross-border and interdisciplinary movement of researchers to support knowledge sharing and institutional capacity building. Furthermore, lifelong learning is addressed through the development of flexible, inclusive learning pathways designed to foster continuous skills development at all life stages and across various professional contexts. The strategy for strengthening human capital includes investing in recruitment, development, and retention approaches that build resilient academic communities capable of innovation. Finally, gender equality and inclusiveness are promoted by embedding inclusive policies and practices across research and teaching activities, advancing diversity within academic institutions.

The second domain, Research Modus Operandi, addresses how research is conducted, shared, and connected to society. It promotes transformative practices that enhance quality, openness, and engagement. A primary area of intervention is open science and digitisation of research, which supports transparency, collaboration, and reproducibility through open-access practices and digital tools. Public engagement and outreach are another important focus, aiming to strengthen the connection between research institutions and society by involving citizens in co-creation and increasing science communication efforts.

Lastly, the third domain, Finance, emphasizes that transformation is unsustainable without a robust financial foundation. This domain is focused on securing and managing resources to sustain long-term institutional change. The area of sustainability in education prioritizes expanding access to public and private funding sources to support inclusive and high-quality teaching and learning initiatives. In terms of sustainability in research, the goal is to ensure consistent investment in excellent and impactful research through tailored financial strategies and the development of external partnerships. Lastly, sustainability in campus operations is promoted by encouraging green, cost-efficient, and resource-conscious practices in infrastructure, energy use, and institutional logistics.

Addressing these key areas for institutional transformation is crucial for HEIs to remain resilient and responsive to the challenges ahead. By focusing on governance, human capital, research methodologies, and financial sustainability, universities can enhance their ability to innovate and meet the evolving needs of society. Strengthening governance enables more effective decision-making, while investing in human capital ensures the right talent is in place to drive progress. Evolving research practices will ensure that research remains relevant and impactful, while financial sustainability provides the foundation needed for long-term success. Prioritizing these areas will help HEIs stay agile and equipped to face future demands, fostering a culture of continuous improvement and creating a lasting impact on education and research.

5.3 THROUGH WHAT CULTURAL FRAMEWORK IS INSTITUTIONAL TRANSFORMATION IN HEIS BEST UNDERSTOOD?

To ensure the long-term viability and fulfilment of the missions of HEIs mentioned above, institutional transformation must be framed not as a singular, episodic intervention, but as a continuous and adaptive process. Within this process, organizational culture emerges as a

pivotal element, as it can either enable or constrain the successful implementation of new strategies and practices of institutional transformation in the sector.

Cultural frameworks refer to the engrained patterns of behavior, shared values, assumptions, beliefs, and ideologies that collectively shape how individuals experience and act within the educational and academic environment. Thus, they are helpful in recognizing how members of institutions interpret their roles, relate to one another, and respond to both internal dynamics and external challenges. Research suggests that efforts for change that do not align with the existing cultural fabric of an institution are highly susceptible to resistance and may ultimately fail to achieve their intended outcomes.[49] Key factors of resistance to change include persisting historical legacies, exclusionary practices, past failure of institutional transformation efforts.[50] In the case studies, Kaunas University of Technology (KTU) identified the need for a vivid community of practice to facilitate the exchange of practices and challenges. On the contrary, successful institutional transformation needs be grounded in updated cultural frameworks comprehensively engage all stakeholders of HEIs, both traditional (trustees, alumni and donors, community groups, local businesses, and foundations) and non-traditional (community agencies, local businesses, and civic groups).[51]

One keyway cultural framework to enhance our understanding of institutional transformation is by offering diagnostic tools to assess the existing culture. Frameworks developed in the field of business and organizational culture can be profitably engaged for institutional transformation in HEIs. Bergquist's institutional archetypes[52] (collegial, managerial, developmental, negotiating, virtual, tangible) and Tierney's dimensions of institutional culture[53] (environment, mission, socialization, information, strategy, leadership) can allow HEIs to identify their dominant cultural characteristics. For instance, a highly collegial institution might respond best to change driven by faculty consensus, while a managerially focused institution might favor top-down, efficiency-driven approaches. Furthermore, cultural frameworks, such as Schein's multilayered model[54], emphasizing the different layers of culture of underlying assumptions and beliefs, norms and values, and artifacts, is vital to capture why certain change efforts might be met with resistance, even if they seem logical and broadly accepted at the surface level. Instead, by addressing deeper cultural elements, HEIs can develop more effective strategies to overcome obstacles to transformation. Kezar's six perspectives on change[55] include a cultural change perspective, which posits that organizational culture is in a constant state of adaptation to its environment, involving gradual and non-linear shifts in fundamental assumptions and values. Lastly, most recently, a framework to grasp the connection between institutional culture in HEIs and sustainability has been proposed.[56] By paying attention to the cultural context, HEIs can increase the likelihood of successful transformation and better position themselves to meet the evolving demands of the higher education landscape.

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[49] Petersen, Steven A. and Bartel, Susan M. (2020). When Culture and Change Collide In Higher Education: A Case Study at One University, Administrative Issues Journal, 10(2): 46-59. DOI:10.5929/2020.10.2.4. Available at: https://dc.swosu.edu/aij/vol10/iss2/2.

[50] Luvalo, L.M. (2024). Re-imagining Institutional Culture for a Socially Just University, Social Sciences and Education Research Review, 11(1): 219 – 226.

[51] Eckel, P. D. (2002). Assessing Change and Transformation in Higher Education: An Essential Task for Leaders. Metropolitan Universities, 13 (2): 80-93. https://repository.upenn.edu/gse_pubs/457.

[52] Bergquist, W. H., Pawlak, K. (2008). Engaging the six cultures of the academy: Revised and expanded edition of the four cultures of the academy. Jossey-Bass.

[53] Tierney, W. G. (2016). The impact of culture on organizational decision-making: Theory and practice in higher education. Stylus Publishing.

[54] Schein, E. H. (1985). Organizational culture and leadership. Jossey-Bass.

[55] Kezar, A. (2018). How colleges change: Understanding, leading, and enacting change. Routledge.

[56] Ranf, D. E., Halmaghi, E., Badea, D., Gorski, A., Gorski, H. (2024). Modelling the influences of universities culture on sustainable development. Management Dynamics in the Knowledge Economy, 12(4): 448–466. https://doi.org/10.2478/mdke-2024-0026.

Within the scope of CATALISI and its three domains, a multifaced theoretical approach is best suited for addressing the current landscape of challenges that HEIs are faced in a flexible and comprehensive manner. A synthetic approach would therefore frame HEIs as:

- **Interpersonal.** Traditional academic leadership often relies on managerial and transactional models that reinforce individual achievement and maintain the status quo instead of collaborative organization.[57] However, advancing sustainability and institutional innovation in HEIs requires a shift toward values-based, collective leadership.[58] New leadership models are vital to support institution-wide collaboration, experimentation, and community-oriented goals. Four such transformational models include: shared leadership[59] (emphasizing distributed responsibility), creative and innovative leadership[60] (encouraging risk-taking and experiential learning), qualitative leadership (grounded in evidence-based decision-making), and dynamic leadership[61] (highlighting adaptability and cross-functional thinking). Moreover, inclusivity and social justice frameworks can enforce the interpersonal structure of HEIs, resulting in increased efficiency and well-being of the stakeholders, as seen, for instance in the entrepreneurial domain.[62]
- **International.** In the face of global challenges, HEIs needs to be framed as international entities that are deeply interrelated and collaborative. Internationalizing efforts can significantly impact institutional culture, often serving as both a driver and an outcome of cultural change.[63] Different models for internationalization – such as competitive, liberal, and social transformation – reflect underlying cultural values and priorities on global engagement.[64] Navigating cultural differences and addressing potential power imbalances in international partnerships present significant challenges that require cultural sensitivity and awareness. When asked about the importance of different priority areas for their institutions, respondents to the *Trends 2024* survey allocate the highest score to internationalization (83%) and the data is consistent even for institutions that predominantly serve national or local students.[65] International collaborations and alliances themselves can foster intercultural and interdisciplinary activities, further influencing the cultural landscape of HEIs.[66] One key aspect of cultural change to address HEIs' international dimension relates to the culture around open science. Research products need to be perceived as

[57] *Haddock-Fraser, J., Rands, P., Scoffham S. (2018). Leadership for sustainability in higher education. Bloomsbury Academic.*
[58] *Whittaker J.A., Montgomery B.L. (2022). Advancing a cultural change agenda in higher education: issues and values related to reimagining academic leadership. Discover Sustainability, 3(1):10. https://doi:10.1007/s43621-022-00079-6.*
[59] *Northouse, P.G. (2013). Leadership: theory and practice. Sage Publications. See also, Sivasubramaniam, N., Murry, W. D., Avolio, B. J., & Jung, D. I. (2002). Longitudinal model of the effects of team leadership and group potency on group performance. Group & Organization Management, 27(1): 66–96. https://doi.org/10.1177/1059601102027001005.*
[60] *Mumford M.D., Scott G.M., Gaddis B., Strange J.M. (2002). Leading creative people: orchestrating expertise and relationships. The Leadership Quarterly. 13(6):705–50. https://doi.org/10.1016/S1048-9843(02)00158-3. See also, Montgomery B.L. (2018). Pathways to transformation: institutional innovation for promoting progressive mentoring and advancement in higher education. Susan Bulkeley Butler Center for Leadership Excellence ADVANCE Working Paper Series, 1(1):10–18.*
[61] *von Lubitz, D., Wickramasinghe, N. (2006). Dynamic leadership in unstable and unpredictable environments. International Journal of Management and Enterprise Development, 3(4): 339-350. https://doi.org/10.1504/IJMED.2006.009085.*
[62] *Henry, C., Wu, W., Moberg, K., Singer, S., Gabriel, B., Valente, R., Carlos, C., Fannin, N. (2024). Exploring inclusivity in entrepreneurship education provision: A European study. Journal of Business Venturing Insights, 22. https://doi.org/10.1016/j.jbvi.2024.e00494*
[63] *Frontiers, Essentials of Institutional Transformation: Advancing Equity and Excellence Through a State Performance-Based Funding Model Report. https://frontierset.org/wp-content/uploads/2023/06/essentials-of-institutional-transformation-advancing-equity-and-excellence-through-a-state-performance-based-funding-model.pdf*
[64] *Piazza, R., Castiglione, G., & Guevara, J. R. (2024). Universities in global transformation: Re-thinking curriculum integration and collaboration to co-create our future. Journal of Adult and Continuing Education, 31(1): 232-243. https://doi.org/10.1177/14779714241263779.*
[65] *EUA, Trends 2024 Report. https://www.eua.eu/publications/reports/trends-2024*
[66] *Teunissen, R. A. G., Dierx, J. A. J., Venter, T., Young, C. T., & Titus, S. (2022). Managing international, intercultural, and interdisciplinary collaboration in health and well-being capacity building: lessons learned within the CASO higher education project. Studies in Higher Education, 48(1), 49–62. https://doi.org/10.1080/03075079.2022.2106204.*

contributions to a wider and dynamic community of researchers that extends across countries, where accessibility to research findings and practices through open science is crucial to promote the acceleration of research impact and effectiveness in the shared research ecosystem. However, such efforts may entail needing to face resistance to change and fear of losing intellectual property, as well as challenges of cultural differences and power asymmetries in partnerships, which demand sensitivity and awareness.

- **Interdisciplinary.** Today's global society offers complex problems, solutions to which require transcendence of traditional discipline-based boundaries, and new forms of knowledge-sharing. A recently developed Higher Education Interdisciplinarity Model (HIM) offers a comprehensive framework for embedding interdisciplinarity into HEIs, recognizing it as essential for students' training to tackle complex global challenges.[67] Six core enablers are identified, namely positioning people, environment, reward, conduct, and communication. Interdisciplinarity is found to often thrive outside formal curricula, in more flexible and collaborative spaces. Moreover, interdisciplinary work requires authentic leadership, supportive team dynamics, and strong role models who embody collaborative values are crucial for the effectiveness of an interdisciplinary approach. The model also emphasizes mutual respect and intellectual openness, encouraging cultural and methodological exchange among disciplines. Although this is a promising avenue for institutional transformation, still standing obstacles and challenges need to be addressed. A study investigating the Italian HE system defined three types of inconsistency and correlated challenges that HEIs need to address, namely ambiguity, conflict, and incompatibility.[68] Moreover, for national HE systems to decisively stimulate interdisciplinarity, institutional transformation needs to involve both metrics of national research evaluation and more cultural discipline standards, which currently penalize interdisciplinary research.[69]
- **Inter and Transgenerational.** A cultural framework that understands HEIs as transgenerational institutions can address generational dynamics and gaps, both intra-groups (as among faculty members) and more broadly, as a general community of stakeholders. Intergenerational learning is useful to address a number of pressing issues, such as demographic changes, ageism, workplace preparation, changing student population, social isolation and diversity of intergenerational experiences.[70] Recent studies have shown the potential of multigenerational classrooms to extend intergenerational learning outside family structures, and which is increasingly adopted by European HEIs.[71] However, a significant level of resistance is still found within faculty members, especially those with tenured positions and at a later career stage. However, more experienced academics are found to benefit from younger scholars in

[67] *Power, E. J., & Handley, J. (2017). A best-practice model for integrating interdisciplinarity into the higher education student experience. Studies in Higher Education, 44(3):554–570. https://doi.org/10.1080/03075079.2017.1389876.*
[68] *Avallone, F. G., Quagli, A., & Ramassa, P. (2022). Interdisciplinary research by accounting scholars: An exploratory study. Financial Reporting, 2:5-34. https://doi.org/10.3280/fr2022-002001.*
[69] *Donina, D., Seeber, M., Paleari, S. (2017). Inconsistencies in the Governance of Interdisciplinarity: The Case of the Italian Higher Education System, Science and Public Policy, 44(6): 865-875, https://doi.org/10.1093/scipol/scx019.*
[70] *(2024) Promoting Intergenerational Teaching and Learning in Higher Education: A Michigan Initiative Report Generations United. https://www.gu.org/app/uploads/2024/06/GU-24-MichiganReport-WEB.pdf*
[71] *Sánchez, M., Kaplan, M. (2013). Intergenerational learning in Higher Education: Making the case for multigenerational classrooms. Educational Gerontology, 40(7):473-485. https://doi.org/10.1080/03601277.2013.844039. See also, Franz, J., Scheunpflug, A. (2016). A Systematic Perspective on Intergenerational Learning: Theoretical and Empirical findings. Studia Paedagogica, 21(2): 25-41. https://doi.org/10.5817/sp2016-2-3.*

target-specific domains, such the use of technology and AI implementation within HEIs.[72]

In conclusion, addressing the current challenges faced by HEIs requires an integrated and multidimensional approach that considers the interconnections between culture, leadership, and innovation. Only through a conscious and inclusive cultural transformation can HEIs adapt to the ever-evolving dynamics of the global educational landscape. Investing in collaborative leadership models and promoting internationalization and interdisciplinarity will not only enhance student preparedness but also contribute to creating a more resilient and responsive academic environment capable of tackling future challenges.

5.4 HOW TO MAXIMIZE THE IMPACT OF INSTITUTIONAL TRANSFORMATIONS IN THE HIGHER EDUCATION INSTITUTIONS

Institutional transformation is a complex and long-term process, requiring deep shifts in governance, culture, research practices, and financial sustainability. The CATALISI model supports HEIs in going through this transformation by offering a range of acceleration services designed to accelerate the process and maximize its impact. It is important to note that CATALISI is not a finalized model, but rather an ongoing experiment in the use of acceleration services for institutional transformation. The project's approach is iterative and adaptive, allowing for continuous learning and improvement based on real-world experience, as well as the acceleration services.

These acceleration services are tailored to help HEIs address the challenges they face in the fields of Research and Innovation, strengthening European University collaborations, and aligning them with European values. **The Design Lab for transformational pathways** enables Higher Education Institutions (HEIs) to co-design tailored transformation pathways that align with their unique contexts and strategic objectives. Through structured workshops and collaborative planning sessions, institutions identify priorities, set clear milestones, and develop comprehensive Action Plans. The service emphasizes ownership and accountability, ensuring that transformation efforts are actionable, measurable, and adaptable over time. Through this acceleration service each implementer develops its own Pathway to follow through their transformational process

To bridge the gap between research and society, the **Living Lab** provides a participatory environment where HEIs can pilot new ideas, policies, and practices in real-world settings. By engaging with a broad range of stakeholders, including students, staff, and external partners, this service facilitates rapid feedback and iterative improvement. The Living Lab fosters a culture of experimentation, transparency, and societal engagement, helping institutions develop solutions that are both innovative and scalable.

Counselling offers ongoing, personalized support to institutions as they navigate complex change processes. Counselling includes expert advice, peer mentoring, and targeted problem-solving sessions, all tailored to the evolving needs of each HEI. The service is designed to help institutions overcome obstacles, resolve bottlenecks, and maintain momentum throughout their transformation journey.

[72] *Culp-Roche, A., Hampton, D., Hensley, A., Wilson, J., Thaxton-Wiggins, A., Otts, J. A., Fruh, S., Moser, D. K. (2020). Generational differences in faculty and student comfort with technology use. SAGE Open Nursing, 6. https://doi.org/10.1177/2377960820941394.*

Capacity **Building and Outreach**. delivers targeted training, workshops, and outreach activities to strengthen institutional competencies. It supports the development of skills and knowledge in areas such as Responsible Research and Innovation (RRI), digital transformation, and stakeholder engagement. By fostering communities of practice and facilitating connections with external partners, this service ensures that transformation is underpinned by a broad and adaptable skill base.

The Predictive Study on Skills Anticipation provides institutions with forward-looking insights into labor market trends and emerging research needs. Through data analysis and scenario planning, HEIs can proactively adapt to curricula, research agendas, and talent strategies. The service supports strategic planning and helps ensure that institutions remain relevant and competitive in a rapidly changing environment.

The **Catalyst Hub**. serves as a central platform for connecting HEIs with funding opportunities, industry partners, and innovation ecosystems. Its integrated Marketplace function allows institutions to access and offer services, resources, and expertise, fostering a vibrant exchange that accelerates institutional growth. The service also supports the commercialization of research and the development of sustainable business models.

Mutual Learning and Knowledge Sharing (MML) & Twinning MML and Twinning are foundational acceleration services that facilitate structured exchanges and deep collaboration between institutions. Through joint workshops, peer visits, and collaborative projects, HEIs learn from each other's successes and challenges. These activities accelerate the transfer of effective practices, foster trust, and build lasting networks, enabling institutions to co-develop and adapt solutions to shared challenges.

Lastly, the **Community of Practice** establishes collaborative networks where HEIs and external stakeholders can share experiences, co-develop solutions, and disseminate best practices. The Community of Practice nurtures a culture of continuous learning and collective problem-solving, supporting the diffusion of successful models and approaches across the sector.

Together, these acceleration services maximize the impact of institutional transformations by providing HEIs with the tools, expertise, and support needed to implement meaningful change. By enabling universities to accelerate their transformation processes, the CATALISI model ensures that HEIs are not only prepared to face current challenges but are also equipped to drive innovation and societal progress well into the future.

5.5 PRELIMINARY EVIDENCE AND DATA TO SUPPORT EMERGING POLICY RECOMMENDATIONS

Throughout the project, University College Cork, in its capacity as Evaluation and Impact Assessment leader, conducted a series of formative and summative evaluation activities to assess the role of CATALISI in institutional change, with a particular emphasis on the policy aspect. This approach is different to the typical summative evaluations that happen as part of such projects. Through these evaluation activities, which consisted of interviews, surveys, workshops and structured discussions with the implementing partners, UCC was able to guide the implementers in real time and build a comprehensive understanding of the role played by CATALISI in developing useful policy insights for current and future projects. It is important to note that this chapter does not comprise the entirety of the data and evidence which emerged from the Evaluation and Impact Assessment activities, it is however a summary of that work, describing the connection between the actions conducted within

CATALISI with the creation of a set of policy recommendations contained in Chapter 6. For an exhaustive overview of the Formative and Summative evaluations conducted by UCC, please refer to D4.2 of the CATALISI project.

Regarding Action Plan implementation, most of the partners' actions were integrated at the strategic level, indicating a strong commitment to embedding change within core institutional structures. The involvement of senior leadership was identified as a key factor in achieving alignment with broader organizational agendas. Institutions reported a range of tangible achievements, including training programs, policy revisions, and digital tools. Notable examples included instruments for monitoring Open Access adoption and cross-institutional surveys on research integrity. These outputs were complemented by outcomes such as increased grant acquisition, integration of new frameworks, and adoption of co-creation methodologies. While long-term impacts were more difficult to assess within the project's timeframe, several indicators suggest potential for sustained change. The analysis also highlighted the importance of cross-institutional learning. Implementing Partners valued the opportunity to engage with peers, exchange best practices, and reflect on their own approaches. Mechanisms such as MMLs and Twinnings facilitated this exchange, though some partners noted uneven engagement with certain acceleration services.

Challenges were identified in several areas. The late development of some Action Plans and related KPIs created difficulties in tracking progress. Some partners expressed uncertainty about the purpose and utility of specific support mechanisms, particularly those related to exploitability and commercialization. Cultural resistance to non-traditional methods was also noted, especially in contexts where institutional change is slow or contested. Despite these challenges, the initiative was widely regarded as a valuable learning experience, partners emphasized the importance of aligning transformation efforts with practical realities, maintaining stakeholder engagement, and ensuring strategic coherence. Facilitators reported gaining a deeper understanding of the complexities of institutional change and expressed interest in applying these insights in future projects.

At the national level, the analysis revealed common concerns about funding constraints and policy alignment with institutions highlighting the need for targeted funding schemes to support long-term transformation and calling for greater integration between national policies and institutional agendas. Differences in readiness and support across national contexts were noted, with some institutions operating in more conducive environments than others.

Recommendations for future initiatives included clearer definitions of acceleration services, and possibly a fewer number of these accelerations which each implementer can choose to use during the implementation of their transformational pathway, improved coordination between partners, and greater emphasis on sustainability. Partners suggested separating the roles of implementation and evaluation, extending project timelines, and embedding support services into governance structures. More prescriptive guidance on how to interpret the intervention was also requested. The importance of digital infrastructure, stakeholder engagement, and cross-sector collaboration was also emphasized.

Unanticipated opportunities emerged during the initiative, including new collaborations, funding streams, and stakeholder engagements. Facilitators reported gaining insights into the internal workings of HEIs, positioning themselves for future EU-level actions. These

developments underscore the potential of the initiative to generate lasting value beyond its formal scope.

Dissemination activities were varied and included publications, events, and digital communications. However, understanding of exploitability remained limited among some partners. While toolkits and academic papers were proposed, many institutions expressed uncertainty about how to define and pursue exploitable results while Facilitators were more confident in this area, offering structured approaches to support institutional change.

UCC collected feedback on the Acceleration Services and found a mixed set of opinions and suggestions; briefly:

- **Living Labs** were generally appreciated, though partners called for greater adaptability and stakeholder involvement.
- **Counselling** services received both praise and criticism, with some partners unclear about their purpose.
- **Transformational Pathways** were seen as useful when endorsed by senior leadership, though overlapping with other planning tools was noted.
- Other services, such as **Predictive Studies** and the **Community of Practice**, were viewed as less useful/impactful in terms of university change, with suggestions for improved integration and clearer objectives.
- **Capacity Building and Outreach** received the most positive feedback. Partners valued the opportunity for peer learning and recommended greater flexibility in format, broader stakeholder inclusion, and improved scheduling.
- The **Catalyst Hub** was met with limited engagement, and partners called for clearer purposes and stronger involvement of HEIs.

The feedback from partners was such that there were some acceleration services that were more relevant than others. Therefore, there may be a case for primary (obligatory) and secondary acceleration services, the latter which could be chosen if applicable to your transformation.

For the universities that were advanced in delivering university-wide change during the project, some common factors emerged from the formative and summative evaluation process undertaken by UCC:

- **Who**: Involving the right people in the project. A mix of bottom up and Top-down approach. The involvement of senior leadership and decision makers contributed positively to changing agendas. Involving stakeholders. Using existing and new governance structures in the change agenda helps to strategically embed the change post project.
- **What**: Getting the right balance between ambition and realism on what can be achieved during the term of the project. The External Advisory Board also raised this in their feedback to partners. Some of the most advanced outcomes came from universities that had a relatively narrow focus. Spending time on the right activity.

- **Where**: Successful utilization of the acceleration services. For example, on-site twinning's and mutual learning events contributed in a leading way to change, especially when these were well planned. Online webinars and presentations, perhaps their linking to relevant action items relevant to the partners. Similarly, advanced impacts and collaboration on change emanated from in-person exchanges.

Embedding the actions in strategic documents of the university can also be helpful with regard to delivery.

- **When**: It was clear that some of the most advanced outcomes were delivered through leveraging work that was already commenced in universities and adding value, or through synergies and building on previous projects. The timing was right for that particular area of focus, and CATALISI allowed that to be accelerated and progressed.
- **How**: Using the acceleration services as appropriate and embedding these within action plans. Pursuing the change through co-creating, implementing, and ongoing evaluation engagement. A move to the use of a Theory of Change and strategic KPIs and having clear ownership of the actions within plans are all common to the universities that were advanced in delivering desired change.

In conclusion, the CATALISI initiative has contributed to institutional transformation across participating HEIs. While challenges remain in measuring long-term impact and ensuring sustainability, the analysis reveals a strong commitment to strategic change, stakeholder engagement, and cultural evolution. The findings offer valuable insights for policymakers seeking to support systemic transformation in higher education and research.

6. EVIDENCE BASED RECOMMENDATIONS

The policy recommendations presented here are conceived as actionable responses to the strategic and theoretical framework for institutional transformation developed in the preceding Chapter. The framework defines institutional transformation as a multidimensional, inclusive, and context-sensitive process, essential for Higher Education Institutions (HEIs) to address the complex challenges identified earlier in this document.

All recommendations are designed to enable, sustain, or accelerate institutional transformation, translating theoretical principles into concrete guidance for universities and policymakers. Each recommendation is explicitly linked to the dimensions and interventions of transformation, ensuring clarity about its intended impact and operational scope.

The evidence base for these recommendations is robust and participatory. It draws on the main outcomes of the CATALISI project, including findings from case studies, predictive studies, interviews with stakeholders, the evaluation and impact assessment work led by University College Cork (UCC), the development of institutional pathways, the Policy Validation session, and the overall results achieved by the consortium. This approach ensures that each recommendation is grounded in CATALISI project and validated by diverse perspectives across the European higher education sector.

Importantly, the recommendations are directly connected to the challenges previously analyzed, such as funding disparities, talent attraction and retention, digital transformation,

and the need for interdisciplinary collaboration (*further detailed in Appendix A below*), and are structured to address these issues in a strategic and integrated manner.

By situating the recommendations within this comprehensive framework, this section ensures that they are both actionable and aligned with the broader objectives of the CATALISI project. This approach supports universities, alliances, and policymakers at local, national, and European levels in advancing institutional transformation and addressing the pressing challenges facing higher education today.

6.1 ADOPT A FLEXIBLE AND ADAPTIVE GOVERNANCE MODEL

Governments should encourage HEIs to implement governance structures that are flexible and adaptive, foster interdisciplinary collaboration, and promote a culture of continuous improvement. Leveraging the unique interpersonal, international, interdisciplinary, and intergenerational dimensions of HEIs, academic leadership should shift from managerial and transactional models to more dynamic, collectivity-oriented ones, prioritizing distributed decision-making and responsibility. Moving towards more adaptive governance could equip HEIs to design institutional transformation pathways that are sustainable and long-lasting. This approach enables institutions to respond more effectively to the rapidly changing landscape of research and innovation. The European Universities Initiative exemplifies this model by promoting systemic cooperation across education, research, and innovation, creating inter-university campuses that facilitate seamless mobility and collaborative knowledge creation across disciplines.[78] University Alliances play a vital role in this context. Interviews confirm that a multi-level governance model proves especially successful for them, combining a shared strategic vision with effective operational coordination. Moreover, positive changes in governance approaches have been observed, particularly in universities where leadership was engaged from the start. Some institutions adopted a bottom-up approach, allowing departments to pilot initiatives and then scale successful practices, which facilitated internal collaboration and innovation. By establishing frameworks that allow for dynamic decision-making and stakeholder engagement, HEIs can better align their strategies with societal needs and expectations.

This recommendation responds to the following challenges identified:

Adopt a Flexible and Adaptive Governance Model	Bureaucracy and regional disparities in European and national research funding (**C2**) Fundamental academic, social, and democratic values (**C9**)

6.2 CREATE AN INCLUSIVE AND SUPPORTIVE ENVIRONMENT

HEIs must prioritize the creation of environments that encourage diversity and equity in research. This involves rethinking institutional values, norms, and behaviors to promote innovation and collaboration. The European Commission emphasizes the need for HEIs to

transform in ways that make lifelong learning and talent circulation a reality, necessitating a fundamental shift in how institutions approach inclusivity.[79] Persistent challenges reported by implementers at the end of CATALISI included promoting coordination among various university areas and increasing faculty and staff engagement in events and seminars. Cultural challenges within institutions, with some stakeholders resistant to changing established practices, were also noted. The efforts to overcome these by promoting coordination and engagement imply a more collaborative and supportive internal environment, as well as dedicated funds to hire specialized human resources for partnerships, posing relevant challenges in terms of staffing and funding. Governments should support initiatives that foster inclusive practices, such as mentorship programs for underrepresented groups and policies that address systemic biases in hiring and promotion. Additionally, funding should be allocated to programs that enhance the participation of diverse populations in research activities, ensuring that a wide range of perspectives is represented in academic discourse. By embedding inclusivity into the fabric of HEIs, institutions can enhance their research quality and societal relevance.

This recommendation responds to the following challenges identified:

Create an Inclusive and Supportive Environment	Attracting and retaining talent (**C3**) Response to demographic changes and evolving social needs (**C5**) Fundamental academic, social, and democratic values (**C9**)

6.3 LEVERAGE DIGITAL TECHNOLOGIES

The impact of technology and generative artificial intelligence (AI) is a pressing issue that affects university management, teaching, and research. Digital transformation is essential for fostering collaboration and addressing societal challenges. The evolution of skill requirements in the labor market was also acknowledged by implementers and governance, suggesting a need for universities to adapt their educational offerings and operational models to incorporate these technological advancements, and improve accessibility and inclusiveness. To enhance research capabilities and streamline administrative processes, HEIs should leverage digital technologies. This includes adopting digital tools and platforms that facilitate research collaboration, improving data management, and enhancing communication among stakeholders. Governments can play a crucial role by investing in digital infrastructure and providing training for faculty and staff to effectively utilize these technologies. Furthermore, promoting open access to research outputs and data can significantly enhance the visibility and impact of academic work, fostering a culture of transparency and collaboration. In particular, there is a need for a dedicated call to action on how AI can accelerate change in HEIs. Policymakers and institutional leaders should prioritize initiatives that explore and harness the transformative potential of AI, not only to improve operational efficiency, but also to drive innovation in teaching, research, and university management. By supporting targeted projects and pilots focused on AI adoption, HEIs can

position themselves at the forefront of digital transformation and ensure they are responsive to emerging challenges and opportunities. By embracing digital transformation, HEIs can increase their operational efficiency and responsiveness to emerging challenges.

This recommendation responds to the following challenges identified:

Leverage Digital Technologies	Addressing digital transformation: impact of digital technologies and artificial intelligence (**C6**)

6.4 PROMOTE OPEN SCIENCE PRACTICES

Governments should actively support and incentivize the adoption of Open Science practices within HEIs and utilize existing networks and structures in order to achieve this. This includes creating policies that encourage open access to research publications, data sharing, and collaborative research initiatives. By fostering an open science culture, HEIs can enhance the transparency, reproducibility, and societal impact of their research. Funding programs should prioritize projects that incorporate open science principles, ensuring that research outputs are accessible to a broader audience, including policymakers, practitioners, and the general public. Additionally, training and resources should be provided to researchers to equip them with the skills necessary to engage in open science practices effectively. CATALISI's strong emphasis on Open Access, Citizen Science, and transparency is a strong example that these objectives, supporting the ERA's goal to make scientific knowledge widely accessible and to engage society in research. The tools and incentives developed within CATALISI are designed to foster systemic change in research culture, in line with ERA priorities.

By promoting open science, governments can facilitate knowledge exchange and collaboration, ultimately drive innovation and address societal challenges more effectively.

This recommendation responds to the following challenges identified:

Promote Open Science Practices	Embracing Open Science in Higher Education Institution (**C7**)

6.5 EMPOWER INDIVIDUALS AS DRIVERS OF CHANGE

Transformational change within HEIs is often driven by individuals who are empowered to act as changemakers. Interviews confirmed that, when equipped with the right tools, motivated champions within the institutions can drive effective transformation. However, it is essential that the right people, including strategic planners and those involved in institutional strategy, are engaged from the outset. When change is embedded within HEI strategic plans and supported by these key actors, its delivery and sustainability are greatly enhanced. If provided with structured engagement, communities of practice have also proved to be long-

term enablers of transformation, though their sustainability remains challenging for HEIs. Governments should support initiatives that provide professional development opportunities, access to resources, and create an environment that values and supports innovation. This can include leadership training programs that equip faculty and staff with the skills necessary to lead change initiatives within their institutions. By fostering a culture of empowerment, HEIs can harness the potential of their human capital to drive meaningful transformation and enhance their overall impact on society. The European University Association's report underscores the importance of leadership development and institutional transformation, suggesting that fostering a culture of empowerment is key to driving meaningful change.[80]

This recommendation responds to the following challenges identified:

Empower Individuals as Drivers of Change	Attracting and retaining talent (**C3**) Skills and competencies (**C8**)

6.6 FOSTER STAKEHOLDER COLLABORATION

Promoting collaboration among diverse stakeholders is essential for breaking down silos within institutions and encouraging a culture of collective action. By involving a wide range of stakeholders, including faculty, administration, students, and external partners, HEIs can harness a wealth of knowledge and expertise to advance their transformation agendas. Interviews highlighted societal engagement as a central, multiplying force for teaching and research impacts. The exchange of best practices and benchmarking with other universities is essential, pointing to professional development through peer learning methods like Twinning and Mutual Learning and Knowledge Sharing, and collaborative insights.

In fact, the CATALISI project has demonstrated how structured activities such as Mutual Learning and Knowledge Sharing (MML) and Twinning can serve as powerful mechanisms for cross-border collaboration and knowledge exchange. These approaches not only facilitate the sharing of expertise and innovative practices among institutions, but also directly support the ERA's priority of strengthening cooperation and connectivity across European higher education. Active engagement of external stakeholders like industry and civil society is also crucial for HEI's role in broader society, and it is successfully fostered through Open Innovation Labs or Living Labs for co-creation and experimentation. Governance should prioritize stronger stakeholders' mapping and engagement of experts from the outset. Moreover, stakeholder engagement should be sustained across all phases of the transformation pathways and not limited to the initial stage of co-creation. Recommendations for better involving external stakeholders suggest engaging with local media outlets, creating community hubs through communication, and utilizing public spaces to build trust within the community. Lastly, stronger partnership with the community is also vital for the institutionalization of intergenerational engagement within HEIs[81]. Governments should facilitate platforms for dialogue and collaboration, enabling stakeholders to share best practices and co-create solutions to common challenges. Collaborative efforts can lead to innovative solutions that address complex societal challenges, ultimately enhancing the relevance and effectiveness of research conducted within HEIs.

This recommendation responds to the following challenges identified:

Foster Stakeholder Collaboration	Stimulating interdisciplinary research for addressing complex social challenges (**C4**) Response to demographic changes and evolving social needs (**C5**)

6.7 IMPLEMENT DATA-DRIVEN DECISION MAKING

Utilizing data analytics to inform decision-making processes can significantly enhance the effectiveness of institutional transformations. Governments should promote training for staff to use data effectively, ensuring that data is accessible and interpretable. Fostering a culture of evidence-based decision-making is crucial for aligning institutional strategies with the evolving needs of society. The European Commission highlights the importance of data in setting standards for the transformation of HEIs, advocating for evidence-based approaches to policy and practice. [82] By integrating data into the strategic planning processes of HEIs, institutions can better assess their performance, identify areas for improvement, and make informed decisions that drive positive changes.

This recommendation responds to the following challenges identified:

Implement Data-Driven Decision Making	Addressing digital transformation: impact of digital technologies and artificial intelligence (**C6**) Skills and competencies (**C8**)

6.8 DEVELOP MULTIDISCIPLINARY APPROACHES

Encouraging multidisciplinary education and research can broaden the scope of learning and innovation within HEIs, addressing the current fragmentation in multidisciplinary research. This involves creating flexible curricular structures that enable creative combinations of disciplines and fostering an environment that supports interdisciplinary collaboration. Interviews highlighted how efforts in communication strategies can also be beneficial to this goal, promoting boundary spanning and stronger collaboration among departments. Governments should incentivize HEIs to develop programs that promote cross-disciplinary research initiatives, recognizing the value of diverse perspectives in addressing complex global challenges. By breaking down traditional barriers between fields of study, HEIs can better prepare students and researchers to tackle pressing societal issues.

This recommendation responds to the following challenges identified:

Develop Multidisciplinary Approaches	Stimulating interdisciplinary research for addressing complex social challenges (**C4**)

6.9 ENHANCE MONITORING AND EVALUATION FRAMEWORKS

Governments should support the development of customized monitoring and impact assessment toolkits for HEIs. These frameworks can encompass both formative and summative evaluation methods, which will enable institutions to track their progress, assess the effectiveness of their interventions, and foster a culture of continuous improvement. Reform in the evaluation system is also encouraged to integrate metric-based evaluations into a more holistic approach. By integrating evaluation processes into the everyday operations of HEIs, governments can help ensure that institutional transformations are sustainable and impactful. Regular feedback loops and assessments like self-reflection toolkits and perception surveys can guide institutions in refining their strategies and adapting to changing circumstances.

This recommendation responds to the following challenges identified:

Enhance Monitoring and Evaluation Frameworks	Bureaucracy and regional disparities in European and national research funding (**C2**) Fundamental academic, social, and democratic values (**C9**)

6.10 PROMOTE SUSTAINABILITY IN RESEARCH AND OPERATIONS

Policies should incentivize HEIs to adopt sustainable practices in their research and operational processes. This includes funding green research initiatives and encouraging universities to integrate sustainability into their curricula and research agendas. This also needs to address the impact on future generations and long-term sustainability, both as a topic of research and as a directive of transformations of HEIs as inter- and transgenerational institutions facing demographic and social challenges. By prioritizing sustainability, HEIs can contribute to broader societal goals while enhancing their own resilience. Governments can support this transition by providing grants and resources for sustainability-focused projects and encouraging partnerships between HEIs and industry stakeholders to promote sustainable innovation and facilitating the sharing of research resources and platforms.

This recommendation responds to the following challenges identified:

Promote Sustainability in Research and Operations	Sustainability in research funding (**C1**)

6.11 DIVERSIFY AND STRENGTHEN FUNDING OPPORTUNITIES

Institutions should invest in talent attraction policies that support research excellence and expand tenure track faculty. Alliances recommend that policy frameworks support them through structural reforms that maximize their collaboration, recognizing their role as laboratories for systemic transformation. Governments should address the financial stability of HEIs, by diversifying financial opportunities and by promoting longer-term funding mechanisms to facilitate planning and execution of collaborative projects and long-term transformation pathways, as well as strategic management of resources. In a concrete example, CATALISI's call for targeted funding schemes and mobility programs aligns with ERA's aim to improve career paths and ensure sustainable research ecosystems. Support structures for grant acquisition and excellence reinforce ERA's goals for competitiveness and capacity building.

This recommendation responds to the following challenges identified:

Diversify and Strengthen funding opportunities	Sustainability in research funding (**C1**) Bureaucracy and regional disparities in European and national research funding (**C2**)

6.12 UNDERSTAND LABOR MARKET DYNAMICS FOR STRATEGIC PLANNING

It is crucial for stakeholders to have a comprehensive understanding of labor market dynamics to effectively navigate future changes within the sector. By analyzing current trends and emerging demands, governments and HEIs can develop strategic plans and policies that are responsive to the evolving landscape. This knowledge will enable HEIs to align their educational programs with the actual needs of the labor market, ensuring that graduates are well-equipped with the skills and competencies required for successful employment. Enhancing this alignment will ultimately improve graduates' employability and contribute to a more robust workforce.

This recommendation responds to the following challenges identified:

Understand Labor Market Dynamics for Strategic Planning	Attracting and retaining talent (**C3**) Skills and competencies (**C8**)

6.13 ENSURE HIGH-LEVEL ADMINISTRATIVE ENGAGEMENT FROM THE OUTSET

To maximize strategic impact and university-wide adoption, implementing partners should involve high-level university administrators (such as vice-rectors or vice-presidents) from the very beginning of future projects. Their engagement ensures that action plans are supported by individuals with the authority and resources to drive meaningful, institution-wide change. Early involvement of senior leaders helps align project objectives with the broader institutional strategy, facilitating smoother integration of new initiatives. Moreover, their visible support can motivate staff and faculty, foster cross-departmental collaboration, and help overcome resistance to change. By leveraging their experience and networks, high-level administrators can also champion the project externally, securing additional resources and stakeholder buy-in. This recommendation has emerged directly from the collaborative work and practical experience with the implementers in CATALISI, reflecting the importance of senior leadership engagement observed throughout the project. CATALISI's recommendation to embed transformation into governance and involve senior leadership supports ERA's push for strategic coherence and institutional reform.

This recommendation responds to the following challenges identified:

Ensure High-Level Administrative Engagement from the Outset	Bureaucracy and regional disparities in European and national research funding (**C2**) Fundamental academic, social, and democratic values (**C9**)

6.14 REDUCE THE NUMBER OF ACCELERATION SERVICES AND EMPHASIZE PRACTICALITY

Future projects should streamline the number of acceleration services offered and focus on their practical aspects, simplifying their descriptions and ensuring clarity of purpose. Lessons learned from CATALISI indicate that overly complex or vaguely defined services can hinder implementation and uptake among partners. Concentrating on a select set of well-defined services enables deeper engagement and more effective capacity building. Clear and concise service descriptions make it easier for stakeholders to understand, adopt, and measure the impact of each intervention. This approach also facilitates ongoing evaluation and refinement, ensuring that resources are directed toward activities with the greatest potential for positive outcomes. Importantly, the experience in CATALISI has highlighted the need for clearer support structures and well-defined roles, reflecting the ERA's objective to streamline and harmonize research support mechanisms across Member States. By prioritizing clarity and coordination, future initiatives can better align with European standards and improve the effectiveness of institutional transformation efforts.

This recommendation responds to the following challenges identified:

Reduce the Number of Acceleration Services and Emphasize Practicality	Bureaucracy and regional disparities in European and national research funding (**C2**)

6.15 FOCUS ON A LIMITED NUMBER OF DOMAINS AND INTERVENTION AREAS TO ENSURE OVERLAP AND REPRODUCIBILITY

To strengthen knowledge-sharing and collaborative learning, future projects should reduce the number of domains and intervention areas addressed, ensuring that the number of intervention areas is fewer than the number of implementing partners. This approach will encourage overlap in the selection of focus areas, enabling partners to learn from each other and undertake transformation journeys together, rather than each focusing on a separate topic. Overlapping domains foster the exchange of best practices and collective problem-solving, leading to more robust and adaptable solutions. It also supports the development of replicable models that can be scaled across institutions, enhancing the overall impact and sustainability of transformation efforts. By working together on shared challenges, partners can build stronger networks and accelerate progress toward common goals.

This recommendation responds to the following challenges identified:

Focus on a Limited number of Domains and Intervention Areas to Ensure Overlap and Reproducibility	Stimulating interdisciplinary research for addressing complex social challenges (**C4**)

6.16 FOSTER INTEGRATED AND MULTIDIMENSIONAL TRANSFORMATION APPROACHES

HEIs should adopt integrated strategies that recognize the interconnections between institutional culture, leadership, and innovation. A conscious and inclusive cultural transformation is essential for adapting to the evolving dynamics of the global educational landscape. By investing in collaborative leadership models and promoting both internationalization and interdisciplinarity, institutions can enhance student preparedness and build a more resilient, responsive academic environment. Governments and policymakers should support initiatives that encourage holistic transformation, ensuring that HEIs are equipped to tackle current and future challenges with agility and vision.

This recommendation responds to the following challenges identified:

Foster Integrated and Multidimensional Transformation Approaches	Stimulating interdisciplinary research for addressing complex social challenges (**C4**) Response to demographic changes and evolving social needs (**C5**) Fundamental academic, social, and democratic values (**C9**)

7. CONCLUSIONS

By implementing these policy recommendations, local, national, and European governments can create a supportive environment that empowers HEIs to drive innovation, enhance their societal impact, and contribute to the advancement of knowledge in an increasingly interconnected world. The following table provides a summary of key insights gathered from stakeholder interviews (*further detailed in Appendix A below*), which represent a crucial element of the evidence base and contextualize the recommendations that follow.

TABLE 1. POLICY TABLE

THEMATIC AREA	TARGET GROUP	KEY POLICY RECOMMENDATIONS
Funding	Local	- Create funding mechanisms to support long-term transformation pathways.
	National	- Diversify funding sources and establish stable funding mechanisms for collaborative initiatives.
	European	- Promote longer-term funding mechanisms to facilitate planning and execution of collaborative projects.
Talent & Research Career	Local	- Create an inclusive and supportive environment for diverse populations in research.
	National	- Rethink assessment models to recognize diverse career pathways and overcome purely metric-based evaluations.
	European	- Support initiatives that enhance talent circulation and lifelong learning.
Structure	Local	- Implement flexible governance structures that foster interdisciplinary collaboration.
	National	- Integrate transformation pathways into strategic planning and operational routines.
	European	- Promote structural reforms to support alliances and inter-university cooperation.
Social Engagement	Local	- Foster stakeholder collaboration and community engagement initiatives.
	National	- Support mentorship programs for underrepresented groups and initiatives that enhance public engagement.
	European	- Facilitate platforms for dialogue and collaboration among diverse stakeholders.
Culture & Values	Local	- Promote a culture of empowerment and innovation within institutions.
	National	- Address systemic biases in hiring and promotion to enhance diversity and equity.
	European	- Encourage leadership development and institutional transformation initiatives.
Internationalization	Local	- Prioritize mobility of young researchers and foster international collaborations.
	National	- Structure collaboration among universities through initiatives like Twinning and Mutual Learning.
	European	- Support internationalization efforts and talent mobility across Europe.
Interdisciplinarity	Local	- Encourage multidisciplinary education and research initiatives.
	National	- Incentivize HEIs to develop cross-disciplinary research programs.
	European	- Promote boundary-spanning approaches to facilitate collaboration across disciplines.
	Local	- Promote open access to research outputs and data sharing practices.

Open Science & Technology	National	- Support training and resources for researchers to engage in open science practices effectively.
	European	- Create policies that incentivize the adoption of open science practices within HEIs.

The CATALISI project serves as a valuable resource for informing these efforts, providing evidence-based insights that can guide future initiatives aimed at transforming the research and innovation landscape in Europe. It could be scaled through university alliances. It can also be scaled through collaboration with all the national and pan-national organizations and networks that are working directly on specific challenges and interventions.

In summary, the journey toward institutional transformation within HEIs is ongoing and requires a concerted effort from all stakeholders involved. By embracing the recommendations outlined above, governments can play a crucial role in shaping a more inclusive, resilient, and innovative higher education sector that meets the needs of society and contributes to the sustainable development of the European region. The insights and frameworks developed through the CATALISI project will not only facilitate immediate transformations but also lay the groundwork for future initiatives that enhance the capacity of HEIs to respond to the evolving demands of the global landscape.

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APPENDIX A
INTERVIEWS INSIGHTS

Recommendations based on the Challenges	
FUNDING	• Create funding mechanisms to support long-term transformation pathways. • Ensure robust financial support to strengthen universities' ability to respond to societal needs. • Diversify business models. • Grant access to funding schemes and incentive mechanisms that reward long-term transformation efforts. • Establish stable and longer-term funding mechanisms for collaborative initiatives and for supporting transformational pathways. • Diversify funding sources.
TALENT & RESEARCH CAREER	• Reform the overly quantitative evaluation system. • Promote flexible and personalized learning experiences. • Expand tenure track faculty. • Address fragmentation in publications and approaches to research. • Focus on methodological competencies. • Re-evaluation of university assessment models. • Recognize diverse career pathways for academics. • Overcome purely metric-based evaluations.
STRUCTURE	• Adopt a systems-level approach. • Develop structured channels to involve alliances in decision-making processes at EU/national level. • Streamline research structures. • Foster collaboration with industries. • Integrate transformation pathways into strategic planning and operational routines. • Align with national and European policy frameworks to reinforce sustainability. • Streamline processes for securing formal commitments. • Develop a comprehensive training program for stakeholders. • Establish KPIs to evaluate impact.
SOCIAL ENGAGEMENT	• Promote flexible learning paths for corporate partners. • Diversify brand recognition. • Promote public engagement to address societal issues and engage communities. • Engage the community in knowledge sharing. • Build trust. • Interact effectively with citizens. • Bring science to the general public. • Manage a diverse audience and numerous partners. • Engage stakeholders through CRM systems.
CULTURE & VALUES	• Prioritize strong leadership support to drive meaningful change. • Enhance networking and cooperation among universities. • Address ethical research practices. • Overcome inertia and resistance to reducing barriers. • Foster a culture that values work beyond academia. • Promote social responsibility. • Overcome bureaucratic barriers. • Address the current climate of misinformation and take ethical responsibility for sharing accurate scientific information with the community. • Identify motivated champions within institutions as key enablers for transformation.
INTERNATIONALIZAZION	• Promote structural reforms to support alliances. • Prioritize mobility of young researchers. • Structure collaboration among universities, particularly through initiatives like Twinning and Mobilization and Mutual Learning. • Internationalization and talent mobility.
INTERDISCIPLINARITY	• Overcome fragmentation in multidisciplinary research. • Foster interdisciplinary collaboration through projects that unite diverse scholars.

	• Adopt a boundary-spanning approach to facilitate internal collaboration and innovation. • Promote peer learning.
OPEN SCIENCE & TECHNOLOGY	• Promote open science. • Address evolution of skill requirements (digital, AI). • Focus on institutional and digital transformation. • Promote open science and data circulation.