

E³UDRES²

Engaged and Entrepreneurial European University as
Driver for European Smart and Sustainable Regions

1.1 E³UDRES² Research strategy

Work Package 4

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Overview

Milestone nr.	Deliverable name	Person responsible	Corresponding HEI
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Executive summary

This document presents the main strategic goals related to the common E³UDRES² Research strategy, reflecting enhanced research capacity, changing environment while building on existing inputs from other projects and activities including ERA policies and approaches to open science, research assessment, ERA hubs etc.

The strategy:

- *Reviews the input from past joint activities and projects, based on the analysis already performed in the Ent-r-e-novators project;*
- *Reflects the regional strategies and expectations of each partner;*
- *Collects data and information from the new partners, as well as update of information from the other partners, as regards research capacity, expertise, results, internal policies including human resources;*
- *Reflects the EU policies and trends mentioned in the Ent-r-e-novators project;*
- *Presents the approach to science communication, research assessment, ERA Hubs, and funding opportunities;*
- *Reflects the input from research groups, and other working structures.*

The document will be revised / updated / expanded to reflect the developments of the project in terms of relevant concepts and policies for research.

List of concepts

Bank of Researchers (BoR) – a shared pool of scientists, pools of already existing expertise within multinational research networks in order to further expand knowledge and experience, constituting the Research Networks.

Executive Board – consists of one high-ranking representative (president, rector, vice-rector, executive director) per E³UDRES² partner and the chair of the E³UDRES² board of student representatives. The E³UDRES² Executive Board takes strategic decisions.

E³UDRES² Focus Areas – the priority areas established within E³UDRES², that integrates not only research but also education and innovation activities, on specific thematic fields based on the needs of the regions. The areas in which E³UDRES² focuses, are currently:

- Creative Industries for Regions' Identity
- Digital Solutions and (Applied) Deep Tech for Regions
- Health, Wellbeing and Social Inclusion for Regions
- Resilient Economy & Innovation for Regions

E³UDRES² research team – currently, Work Package 4 – “Research and Knowledge Serving Users” team

E³UDRES² research networks – promotes an innovative approach to co-ideate and co-create mission-oriented research, challenge-based, human-centered innovation, open and engaged knowledge exchange; they also motivate, encourage, and strengthen (young) researchers as well as learners, innovators, entrepreneurs and other stakeholders to participate in European collaborations.

E³UDRES² researcher – a researcher from any of the partner universities or from the associated partners, that is registered in the Bank of Researchers

E³UDRES² Applied Research Centers of Excellence – a number of 2-4 joint-research centers established between minimum three E³UDRES² partners, based on their proved capacity to provide excellence in research on specific topics. The concept and methodology will be part of a specific analysis and will be part of a specific document.

E³UDRES² Scientific Council - the relevant body for academic and strategic aspects of research activities in E³UDRES². It was established in May 2024 and it is composed of senior researchers/scientists from all partner universities.

1. Introduction

E³UDRES², the Engaged and Entrepreneurial European University as Driver for European Smart and Sustainable Regions¹, a European University alliance, promotes Smart and Sustainable Regions (S²-Regions) to shape a peaceful and prosperous European future for responsible citizens as a pioneering full-fledged Engaged and Entrepreneurial European University (E³-University).

The research strategy outlined herein is aimed to serve as the cornerstone of the E³UDRES²'s ambitious goals. It is designed to coordinate the efforts of E³UDRES² member universities and harness their collective strengths, resources, and expertise. By aligning their diverse capabilities, the strategy seeks to catalyze advancements in research that are critical for the advancement of Smart and Sustainable Regions. Moreover, the strategy is imbued with a spirit of innovation and collaboration, geared towards fostering joint efforts among researchers, facilitating interdisciplinary and cross-regional research collaborations, and promoting a vibrant exchange of knowledge and best practices across the network.

Ultimately, this research strategy is designed to provide guidance for all researchers engaged within the E³UDRES² framework, providing them with the direction, resources, and inspiration needed to achieve excellence in research and innovation.

2. Previous activities and experiences

The E³UDRES² alliance has cultivated a dynamic culture of collaboration through the implementation of its previous projects: E³UDRES² 1.0, EINS² and Ent-r-e-novators³. These previous joint activities allowed partners to better know each other, while aligning their initiatives in implementing the alliance's mission to drive smart and sustainable regions' development by fostering interdisciplinary research, innovation, and education.

E³UDRES² 1.0 laid the foundation for the alliance by bringing together like-minded universities to tackle regional challenges collaboratively. It focused on co-creating innovative solutions for societal issues through the engagement of local communities, businesses, and policymakers. This phase established robust networks and frameworks for interdisciplinary collaboration, emphasizing inclusivity and stakeholder-driven approaches. Probably the main outcome in the field of research cooperation is the establishment of the research networks in the following topics: Health and Wellbeing, Human Contribution to AI and Circular Economy. The first small cross-cutting projects including citizen science aspects, were used as role models for joint research activities. As part of the Research Living Labs concept, researchers, students and external stakeholders were networked to develop joint research questions in the context of the research networks. To increase the visibility of the E³UDRES² researchers, the first version of the Bank of Researchers was published. All these activities were evaluated and adapted for the second phase of E³UDRES² according to the evaluation.

Building on this foundation, **EINS** has delivered significant advancements in entrepreneurial and innovation ecosystems across its network of seven partner institutions from Austria (STPUAS, St. Pölten University of Applied Sciences), Belgium (UCLL, UC Leuven-Limburg), Hungary (MATE, Hungarian University of Agriculture and Life Sciences), Latvia (ViA, Vidzeme University of Applied Sciences), the Netherlands (UIIN, University Industry Innovation Network), Portugal (IPS, Polytechnic Institute of Setubal), and Romania (UPT, Politehnica University of Timisoara). It pioneered new pathways for entrepreneurial universities, fostering innovative thinking, collaboration, and the development of advanced frameworks for education, business creation, and knowledge triangle integration.

¹ <https://eudres.eu/>

² <https://eudres.eu/eins>

³ <https://www.entrenovators.eu/>

The initiative supported 68 start-ups and scale-ups with tailored mentorship and training programs and engaged 3,492 trainees through Open lectures, workshops, and mentoring sessions, enhancing entrepreneurial capacities among students, staff, and stakeholders. Key initiatives like the SEED Soft Landing Program and Wicked Architect Conversation Card Game provided innovative tools for collaboration and education.

EINS also built strategic partnerships with industry leaders and organizations, ensuring scalability and transferability of its efforts. Highlights included featured start-ups, inspiring testimonials, open lectures, inspiring chats and a podcast series, the EINS Book Club: *Doing Business Differently*. The development of Open Innovation Hubs established sustainable platforms for engagement, mentoring, and networking, ensuring lasting regional impact. EINS inspired innovation and advance entrepreneurial practices across Europe.

The project **E³UDRES² Ent-r-e-novators**, funded by Horizon Europe, started in October 2022, to create a strong interconnection between education, research, innovation and entrepreneurship. This project involves the six founding partners of the alliance and, together, they have been working on five transformation modules:

- i) Co-creation of a Common Research and Innovation Strategy,
- ii) Sharing Research Infrastructure,
- iii) Embracing Open Science and Open Education,
- iv) Creating proximity and engaging citizens and society
- v) Strengthening R&I human resources and ecosystems.

The joint work carried out so far allowed the partners to have a better understanding of each other's research capacity and research interests and is creating a solid foundation for boosting research in E³UDRES² 2.0. The project will end in September 2025.

Lessons learned from these previous funding projects allow a smooth implementation of the **E³UDRES² 2.0** project and the fulfillment of its ambitious goals in research.

3. E³UDRES² Vision & Mission Statement

E³UDRES² envisions to integrate challenge-based education, mission-oriented research, human-centered innovation as well as open and engaged knowledge exchange as interrelated core areas and to establish an exemplary multi-university campus across Europe as stated in the E³UDRES² long-term vision and mission statement.

E³UDRES² provides a platform for collaborative innovation for multidirectional, cross-disciplinary, cross-sectoral, cross-actor knowledge exchange. It is exemplary as an engaged and entrepreneurial European university that responds to the societal, environmental, and economic challenges of the 21st century and is committed to sustainable development goals. Furthermore, it acts as a living laboratory for the society of the future in progressive European regions and connects research, innovation, education and service to the community (knowledge square). It is committed to excellence and strives for the highest quality in all areas of activity in order to promote, support and challenge motivated learners, employees and various partners in regional, European and global contexts.

Rooted in partners' core values, E³UDRES² is committed to free and open science, responsible research as well as future-oriented excellent scientific expertise. E³UDRES² aims to forge multi-dimensional research networks that are mission-oriented and cross-disciplinary, focusing on developing smart and sustainable regions. These research networks extend beyond traditional research confines, incorporating not just researchers, but also learners, educators, innovators, entrepreneurs, and diverse community stakeholders. Together, they are poised to make significant contributions to international scientific communities and innovation ecosystems, delivering highly recognized scientific advancements.

The E³UDRES² alliance aims to enhance its joint research potential, strengthening the synergy of capacity and diverse expertise of all individual partners, yet also reflect on relevant European

policies and opportunities. This should allow E³UDRES² to develop a basis for research, translate its results into user-oriented solutions, reflect upon emerging challenges, yet also strengthen the links between research and education and ensure career development of a young generation of academics.

With the overarching themes of "Smart and Sustainable Regions" as well as "Future Universities", the E³UDRES² alliance aims to support European regions in making them innovative, future-proof places for all. In connection to these themes, E³UDRES² is focusing on four focus areas, as described in the E³UDRES² proposal:

- Health, Wellbeing and Social Inclusion for Regions;

Many urgent societal challenges arise from an ageing society, rural exodus and migration, as well as from substantial gaps between urban areas and rural regions. Technologies and innovation contribute to and serve the European values and their realisation in people's life, ideally empowering and strengthening democracy. E³UDRES² aims to support in developing, highlighting and sharing good practices from its regions, addressing forms of neighbourhood support and the resiliency of small communities.

- Digital Solutions and (Applied) Deep Tech for Regions;

In line with the European Commission's priority for "A Europe fit for the digital age", this focus area deals with enabling and developing frameworks for several regional challenges. The development and deployment of these technologies in real products and services for society and economy, as well as the skills needed for people to use, implement and further explore them, are the key to overcoming regional challenges.

- Resilient Economy and Innovation for Regions;

In line with the European Commission's priorities for "A European Green Deal" and "An economy that works for people", this focus area addresses the challenges of developing and implementing infrastructures, living and working environments, manufacturing, transportation, agriculture and food production which are resilient, sustainable, green, innovative, supported and enhanced by digitalisation, attractive for people, and strongly connected in a path of regional development. The full potential of the green and digital transition can only be exploited by designing and developing the future of different economic sectors with a strongly connected, overarching, interdisciplinary and intersectoral approach to education, research and innovation.

- Creative Industries for Region's Identity.

In line with current European flagship activities like the New European Bauhaus, this topic reflects the fact that creativity is one of the most important key competencies of our time. Moreover, the role of cultural and creative spillovers as cross-sectorial innovation motors is widely acknowledged as a stimulant in society and the wider economy. Creative industries are not only important for region's identity and the preservation of their cultural heritage, but they have been one of the first to experiment and adopt digital technologies as well. The particularly high number of self-employed people and SMEs in this sector, as well as the high affinity for remote work, co-working and other approaches of New Work offers numerous opportunities for S²-regions to strengthen innovation capacity and create future-oriented jobs.

All E³UDRES² research activities are designed in line with this general vision and assumed mission of the alliance.

4. Research capacities

4.1. Applied research and fundamental research

As stated in the Research Vision Statement, the E³UDRES² Alliance aims to develop and provide (applied) solutions for major challenges faced by the European regions. A strong interlink with regional stakeholders, to identify the individual regional needs as well as applied

and mission-oriented research approaches are necessary to achieve the aim mentioned above. Therefore, a strong focus will be placed on applied research initiatives that support regional needs. However, applied research also needs excellent fundamental research results. Therefore, the E³UDRES² partners complement each other with applied research as well as fundamental research. The E³UDRES² alliance connects higher education institutions with focus on applied and mission-oriented research.

4.2. Capacity of the E³UDRES² Alliance

The E³UDRES² European University Alliance encompasses nine academic institutions, collectively employing over 10,000 faculty and staff and educating more than 100,000 students, showcasing its substantial size. The alliance stands out for its immense diversity in research expertise but also offers significant opportunities for creating synergies. For example, multiple E³UDRES² institutions each conduct research focused on (digital) health and well-being from an individual or public perspective, (sustainable) energy production, conversion and storage, artificial intelligence and cybersecurity but also nutrition and dietetics, mobility and logistics as well as creative (multi)media technologies.

Each member institution within this partnership owns impressive facilities, including exceptional equipment and the latest technologies. In line with the wide array of research expertise, the scope of laboratories and other research facilities is immensely broad. They include but are definitively not limited to a completely equipped TV studio and other infrastructures in creative media, immersive media labs, research facilities dedicated to textiles, railways, robotics technology, digital health technology, digital fabrication, nursing and rehabilitation, energy transition, cyber defense, but also animal experiment facilities, mechanical testing laboratories or a flight simulator. Overall, E³UDRES² researcher demonstrate a high level of expertise, which, if successfully mobilized, allows us to tackle interdisciplinary research questions.

A strong emphasis on collaboration is evident across the partner institutions, engaging with external businesses, industry stakeholders, other educational entities, and individuals, contributing to a wide array of national and international endeavors, including FP6, FP7, H2020, and Horizon programs. Joint proposals to Horizon Europe programs have already been submitted, as well as proposals to the ERA-Net programme. Furthermore, two innovation project proposals (Accelerate FutureHei and DIGIHealth UASHome Incubators Boost Programme) were submitted and approved in 2022.

5. Strategic Pillars

E³UDRES² aims to build research capacity and foster innovative and excellent high-impact research by pooling resources and expertise across the alliance and supporting cross-institutional, interdisciplinary and cross-sectoral research initiatives.

The following activities support the realization of this strategic objective:

5.1. Reinforcing E³UDRES² Research Networks

E³UDRES² aims to foster cooperation and the creation and maintenance of research networks consisting of researchers from the partner institutions in the Focus Areas by a variety of networking opportunities, both virtual and face-to-face. For example, E³UDRES² maintains a database of researchers and their expertise, accessible to all members, the E³UDRES² Bank of Researchers (BoR)⁴. This database is instrumental in identifying potential collaborations and forming research groups. It forms the basis for the networking of researchers in E³UDRES².

⁴ <https://eudres.eu/researchers>

More activities to foster and enhance research collaboration are described in the E³UDRES² research network policy.

Research cooperation in research networks plays a pivotal role in enhancing the research profile of the alliance, facilitating interdisciplinary collaboration, and addressing complex global challenges. They offer the ideal opportunity to get in touch with other researchers and exchange ideas on scientific issues.

E³UDRES² research networks should be understood as the set of relationships between researchers, registered in the Bank of Researchers, that share a scientific interest and are willing to work together under one of the Focus Areas of the alliance, along with the regional stakeholders that collaborate with them in joint research projects and/or project proposals. Research networks are open to all research questions relating to the E³UDRES² focus areas. They can be founded bottom-up on the initiative of individual researchers and shall be supported by networking activities organized by the E³UDRES² Alliance.

A core element of networking and the establishment of the research networks is the Bank of Researchers providing relevant information on expertise and research scope of the researchers involved in the E³UDRES² Alliance. The E³UDRES² alliance aims to drive forward further opportunities for networking e.g. scientific conferences, virtual platforms, networking meetings to encourage the setting up of interdisciplinary research networks.

The E³UDRES² Research network policy⁵, adopted in October 2024, describes the plan and concept for inspiring research and the mechanisms for networking and knowledge exchange between researchers.

Furthermore, the concept delineates how E³UDRES² aims to monitor and review joint research effectiveness.

Reinforcing the four E³UDRES² research networks is having a crucial role in developing the alliance's human resources for Research and Innovation R&I as part of the alliance's **capacity building strategy**.

5.2. E³UDRES² Joint PhD schools / programmes

E³UDRES² aims to develop motivating framework conditions for academic careers. Joint doctoral programs can make a significant contribution to this. These joint programs, each of which should be thematically related to the focus areas, offer on the one hand the expansion of PhD offers for those partners who are already allowed to award PhDs. Above all, however, they also enable those young researchers who do not have the opportunity to complete a PhD program at their home university, mainly due to national legal restrictions, to gain access to this advanced scientific training.

The offer of joint doctoral programs should include both the opening of existing courses for doctoral students within the E³UDRES² Alliance and considerations for the establishment of concrete new joint innovative programs.

The objective assumed by the E³UDRES² alliance is to establish 2-4 joint PhD schools / programmes based on E³UDRES² shared values, principles, methodologies and co-operation across the alliance.

The actual situation in the field of PhD studies varies between the E³UDRES² partners. There are three types of partners in the alliance:

- Partners that already hold the legal right to award PhD and/or Professional Doctorate (PD) titles (UPT, MATE, ViA, HF Fulda, Saxion)
- Partners that currently do not have the right to award PhD titles, but have a potential pile of PhD supervisors as habilitated professors, and who would like to obtain the legal status for awarding PhD titles or Professional Doctorate (STPUAS, IPS, JAMK);

⁵ https://eudres.eu/assets/files/deliverables_phase_2/eudres_ms14_research_networks_policy.pdf

- Partners that are only running bachelor level courses. They cannot organize their own or joint PhD schools, but might be interested in getting PhD titles for some of their staff and might also contribute to developing general training courses for PhD students (UCLL).

The starting point for reaching the assumed objective will be mapping the situation and doctoral study programmes conditions across partners' national systems, partners' experience & capacity and then establishing a common E³UDRES² doctoral studies concept & policy (criteria, characteristics, model & rules, variable scope of partners' support and engagement, including financing and mobility model), also including experts from universities without PhD awarding power at this moment.

According to the shared vision of the E³UDRES² alliance, a priority will be the identification of feasible fields within the E³UDRES² focus areas, agreements on lead universities and other partners' engagement to develop concrete programmes, to look for internal E³UDRES² approval and national recognition in order to start promotion and enrolment of students across the alliance.

This will ensure the continuation of research cooperation and research excellence for the future.

The strategy for establishing joint PhD schools/programmes inside the E³UDRES² alliance will be further developed in the specific document – deliverable D4.1 “E³UDRES² Joint Doctoral Programmes – Concept and Methodology”, that will include framework conditions and provisions for setting up Joint Doctoral Programmes (conditions for the partners and the programmes); joint methodologies, mobility models, conditions for enrolling the candidates etc.

At this moment, the research team of E³UDRES² is proposing the development of joint general training courses for actual or future enrolled PhD students at the level of the alliance, in fields like: research methodologies, academic writing, research data analysis, bibliographic research, research ethics, science popularization etc.

Joint doctoral programmes are seen by the E³UDRES² Alliance as the main pillar to **develop and regenerate the human resources** involved in Research & Innovation by attracting the young generation towards an academic or research career.

5.3. E³UDRES² Applied Research Centers of Excellence

E³UDRES² Applied Research Centers of Excellence (CoE) contribute to shape the E³UDRES² framework for ongoing and upcoming (research) activities. They shall ensure, that excellence efforts in research are best combined and competitiveness and critical mass in research on European level are achieved.

They connect researchers from the E³UDRES² European University alliance who jointly develop outstanding fundamental and applied research, which support and is interlinked with innovation, services and education, in a specific field, within one of E³UDRES² Focus Areas, to serve as a catalyst for regional development in that field. They are managed according to high levels of efficiency and positive leadership and show financial viability.

The CoE will be encouraged to include as many E³UDRES² partners and associated partners as possible, as well as external partners, to strengthen their European visibility and to enhance their capacity. Not only academic partners, but also local industry partners should be involved in the projects to provide researchers with real-life challenges and ensure knowledge transfer and innovation implementation. They should build on each partner's strengths, looking for an ideal balance between basic research and applied research to unleash their full potential.

The concept for the CoE should be developed following the European research and policy trends, to enhance their capacity to operate and be competitive at the European level.

The CoE should be continuously committed to promote attractive and sustainable research careers of young researchers. Based on their collaboration in the CoE, the researchers shall

stimulate the creation of joint master's and doctorate programmes as well as microcredentials and other training and innovation activities.

The progress and outcomes of the CoE should be internally assessed against a set of criteria that should take into consideration

- (i) outputs that realize high regional impact and targeted knowledge transfer
- (ii) the diversity and transdisciplinarity of expertise fields,
- (iii) innovative potential, excellence of the research and the different research profiles
- (iv) national research frameworks at the partner level
- (v) intertwining research and education
- (vi) potential for future impact.

From an Open Call for proposals, pilots for Research Centers of Excellence were selected that each unite senior researchers from at least three member institutions and are focused on key research themes within the four Focus Areas. They are intended to help strengthen the research capacity of E³UDRES² by creating synergy effects and their concept will be further developed.

Joint E³UDRES² Applied Research Centers of Excellence are seen as the vehicle to achieve **excellence in research**.

5.4. Citizen Science and Open Science

Citizen Science events are organized yearly, focusing either on supporting knowledge exchange and networking between researchers involved in Citizen Science projects or on creating opportunities to interact directly with citizens and thus providing them insight into research happening in E³UDRES² and opportunities to get actively involved in this research.

For example, in November 2024, the E³UDRES² research team organizes a hybrid workshop ("Empowering Innovation through Open Science and Citizen Science: Bridging Academia and the Public in the Digital Age") to inspire dialogue, partnership, and the interchange of ideas related to citizen science and open science. In 2025, a Citizen Science Festival will be organized and will provide on-site activities and opportunities to connect researchers, students, academic staff and citizens.

Based on the activities in other projects and work packages, the joint Open Access/Open Science strategy⁶ developed with six of the current members of the alliance during a first phase of funding will be updated and adopted by all members.

Support to citizen science and open science is in line with the E³UDRES² vision to **build bridges with citizens and society**.

6. Focus on Societal Challenges and European Research Area (ERA) Priorities

E³UDRES² aims to prioritize research that addresses pressing local and global societal challenges, especially those posed by the twin green and digital transition. It seeks for strategic alignment with ERA priorities, most importantly by adhering to Open Science Principles, addressing the twin green and digital transition, promoting gender equality and inclusiveness as well as empowering and including citizens and local communities.

Each partner of the E³UDRES² alliance has its own regional strategy for Research & Innovation (RIS) and its own local expectations. The common E³UDRES² research strategy is developed

⁶ https://eudres.eu/assets/files/eudres_open_policy_strategy.pdf

in line with those local RIS, after several discussions with stakeholders during the E³UDRES² General Assembly meetings. This is a topic that will be discussed and updated regularly.

The following activities support the realization of this strategic objective:

6.1. Green and Digital Transition Initiatives

Each country/region historical, economic, social and political context is unique, but the basic principles of sustainable development apply to all. Economic growth is essential, but growth alone, without understanding all the factors that contribute to well-being, does not reduce poverty sustainably. Economic growth generally correlates with overall improvements in quality of life, higher levels of education and life expectancy at the country level, but this does not tell us how this growth is achieved; whether or not it is lasting; and who benefits or is left behind.

Given the global nature of many of the challenges facing sustainability, nations have to co-operate at the highest levels to design and apply solutions. National governments have the authority and power to do this. They also have the means to ensure that decisions are applied.

This is not an easy task, and the choices that we as citizens, or our governments, and universities have to make will usually involve trade-offs. Sustainable Development outlines these challenges and suggests what can be done to meet them. (OECD Insights: Sustainable Development: Linking economy, society, environment)⁷

The interconnected nature of sustainable development calls for going beyond borders, whether they be geographical or institutional, to co-ordinate strategies and research to make good decisions and to bear in mind that sustainable development is a process linking what happened in the past to what we're doing now, which in turn influences the options and outcomes of the future. And developing measures is not a purely statistical or technical exercise. It touches also on two very sensitive areas for all societies: government accountability and social participation.

The OECD conclusion after research is that we need collaboration between the public sector and start-ups, innovators, government "intrapreneurs", and academia also on digital solutions. It complements existing public sector capability to explore what is possible, experiment with new approaches, and develop scalable solutions.

The definition found through this research results in an evolving dialogue that frames GovTech as the collaboration between the public sector and an innovation ecosystem to deliver better digital solutions rather than simply 'technology'. While there is not yet a unified, single definition of GovTech, consensus is building around the OECD's definition. (OECD, 2023, OECD Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem)⁸

E³UDRES² is committed to advancing "smart and sustainable regions" in Europe, aligned with the European Smart Specialization strategy and the regional development priorities of each area. The alliance establishes a network of regionally anchored yet globally connected agile higher education institutions with the aim of accelerating the green and digital transition of European regions.

To achieve this, E³UDRES² emphasizes the role of Ent-r-e-novators (entrepreneurs, researchers, educators, innovators) as key change agents. These individuals, connected across institutions and disciplines e.g. through research networks, Centers of Excellence and (planned) doctoral collaborations, these ent-r-e-novators contribute to E³UDRES² regional way to the twin green and digital transition.

The E³UDRES² Focus Areas guide the efforts of these ent-r-e-novators, ensuring that their research supports:

⁷ https://www.oecd-ilibrary.org/environment/sustainable-development_9789264055742-en

⁸ https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/12/oecd-digital-education-outlook-2023_c827b81a/c74f03de-en.pdf

- the Sustainable Development Goals (SDGs),
- the European Commission's priorities for "A European Green Deal" and "An economy that works for people" (in particular the Focus Areas Resilient Economy and Innovation for Regions and Creative Industries for Region's Identity),
- the current European flagship activities like the New European Bauhaus and EIT Culture & Creativity (in particular the Focus Area Creative Industries for Regions Identity),
- the European Commission's priority for "A Europe fit for the digital age",
- recent flagship activities such as the EIT Deep Tech Talents Initiatives (in particular the focus area Digital Solutions and (Applied) Deep Tech for Regions),
- the European Commission's commitments to "Promoting our European way of life",
- encouraging "A new push for European democracy",
- current health and social policies (in particular the focus area Health, Wellbeing and Social Innovation for Regions).

E³UDRES² 2.0 emphasizes the importance of interdisciplinary cooperation across these Focus Areas. Its members are already engaged in recognized exemplary practices at these intersections, such as digital health, digital social innovation, digital cultural heritage, and creative media technologies.

6.2. Diversity and Gender

Gender mainstreaming, diversity management and inclusion are to be considered as integral part of the whole research process, from a structural perspective as well as from a content-related point of view:

From a structural perspective, criteria concerning Gender & Diversity are to be included in any decision-making process inside the alliance, be it selection criteria in relation to students and employees of the partner universities, be it in questions of budget / time / resources distribution. Composition of teams, distribution of roles, visibility and involvement in decision making have to be ensured and balanced to the best of the given possibilities for all genders and across different diversity dimensions, to ensure the plurality of approaches and an improved quality of the outcomes.

From a content-related point of view, all research and innovation activities of the alliance shall consider the relevance of Gender & Diversity questions and criteria to their research questions, choice of methodologies, validity of results. It is to be inquired in an active way, if and how the topic, approach, etc. of a given initiative or project on the one hand can be improved by a better consideration of Gender & Diversity questions, and on the other hand potentially contribute in a more significant way to the consideration of Gender & Diversity aspects in industry and society.

The majority of E³UDRES² partner institutions have either obtained (e.g., Fulda, STPUAS) or applied for (e.g., ViA, UPT, MATE, IPS, UCLL) the HR Excellence in Research Award, demonstrating their commitment to endorsing all principles of the European Commission's Charter & Code for Researchers⁹. These principles emphasize the importance of fostering diversity and gender equality in research by creating an inclusive environment where individuals from varied backgrounds - including different genders, nationalities, and abilities - are respected and valued. The Charter advocates for gender balance in recruitment, career progression, and representation in decision-making roles, urging institutions to adopt policies that actively counteract gender bias and ensure equal opportunities. It promotes a merit-based, discrimination-free recruitment process and encourages family-friendly policies to support

⁹ <https://euraxess.ec.europa.eu/jobs/charter>

work-life balance, with particular attention to addressing the underrepresentation of women in STEM fields (European Commission, 2005)¹⁰.

To support diversity and gender equality, E³UDRES² partner institutions have adopted a range of different strategies that align with the European Charter & Code principles. These approaches include implementing Open, Transparent, and Merit-based Recruitment (OTMR) policies, along with forming committees dedicated to diversity and inclusion. Institutions are raising awareness around inclusive research practices, providing regular training on diversity topics, and creating best practice guides for managing diverse teams. Some universities have integrated diversity priorities into their academic frameworks by analyzing current diversity levels, setting key performance indicators (KPIs), and promoting career coaching to nurture diverse talent. Additional efforts include establishing career guidance centers and Equal Opportunities Committees to support inclusive career progression and implementing equal opportunities policies with diversity-focused recruitment practices to ensure equitable access to roles. Furthermore, programs like "Research Lab" prioritize diverse representation and inclusivity in research initiatives, emphasizing the importance of gender and diversity within institutional research activities.

To conclude, E³UDRES² partner institutions are strongly committed to promoting diversity and gender equality in alignment with the European Commission's Charter & Code principles. But each partner institution implements these principles with its own approaches. By actively pursuing the HR Excellence in Research Award, these institutions demonstrate dedication to fostering inclusive research environments.

Diversity and Gender sensitive selection criteria are applied in all selection processes within the Work Package. This includes, but is not limited to, the selection of PhD students in joint PhD schools/programs and the selection of members for the Scientific Council.

6.3. Focus on enriching synergies between education/training and research

E³UDRES² aims to strengthen regional resilience and sustainability through collaborative, interdisciplinary projects. By connecting researchers, teaching staff, students, and communities, E³UDRES² addresses contemporary challenges and enhances education. Researchers play a vital role in this mission, especially within targeted WPs, where they guide student learning and apply their expertise to benefit regional development.

Supporting this mission is the Talent Funnel, an ecosystem that bridges education, research, and regional needs. It empowers students and stakeholders to collaboratively solve real-world challenges by integrating hands-on learning with practical solutions. Acting as a flexible "linking pin" between WPs, partners and topics, the Talent Funnel connects diverse talents with regional needs, fostering sustainable growth through innovative, solution-driven projects.

Researchers can create "appetizers," which are short, engaging knowledge clips that make complex subjects more accessible to students. These appetizers allow researchers to present their areas of expertise in a digestible, vulgarizing format, highlighting relevant and future-oriented topics in their fields. Additionally, researchers can develop appetizers that address foundational academic skills needed across disciplines, such as research methodologies, information skills, and other essential competencies. This set of general appetizers could include tailored clips on subjects like qualitative research, with specific versions that show applications in different domains, such as health or wellbeing. However, it's crucial that these appetizers are distinct from the extensive existing resources on statistical methods, as the aim is to provide unique, broadly applicable insights rather than duplicating well-covered topics.

Researchers have the chance to contribute directly to regional development by acting as "challenge owners" who lead student projects that address real-world regional issues. These

¹⁰ https://ec.europa.eu/commission/presscorner/detail/en/ip_05_363

projects offer students a platform to apply their learning practically while benefiting the local community. Furthermore, researchers can support students as methodological and theoretical coaches in the Talent Funnel during various experiential events including International Engagement Circus (IEC), I-Living Labs (ILLs), hackathons, and bootcamps. In these roles, researchers guide students in applying theory to practice, equipping them with the skills needed to tackle complex challenges and encouraging collaborative problem-solving.

Through these activities E³UDRES² researchers play a crucial role in enhancing student learning, promoting academic and practical skills, and supporting sustainable regional innovation.

6.4. Commitment to Innovative Research Assessment Practices and Research Ethics

E³UDRES² commits to being open to reforms of research assessments. It aims to support developments regarding research assessment that better reflect the value of applied research in helping E³UDRES² regions to become smarter and sustainable. E³UDRES² research is committed to high ethical standards in research and takes adequate measures to ensure that these standards are met.

The following activities support the realization of this strategic objective:

- All member institutions share and discuss their ethical research guidelines and their approaches to research assessment
- The Centres of Excellence as well as the joint PhD schools/programs define joint ethical research guidelines
- E³UDRES² commits to the principles of the Coalition for Advancing Research Assessment (CoARA) Agreement on Reforming Research assessment¹¹

E³UDRES² and its partner universities support the efforts of the Coalition for Advancing Research Assessment (CoARA). They recognize and underscore the importance of opening, advancing and reforming the current practices of research assessment – be it related to research outcomes, research projects, research careers, research units. The plurality of the research approaches and ecosystems has to be better reflected in the assessment methodologies and procedures. In particular, with specific relevance to the long-term vision and mission statement of the alliance:

- the importance and impact of applied and mission-oriented research has to be further explored, expanding the considerations of a plurality of outputs
- the contributions of knowledge-transfer and innovation as well as internationalization efforts to the quality and impact of research and to the permeability of research careers has to find better consideration
- the active intertwining between education and research has to become an integral part of the whole approach (including to academic careers as a whole)

6.5. Strengthen researchers' skills, careers and mobility

E³UDRES² is committed to strengthen and improve attractiveness of research careers. It aims to provide researchers with good working conditions and opportunities to enhance their skills and knowledge as well as to facilitate researchers' mobility to cultivate a broader research perspective and strengthen professional networks.

The following activities support the realization of this strategic objective:

¹¹ <https://coara.eu/>

- Two of the member institutions (STPUAS and HFD) already hold the Human Resources Strategy for Researchers (HRS4R) label, other five (IPS, MATE, UPT, UCLL and ViA) applied for it, while the other two (Saxion and JAMK) will probably also join
- The joint PhD schools/programs will be designed with the intent of providing young researchers with a good start in their research career, good working conditions and opportunities to enhance their skills and knowledge and with support for their mobility and the creation of professional networks
- All E³UDRES² members aim to provide access to their training opportunities for researchers at all career stages and to all alliance members whenever possible
- Whenever possible, opportunities for researchers to travel and meet face-to-face will be offered in addition to virtual networking opportunities

7. Knowledge and Research results valorization in the Regions and at European level

Applied research is a powerful tool for increasing universities' international visibility. By addressing global challenges, fostering industry and government collaborations, enhancing academic reputation, attracting top talent, building strategic partnerships, and promoting innovation, universities position themselves as global leaders in knowledge application. As the world continues to prioritize practical solutions to pressing issues, the role of applied research in shaping a university's international standing will only grow more significant.

On the other hand, traditional research valorization through publication is a cornerstone of increasing universities' international visibility. By disseminating scholarly work through high-impact academic journals, conferences, and books, universities showcase their intellectual output to a global audience. This process not only elevates their reputation in academic circles but also cements their role as contributors to global knowledge and innovation.

Academic publications are widely regarded as the gold standard for sharing research findings. By publishing in respected peer-reviewed journals, universities validate the quality and significance of their research. These publications become a record of scholarly contributions, accessible to academics, policymakers, and practitioners worldwide. Institutions with high publication output often achieve better rankings in global university indices, such as the Times Higher Education and QS Rankings, which directly enhances their visibility.

In line with the European Commission's efforts, the E³UDRES² alliance is strongly committed to a comprehensive and inclusive approach to knowledge valorisation. This encompasses not only the dissemination of research results but also innovation outcomes, knowledge-transfer activities, and the contributions of students participating in R&I projects and innovative learning formats such as bootcamps and hackathons.

Our approach recognizes a broad spectrum of target groups within the innovation ecosystem, including:

- The scientific research community, knowledge and technology transfer actors, and innovation founders.
- Start-ups, spin-offs, and companies of all sizes.
- Public sector entities, particularly in fields like health and education.
- NGOs, service providers, and formal and informal education providers at all levels.
- Society at large, including local communities and regional stakeholders.

These diverse actors not only benefit from, but actively participate in and utilize the outcomes of research, innovation, and knowledge generation within the E³UDRES² alliance.

The alliance is guided by a mission-oriented approach to valorisation, addressing key societal and economic challenges at global, European, national, and regional levels. These missions are rooted in our Focus Areas and shaped by continuous input from stakeholders through various engagement formats.

E³UDRES² fosters innovative formats for engagement and collaboration, including:

- Bootcamps, hackathons, and citizen science initiatives that connect students, researchers, and stakeholders.
- Interactive partnerships with policy makers, companies, and societal players to co-create impactful solutions.
- Cross-regional and international networks that bring added value to regional development.

The alliance values the plurality of outputs from research and knowledge-generation activities. By recognizing the diverse dimensions of impact, E³UDRES² ensures its contributions benefit multiple target groups, including industry, public services, and local communities.

E³UDRES² embraces open science principles as a fundamental approach to enhance the accessibility, transparency, and impact of research. By fostering a culture of open knowledge sharing, the alliance ensures that research outputs are widely available and contribute to societal and economic progress, highlighting the following dimensions:

- Key Principles:
 - Accessibility: Promote open access to research publications and data, adhering to FAIR principles (Findable, Accessible, Interoperable, and Reusable).
 - Transparency: Share methodologies and results openly to build trust and reproducibility.
 - Inclusivity: Engage diverse stakeholders, including policymakers, businesses, and citizens, in the open knowledge ecosystem.
- Mechanisms for Open Sharing:
 - Open Access Publications: Utilize repositories like OpenAIRE and EOSC for free dissemination of research outputs.
 - Open Data: Share structured, reusable research data while respecting ethical and legal obligations, such as GDPR compliance.
 - Collaborative Platforms: Leverage digital tools for open collaboration and knowledge exchange, including preprint servers and peer-review platforms.
- Supporting Activities:
 - Training and Resources: Equip researchers with skills in open science practices through workshops and guidelines.
 - Recognition: Integrate open knowledge contributions into research assessments to incentivize adoption.
 - Citizen Engagement: Use accessible formats (e.g., infographics, videos) and participatory events to translate findings for broader audiences.

By embedding these patterns and rules, E³UDRES² not only complies with European Commission policies on open science but also drives a paradigm shift in how knowledge is shared and utilized. This approach strengthens the alliance's impact on society and fosters innovation across regions and beyond. By embedding research activities in regional contexts while leveraging international expertise, E³UDRES² ensures:

- Tangible benefits for regional development through applied research tailored to local challenges.
- Enhanced European visibility through participation in high-impact research networks and open innovation platforms.

Through these initiatives, E³UDRES² bridges the gap between research and practical impact, empowering regions while contributing to European and global innovation ecosystems.

During the last decades, Open Science has emerged as a transformative paradigm in academic research, emphasizing transparency, accessibility, and collaboration. The principle of Open Science seeks to make research outputs, such as data, publications, software, and methodologies, freely available to the global community. By fostering inclusivity and reducing barriers to knowledge, Open Science accelerates scientific discovery, enhances reproducibility, and ensures equitable access to research.

The E³UDRES² alliance is committed to respecting and promoting the principles of Open Science and Open Innovation. Among the key initiatives driving Open Science are OpenAIRE (Open Access Infrastructure for Research in Europe) and EOSC (European Open Science Cloud). OpenAIRE is the European initiative funded by the European Commission that provides an open-access infrastructure for research. OpenAIRE connects a wide network of repositories, publishers, research institutions, and funders, creating a collaborative ecosystem that promotes open access to knowledge. The European Open Science Cloud (EOSC) is a flagship initiative of the European Commission aimed at creating a federated, digital environment for research. EOSC provides a virtual space where researchers can store, manage, and share data, tools, and services in an open and secure manner.

OpenAIRE and EOSC share a common vision of promoting Open Science and creating a collaborative research ecosystem. Their partnership exemplifies the power of academic collaboration in advancing Open Science goals by integrating services. OpenAIRE provides a critical infrastructure for integrating research outputs into EOSC. By aligning their technical frameworks, the two initiatives ensure that research publications, datasets, and software deposited in OpenAIRE repositories are accessible through EOSC.

The first six E³UDRES² partners are already familiar with the principles of Open Science, Open Innovation, Open Access, production of Open Educational Resources and with the adoption of FAIR (Findable, Accessible, Interoperable, and Reusable) principles for data management, through the activities of the Ent-r-e-novators project.

Research results valorization through Open Science enhances the impact and societal relevance of academic outputs by making them accessible, reusable, and actionable for diverse stakeholders. Open Science principles ensure that produced knowledge transcend traditional academic boundaries and reach broader audiences, including policymakers, industry leaders, and the general public. By enabling the free dissemination of knowledge, Open Science accelerates innovation, fosters interdisciplinary collaboration, and promotes the co-creation of solutions to pressing global challenges, which is a key value stated in the E³UDRES² vision and assumed mission.

8. Funding and Transfer

The E³UDRES² alliance partners face different national and institutional regulations for funding of research and transfer activities. This influences the overall funding strategy of the E³UDRES² alliance. In general, research funding should primarily rely on financial support attracted from the research projects. EU funding opportunities, in particular, hold significant appeal and relevance in this context. Moreover, there is limited support obtainable from partnering institutions, which varies in both the nature and the amount of funding available.

The members of the E³UDRES² Alliance are confronted with different national framework conditions for research funding in higher education. Not all partners have basic funding for research. A sustainable portfolio of funding opportunities for research activities must therefore be established. Therefore, the E³UDRES² Alliance strives for sustainable research funding based on the following pillars:

- 1) Basic funding from the budgets of the individual partners
- 2) National and international funding
- 3) Research contracts

The researchers shall be supported with e.g. specific trainings, targeted analysis of relevant funding calls to improve the success rate in competitive research calls on national and international level.

9. Governance and Management

E³UDRES² researchers are all researchers from any of the partner universities that are registered in the Bank of Researchers. The research strategy is designed to provide them with

the direction, resources, and inspiration needed to achieve excellence in research and innovation.

The E³UDRES² research supporting team is a team consisting of members of all the partner universities who are active in realizing the goals and tasks defined in the E³UDRES² project proposal, including the activities described in this research strategy.

The Scientific Council is the relevant body for academic and strategic aspects of research activities in E³UDRES². It is established to provide scientific advice and guidance to the researchers and project staff of E³UDRES² regarding research related activities, validate strategic and conceptual work conducted by the E³UDRES² research supporting team before being sent for approval to the Executive Board and to supervise the implementation of research-related concepts and activities. The Scientific Council works closely with the E³UDRES² research supporting team, provides its scientific expertise and supports the implementation of the E³UDRES² research tasks. E³UDRES² research supporting team members are responsible for the coordination with the E³UDRES² Board of Coordinators and the E³UDRES² Executive Board. More information about the Scientific Council can be found in the statutes of the Scientific Council.

The E³UDRES² Executive Board consists of the Presidents and Rector of E³UDRES² partner universities. By approving the research strategy, they declare their institutions commitment to the goals and activities described in this research strategy.

10. Conclusion

This research strategy was developed as a long-term basis for all research-related tasks within E³UDRES² 2.0 and beyond 2027. It takes into account E³UDRES² joint research activities and capacities reflecting previous EU policies, previous activities & experience and defines the E³UDRES² research vision and its strategic pillars, identifies strategic research areas and describes strategies and mechanisms related to funding, governance and management as well as strategy implementation. It was approved by the E³UDRES² Scientific Council representing senior researchers and the E³UDRES² Executive Board representing the leaders of all partner institutions.

The strategy will be adapted, if necessary, in response to new opportunities, funding landscapes, and emerging challenges in the European research environment as well as in response to changes within E³UDRES².