Report on Human Centered Innovation for Smart and Sustainable Regions around E³UDRES² universities

WP5: Innovators and Entrepreneurs

2021.

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Highlights of the E³UDRES² project

Background and aims of the E³UDRES² project

The idea of E³UDRES² was initiated by the assumption, that innovation ecosystems are often associated with urbanisation and globalisation. Most of their stakeholders are linked to large metropolitan regions, collaborate with major companies rather than regionally anchored SMEs and act within a global competition of a digitised world in which their revenues are more important than their social impact.

However, a majority of the European population lives in small or medium-sized towns and their surrounding rural areas. The manifold regions strongly contribute to the high quality of life as well as the cultural identity of Europe and regionally anchored SMEs make relevant contributions to the European economy. Thus, progressive regions and smart villages urgently need to develop innovative ecosystems taking into account the specific challenges and opportunities of medium-sized cities and their rural surroundings. Despite geographical, economic and cultural differences, many European regions face challenges that are at least similar.

Because of these reasons E³UDRES² wishes to establish an open inspiring, innovative, intercultural, international, interdisciplinary, intersectoral, inclusive, and intense – real and virtual – environments for learning, teaching, research, innovation and multidirectional knowledge exchange as well as to develop service to related communities. These environments would enable creativity, curiosity, impact orientation, societal engagement, challenge based open innovation and entrepreneurial mindsets and strive gender equality and social inclusivness. Various opportunities for open communication and interaction promote individual creativity and the quality of cooperation at all levels. E³UDRES² shares Living Labs for smart and sustainable regions in which learners, educators, researchers, developers and community stakeholders meet, interact and collaborate with regional SMEs and global ventures, digital makers and diverse creative individuals as well as the wider public. The I-environments strongly contribute to innovation ecosystems for human-centered, regionally-anchored smart and sustainable solutions that integrate scientific experience, cross-disciplinary knowledge, applied professional skills and practical experience.

As an unique European university that is widely recognized for ground-breaking approaches to challenge-based higher education, mission-oriented research, human-centered innovation, E³UDRES² is committed to the further development of small and medium-sized cities and their rural surrounding areas into smart and sustainable regions. Besides, E³UDRES² provides a platform for collaborative innovation for multidirectional, crossdisciplinary, cross-sectoral, cross-actor knowledge exchange. E³UDRES² is exemplary as an engaged and entrepreneurial European university that responds to the social, environmental, and economic challenges of the 21st century and is committed to sustainable development goals.

Based on an inspiring, open, agile, holistic and inclusive academic culture E³UDRES² is committed to high quality in four main areas of activity:

- Challenge-Based Education
- Mission-Oriented Research
- Human-Centered Innovation
- Open and Engaged Knowledge Exchanges

Triggered by regional challenges, all four areas are closely connected and stimulate each other within I-Culture, I-Living Labs, I-Research Centers and I-cubator, so that resonating cycles of innovation arise and turn the

knowledge square into a reality. Together with the smart and sustainable regions and their diverse communities, these core areas will act as perpetuum mobile.

Participants of the project

E³UDRES² members are located in different European regions which are shaped by different geological, social, cultural, economic and historical conditions. What they have in common, however, is their commitment to becoming relevant key players by supporting their rural surroundings to overcome the challenges of the digital age as well as urbanisation. The project involves the active participation of the following universities:

- St. Pölten University of Applied Sciences
- Polytechnic Institute of Setúbal
- Polytehnica University Timisoara
- Hungarian University of Agriculture and Life Sciences (Formerly: Szent Istvan University)
- University College Leuven Limburg
- Vidzeme University of Applied Sciences

The table below shows the full and short name of each participating university. (In the report, short names of the universities are used.)

University name	Short name	Country
St. Pölten University of Applied Sciences	STPUAS	Austria
Polytechnic Institute of Setúbal	IPS	Portugal
Polytehnica University Timisoara	UPT	Romania
Hungarian University of Agriculture and Life Sciences (Formerly: Szent Istvan University)	MATE	Hungary
University College Leuven Limburg	UCLL	Belgium
Vidzeme University of Applied Sciences	VIA	Latvia

Brief introduction of the EUDRES universities

With about 3,500 students and about 370 staff members and more than 900 lectures from the practical field, the STPUAS is located in the city of St. Pölten (60,000 inhabitants), the capital of the province of Lower Austria. After the fall of traditional industrial companies (e.g. Glanzstoff, VOITH), the city of St. Pölten heralded a structural change about ten years ago and has meanwhile become a centre of education, research and culture. It represents the type of region which has transformed from a traditional industrial region into a knowledge hub, with a rising number of SMEs. St. Pölten is closely linked to Vienna, benefits from an excellent infrastructure and acts as a regional transport hub with direct connections to Vienna International Airport and European metropolises such as Munich and Budapest.

IPS is the alliance's representative from the south-western end of Europe. Despite belonging to the Greater Lisbon Metropolitan Area (NUTS III), IPS is located in the suburban setting of the Setúbal region (approx. 52,000 inhabitants). This is primarily an industrial region, strongly connected to the sea but also with a long rural tradition, particularly in wine and cheese production. Many Portuguese and multinational companies have been moving their production and headquarters to Setúbal to take advantage of its proximity to the sea (seaport), the efficient network of transport and communication routes, and the investment appeal in productive and technological sectors. However, 99% of the companies in the Setúbal region are still small and medium-sized

enterprises that have the will to grow. With 7,000 students and 800 staff members, IPS aims to contribute to the Setúbal region's sustainable development through the education of its population, research and development applied to the regional challenges, knowledge and technology transfer activities, provision of services to the community, and dissemination and promotion of science and culture. The Setúbal region also contributes to IPS' academic activities, as a "supplier" of challenges that students have to solve in the course of their studies. So far, IPS has cooperated with more than 100 local partners, among them health, automotive, naval and aeronautic industries, as well as a number of educational institutions and healthcare entities.

MATE's headquarters is located in the town of Gödöllö (35,000 inhabitants) about 35 km north-west of the capital Budapest in a suburban area, creditably teaching agriculture and related life sciences. MATE has gained experience in a number of projects based on its educational, research and advisory potential which can contribute to the success of collaborative work between European universities. Among these, the following are professionally related to the planned project: (1) SMART CITY: development of innovative research networks in Gyula and Salgótarján, and (2) Establishment of Agricultural Informatics Higher Education and Industrial Cooperation Centre. The aim of the project was to improve the competitiveness of agriculture by integrating IT system-level technologies within the framework of university-enterprise research and educational cooperation in rural areas.

Limburg is the smallest province of Belgium. It is located near the Dutch and German border, 30 km from Maastricht, Aachen and the French-speaking community Liege. It is easily connected to airports in Maastricht, Charleroi and Brussels. UCLL is situated in the Hasselt region counting 281780 inhabitants. 78000 live in the capital Hasselt. Limburg has both an industrial and rural area. In 1901 coal was discover and 7 coalmines were built in Limburg. However, the last one was closed in 1992. In 1964 a huge FORD manufacturing site was built in Genk. This was also closed in 2014. To compensate job loss, Limburg invested in tourism, technology and entrepreneurship. Limburg created 9 incubators for start-ups: Corda Campus, C-Mine, Greenville, Bioville, Agropolis, Incubathor,Mia-H, Bikeville. Limburg is also famous for its cheese, cakes (vlaai) and gin (jenever). The rural area of Limburg is Haspengouw. It is famous for its fruits and wines. Limburg is the biking and walking province with an expanded bicycle network and very popular blossom walks.Hasselt promotes itself as the capital of taste and fashion attracting tourists for shopping and lovely dinners.

Vidzeme University of Applied Sciences (ViA) is a state educational institution in Vidzeme region, Latvia. Vidzeme University of Applied Sciences (ViA) enrolled its first students in the autumn of 1996. It was founded for promoting economic, political and social development of Vidzeme Region. In 2001 ViA acquired the status of state university and today there are around 800 students studying at the university, 99 % of them are full-time students. Apart from offering higher and further education possibilities, the university has become an essential partner in solving the development issues of the dynamic Vidzeme Region and the city of Valmiera. The university is well known for its international profile, qualified staff and a balanced link between theory and practice. It has two faculties: Faculty of Engineering and Faculty of Society and Science. The university offers 16 study programmes in 6 study directions from college level to PhD – communication and media; travel and leisure; business administration; information technologies; mechatronics; construction. All the study programmes (except Masters programmes in Media and Information Literacy and PhD in Socio-technical Systems Modelling) are professional – graduates get professional degree and qualification. Studies in English are offered in Bachelor (exchange) and Masters level (exchange and full time studies). Around 25% of university graduates have acquired international experience abroad (internship or studies), and a number of international activities are integrated in all levels of university operation. ViA has 120 paid (60 academic and scientific, 60 administrative staff).The university has two scientific institutes - Institute of Social, Economic and Humanities Research (HESPI) and Socio-technical System Engineering Institute, as well as Knowledge and Technology Centre.

POLITEHNICA University of Timisoara-UPT is a 100 years university of advanced research and education, having around 15000 students and 10 faculties. Today, it is one of the traditional Romanian schools and is recognized

nationally and internationally both through the work of generations of teachers and the outstanding work of prestigious academics. According to tradition, the mission of UPT resides in meeting the competence requirements of the societal environment by providing superior training at undergraduate, graduate, and postgraduate levels. Bearing fundamental values, the university mission reflects at the same time concern for the future of society, by tracing its development at local, regional, national, and international levels. UPT is recognized as an outstanding actor on the research stage both nationally and internationally. The existence and operation of an important number of research centers (25), in which research teams successfully put into practice the research strategy of the institution, offer the university its international prestige and at the same time, provide funding sources for its development. The materialization of the research results in scientific papers, patents or products constitutes a guarantee of the institutional competence, thoroughness and professionalism. UPT has an infrastructure which ensures best conditions for teaching and research. The excellent spaces and equipment which the university offers are a consequence of the last decade's modernization and investing concerns. Fully consistent with its mission with the desire to assert itself internationally, UPT is currently developing fruitful collaboration with many universities in Europe, USA, Canada, South America and Asia, resulting in over 190 cooperation agreements concluded directly or under European Union programs.

Work Package 5

The overall approach of the E³UDRES² work programme is based on its main core principles (I-culture, I-living ab, I-research networks, I-cubator). In line with these core principles, E³UDRES² attaches great importance to co-design and co-create the proposed desired multi-university together with all members, associated partners and other relevant stakeholders. Because of its complexity, all members are involved in all work packages to a comparable extent. Besides the two obligatory work packages "General Management and Coordination" and "Sustainability and Dissemination" one work package concerning "Future Universities" is introduced to provide knowledge and experience about future challenges and opportunities for higher education institutions as an important basis for the overall development of E³UDRES² from individual, regionally anchored, national universities to a European multi-university campus for smart and sustainable regions. Three work packages are fully in line with the proposed human-centred approach and therefore represent the perspectives of learners, researchers, innovators and entrepreneurs.

Since E³UDRES² strives for a strong interrelation of challenged-based education, mission-oriented research, challenge-based innovation and open and engaged knowledge exchange, the main output of WP5 (Innovators and Enntrepreneurs) is to establish an I-cubator as the E³UDRES² Innovators and Entrepreneurs Programme. The first deliverable of the work package (D5.1) is the '1st E³UDRES² Report on Human Centered Innovation for Smart and Sustainable Regions'. The Report shall be delivered in Englsih and shall provide an overview and an analysis of related pre-existing acitivities of the members of the consortium.

EUDRES Universities' objectives to be achived within the project WP 5

In order to achive the project's goals and to convert the results of scientific research into real innovation, it is necessary to improve the knowledge and technology transfer activities of higher education institutions, to develop incubation services and services to help start-up spin-offs. In addition, it is essential to develop the relationship between higher education, vocational training, the business sector, and to channel training, research capacities and the knowledge base into the formulation and implementation of regional economic and

settlement development strategies. To achive the general objectives of the project, the project members' aims are the following:

- Spread entrepreneurial mindset across all partners including own institution, build up a new Future University that is built on open innovation, citizen science, mutual respect & development and transfer of sustainable state-of-the-art technology and digitalisation in the service of humanism.
- Be key players in the regional innovation ecosystemns who approach education and research in a flexible and totally different way by helping the digital shitf to new learning design; stimulating and supporting lifelong and entrepreneurial learning; providing extra commitment to talent development programs
- Implement good practices in terms of entrepreneurship and innovation for sustainable and smart regions; Align with the best international practices in terms of entrepreneurial culture and entrepreneurship support
- Internally align the community (teachers, staff, students, directors) in terms of what it means to be an entrepreneurial university
- Develop strong networks with the EUDRES partners in terms of sharing programmes; business support structures; exchanging entrepreneurship programmes; shared curricula
- Get national and international recognition for the entrepreneurship programmes.
- Gain strong knowledge base to prepare more robust proposals with enhanced probability of success in the upcoming European calls.

Backround of the 'Report on Human Centered Innovation for Smart and Sustainable Regions around E3UDRES2 universities'

Aims and methods of the report

The aim of the 'Report on Human Centered Innovation for Smart and Sustainable Regions around EUDRES universities' is to introduce the region of the six participating universities, identify local best practices at each participating universitiy that contributed to a flourishing innovation ecosystem. Also, the report aims to find the correlation between specialities of the different regions and university innovation management systems.

Prior to the creation of the report, a general questionnaire was created to be completed by each participants. Questions of the template was answered by each university. The report includes the compiled answers of the consortium members.

II.   Introduction of the regions and their innovation ecosystem of the EUDRES universities

The aim of this unit is to introduce the region's innovation ecosystem including the key players and key leaders building and managing a working innovation ecosystem in the regions; the largest industries, their involvement in the regional ecosystems; the links between small and medium-sized cities and their rural environment; sustainability and smart systems / technologies in the regions and their impact on society and economy; the regional start-up ecosystems. To get the right inputs, the following questions were applied:

- *How do you assess the region's innovation ecosystem, especially with regard to small and medium-sized cities and their rural environments?*
- *How sustainability and smart systems / technologies appear in the regions? Give some examples. What are their impact on society and economy?*
- *Who are the key players and key leaders building and managing a working innovation ecosystem in your region? (companies, SMEs, local authorities, legislators, innovators, clusters, chambers)*
- *What are the 3 largest dominant industries in the region? (How) are they involved in – connected to - the regional innovation ecosystem?*

STPUAS: St. Pölten Region

St. Pölten, the capital of Lower Austria, used to be a traditional industrial city. After the fall of traditional industry companies (e.g. Glanzstoff, VOITH), the city of St. Pölten heralded a structural change about 12 years ago and now has become a centre of education, research and culture. St. Pölten benefits from an excellent infrastructure and acts as regional transport hub with direct connection to European metropoles like Munich, Vienna and Budapest. In recent years, co-working spaces and hackerspaces were opened in the city of St. Pölten. Although a still young capital (since 1986) and quite small city (60.000 inhabitants), St. Pölten already is a regional important education location with currently four higher education institutions, numerous compulsory schools, secondary schools for economic professions and technical schools. The most dominant industries of the region are manufacturing with big companies involved in packaging, wood, paper and stell production; health (Niederösterreichische Landeskliniken-Holding is the organization that mergers all hospitals and training sites for nursing staff operated by the province of Lower Austria) and retail and service industry. Also some bigger companies and loads of SMEs can be found in the region.

The key players who are involved in the formulation of the local innovation ecosystem:

- City of St. Pölten
- Lower Austrian Regional Government
- Ecoplus Business Agency of Lower Austria
- Riz up Regional Innovations and Start-Up Center of Lower Austria
- Tecnet (regional partner for research-to-value & venture capital)
- Accent (tech incubator)

The regional start-up ecosystem in and around St. Pölten is well developed however there could be more demand. Start-ups are still rare organisational structures and the ecosystem could support more demand. The ecosystem needs more dreamers, makers and realisers who dare to start building their own business.

In 2018 the city of St. Pölten has implemented the SMARTUP initiative for innovation, entrepreneurship and start-ups. The aims of this initiative is the interlocking of research, education and economy, knowledge transfer,

promoting talents and ides (e.g. innovation weeks, hackathons), establishing concepts of open innovation and co-creation (e.g. open laboratories and facilities), interaction with existing networks (Industry meets Makers, Austrian IT Security Hub, etc.), establishing connections with other cities. STPUAS innovation ecosystem gives a lot of support to those who look for it.

Also, there are some examples for smart technologies with remarkable results. QuickSpeech is a mobile learning app that trains in short knowledge portions and activates the usage of the app in a playful way. Employees play in groups, achieve points and can achieve rewards by learning via a mobile device. Bakery Weinberger is a logistics opimizing app for bakery´s daily selling tours.

The ecosystem has a positive impact on society and economy: positive examples for digitalisation in SMEs and Start-Ups in the region motivate other SMEs to dig into digital solutions and collaborate with innovative teams from University.

IPS: The Setúbal Península

The Setúbal Península (IPS region of implementation) encompasses 9 municipalities and a mix of industrial and rural areas. There's a strong focus on automobile industry (centred on the Volkswagen plant) and the region investment and business revenue is highly concentrated under 4 big companies (more than 30%). For that matter, innovation ecosystem is fragmented and difficult to assess. There are some development agencies that act as triggers for rural, coastal and urban innovation. One of the most important one is ADREPES, that defined in 2016, alongside with IPS and other regional stakeholders, a strategic view for the region. Nevertheless, that effort, the several forums and presentations that took place by the time the report was made, a clear dissemination throughout the region is not clear yet.

The Setúbal region has a diversified industrial structure, very much alike the national type, being commerce and service support activities the most representatives. As a specify it encompasses a strong concentration of business under the biggest four companies (much bigger than the countries' average – more than 30% against less then 5%). The added value of the region's industrial activity counts for around 5% of the countries' value. The largest companies are:

- Autoeuropa (Volkswagen) with around 4.000 workers: automobile industry;
- Infraestruturas de Portugal with around 4.000 workers: land transport infrastructure management;
- Navigator – pulp and paper industry;
- Hospital Garcia da Horta with around 3.000 workers: public central hospital. (IPS)

In 2015, IPS created an interface for collaborative efforts towards regional innovation, designated as IN2SET. This interface had the goal to network all innovation forces of the region, alongside with the knowledge base, and contribute, as one of the main areas, to collect, analyse, publish and disseminate statistical information from the region to the region. It's still a work in progress and besides the network, few projects were delivered.

Entrepreneurial activities run in an ad hoc basis, being ADREPES as one of the main triggers, acting as the biggest regional funding agency (with 32 million euros invested in 509 projects)[1]. Some of the 9 municipalities have entrepreneurial support activities, but none of them has very distinctive activities.

At the Setúbal Península lacks a sense of network towards entrepreneurship and innovation between the rural, coastal and urban territories, but the territory already has a network structure in place, that can be called out to develop and implement new approaches.

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[1] Information available at www.adrepes.pt

There is no systematized information about sustainability actions or smart systens/technologies in the region. There might be some organizations that encompass some actions towards sustainability, but it's all under the respective organizations or the specific activities. The most inmportant organization that takes part in the formulation of the regional innovation ecosystem:

- ADREPES- regional development agency;
- IPS – higher education instituition;
- AISET- industrial association for the Setúbal region.

There is no specific regional and regular assessment of the startup ecosystem.

MATE: Gödöllő Region and Kaposvár Region

Gödöllő is a town in Pest county, Budapest metropolitan area, Hungary, about 30 km northeast from the outskirts of Budapest. Its population is 35,000 according to the 2010 census and is growing rapidly. The economy of the town has been transformed substantially in recent years. New businesses move to Gödöllő creating more jobs than before, while Gödöllő Business Park is a good opportunity for prospective longtime investors for investments.

By employment and turnover the most important corporates are the Hungarian chemical company BorsodChem operates a technical support and R&D centre in Gödöllő. The British pharmaceutical company GlaxoSmithKline has been operating its vaccine plant in the town since 2006. The American technology company, Itron has its own R&D centre there since 2017. The Hungarian flavour and essential oils manufacturer FOOD BASE, the Hungarian chemical company Chemico, the Italian blood plasma distributor Kedrion, the American cosmetics company Avon and the American vehicle manufacturer Caterpillar Inc. have production facilities in Gödöllő. Besides there is a large number of large-scale enterprises that operate its manufacturing or R&D units in the neighbouring towns, like GE's Aviation and Gas Power units in Veresegyház. At the same time – due to educational, historical and economic reasons – many agrictulture related enterprises work actively in the region who are involved manufacturing / production (inputs, fertilizers, machinery, etc.) and / or R&D activities (like Syngenta Hungary Ltd.).

As this corporate and industrial diversity suggests, in terms of R&D activities, the region is keep developing. The region's diversity is mirrored by the education portfolio of the MATE university which offers a high variety of institutes, faculties.

Key player of the innovation ecosystem is the National Research, Development and Innovation Office (NKFIH - a department of the Ministy of Technology and Innovation) which is a bridge between the university, the corporate sector and the government. Since 2020 the Office provides outstanding innovation management service portfolio to the higher education institutions. The Office launched a program (university RDI ecosystem) with the aim of strengthening the innovation activities of Hungarian Universities. At the sam time, the Office launhed the so-called TIP network (Regional Innovation Platform) which is the alliance of the corporate sector of the region. Thus, the government, the education institutions and the corporate sector works according to an well-defined model.

The closeness of the capital city of Budapest is both an opportunity and a threat. The region has a lower level of investment in innovation (Then the neighbouring capital) and many citizens are unable to access and apply the innovations. Some part of the companies of the region do not have the knowledge to absorb and apply adequate innovations, digital technologies, unable to build them in their daily routine which makes them difficult to overcome competitive disadvantages.

The key to development is clearly to increase, rationalize and apply innovation performance. Startups, Incubators move to the capital city, thus regional startup ecosystem is weak.

Smart and sustainable technologies are not typical in the daily life of the region, however, in many case the subject of the R&D activities of the university and corporate sector for a while. Every day life of the people is not saturated with advanced technologies because of the public's low level of access to such innovations. On the other hand, the university along with the corporate sector have been working on smart and sustainable solution that could contribute to the people's everyday comfort, safety or entertainment or could bring remarkable shift in the daily operation of the corporate sector, regardless of industry, size or location. However, the spread, the wide acceptance and integration in the daily routine of such innovations is yet to come.

Southern Transdanubia is one of the most fragmented region of the country, as all its counties have a different level of development than the region as a whole. It includes industrial centers, stagnant agricultural peripheries, international tourist areas and cities with significant intellectual potential. It's economy is changing slowly. The South Transdanubia region has long been one of the least developed regions in the country in terms of manufacturing performance, and this is a lasting problem of the territorial economic sector structure. On one hand the manufacturing industry is the primary carrier of economic innovation, and its lack also means a lack of capacity to innovate. Secondly, as noted above, the lack of growth in manufacturing is dampening market demand in the tertiary sector, especially financial and business services. The level of education is basically the same as the national average, but with regard to higher education, the population of the region lags behind the national average and the rate of emigration also increases as the level of education increases.

The city of Kaposvár is the capital of Somogy county, the economic center of the county. It has nearly 65,000 inhabitants. The city plays a significant role primarily in trade, community and business services. Kaposvár has a significant industrial tradition. A significant part of the main enterprises are in the upper, lower value-added half of the supply chain. Despite the presence of the University, R & D & I activity and cooperation are low in the city.

The city and the region has tradition in agricultural and food industry, that is one of the main cornerstones of the developments with its significant capacities and technological level and uniqueness at the national level. Electric machine manufacturing is also a sector that is competitive, has high added value and has significant capacities in the city. Automotive manufacturing and related component manufacturing and metalworking also have local traditions and are currently on the production palette, but this is the industrial sector that could be one of the focus areas for developments by new entrants in the future. The transport and logistics sector, which is able to serve the listed industrial and service sectors, is the one that has been ranked first among the development areas of the future.

The only sugar manufacturing in the country operates in Kaposvár, which has recently expanded with a development of about 3 billion HUF. The factory, which covers one third of domestic consumption needs, employs nearly 300 people, which will increase by another 100 people seasonally. Two dominant playesr in the food industry also operating in the city. FINO FOOD Ltd. and KOMÉTA Ltd. use many digital and innovative technologies. Both companies play a significant role in the regional involvement and development of Industry 4.0. The SOUTH TRANSDANUBIAN REGIONAL FOOD INNOVATION CLUSTER also operates in our city, connecting more than 30 food industry and related service companies. Enterprises that play an important role in machine manufacturing and the production of electrical components - Büttner and Co Tool Component Manufacturing and Trading Ltd, Videoton Elektro-PLAST Ltd, Kaposvári Villamossági Gyár LtD. (Kaposvár Electricity Factory) - maintain a close relationship with the Kaposvár Campus, also in the field of innovation and economic development.

The presence of the University and the close cooperation with it significantly contribute to the competitiveness of Kaposvár, as well as the local business infrastructure, the business development incubator house, the local industrial parks and the existing business development organizational network (chambers, Somogy County Entrepreneurship Center Public Foundation).

There have also been significant developments in the field of renewable energy in previous years in the region. On the outskirts of the city, the largest 100MW solar park in Central Europe was completed by the beginning of 2021, which is capable of producing energy corresponding to the full annual electricity consumption of the settlement. Biogas plant operated by the Sugar Factory or the conversion of local buses into gas plants are also implemeted in the last years. Futire plans in sustainability and smart development includes the thermal insulation of buildings and the further modernization of heating and other energy consuming systems (eg building lighting and mechanical engineering).

In the field of innovation, one of the biggest shortcomings of the region is that the cooperation skills of the actors are low. It is precisely co-thinking and co-operation that would be the engine of progress, without which the players in the sector will try to stay afloat without substantial development and innovation. The level of investment in innovation is also low and many citizens cannot access and apply the innovations. The citizens of the region do not have the knowledge to absorb and apply adequate innovation, which makes it difficult to overcome competitive disadvantages. The key to the way out of the crisis is clearly to increase, rationalize and apply innovation performance and cooperate with the University, and apply knowledge and technology transfers. No new forms of cooperation and partnership have yet emerged in the region, and there are no well developed and working cooperation pacts, consortia and networks. Although there are institutions that support innovation, we cannot talk about a coherent system of regional innovation ecosystem. The overall goal is to improve the innovation environment of the region, to improve the innovation capacity of the economy through the increase of the proportion of innovative products and services, thus developing the region's economy embedded in the European R&D space.

UCLL: Limburg Region

Four major megatrends created an economic challenge that also required an answer for corona: climate change, globalization, digitalization and diversity As a result, the Limburg Strategic Action Plan has been set up in Limburg with concrete priorities and ambitions. The clear focus of this plan is on the development of a competitive, sustainable, digital and inclusive Limburg.

The 3 largest dominant industries in the region are logistics, care and creative sector. Limburg has many logistical advantages such as its central location in Western Europe, multimodal access with a direct connection to the Port of Antwerp and the availability of business land. The logistics sector is already very important to the Limburg economy today and also has considerable growth opportunities. Health care is a crucial sector in the Limburg economy. Almost 1 in 5 Limburgers is employed there, for Limburg women this is even 1 in 3. In addition to the need for qualified personnel, the social importance of quality care cannot be underestimated. The construction sector is of great importance to the Limburg economy. Relatively speaking, Limburg has more turnover, employers and employees in the construction industry than in the rest of the country.

In the region there are a number of players whose role is to accelerate innovation in the region: local authorities, clusters, chambers, companies & SMEs participating in those organisations. Limburg is an SME landscape within the the entrepreneurial network is well developed .There are many support services to accelerate innovation.

The region has a strong network of starterscommunity in our region with 7 incubators on specific sectors (limburg startup) – 230 coaches – 275 startups – 7800 new starters in 2020.

The region is open to smart and sustainable technologies. A couple of years ago S-Lim has been set up (Smart Region Limburg) in the region. S-Lim unites the Limburg municipalities to enable the region to develop into a smart region through cooperation. Based on the needs of both rural and urban authorities, s-Lim offers technological and software applications to promote the prosperity, well-being and quality of life of Limburgers.

UCLL also takes part in developing the regional innovation ecosystem. The university, for instance, is involved in the projects of SALK turbo, where a prototyping center is being developed and there is also an XR lab that is being developed with the partnership of UCLL.

UPT: Timisoara Region

With 319,279 inhabitants at the 2011 census, Timișoara is Romania's third most populous city, after Bucharest and Cluj-Napoca. It is home to almost half a million inhabitants in its metropolitan area, while the Timișoara–Arad conurbation concentrates more than 70% of the population of Timiș and Arad counties. Timișoara is a multicultural city, being the home of 21 different ethnicities and 18 religions. Interculturality has long been a special characteristic for the western part of the country.

Timișoara is one of the most dynamic economic centers in Romania. Based on its proximity to the western border, Timișoara has managed to attract many foreign investments in recent years, forming, together with Arad, the second largest area in Romania in terms of economic mass. By the mid-2000s, the foreign investments in Timișoara amounted to €753 per capita, compared to €450 per capita at county level. Most of these investments come from the EU countries, especially from Italy, Germany and France. Similar to other growth poles in Romania, the services sector has developed significantly in recent years, accounting for half of the revenues.

Among the strengths of the region is the existence of a strategy at regional level for sustaing innovation ecosystem (West Regional Development Agency - https://adrvest.ro/), the existence of specialised infrastructures to encourage innovation and technology transfer (Tehimpuls Association - https://www.tehimpuls.ro, Nokia Romania Garage, etc). These goals could be supported by a highly specialised workforce due to the 4 state universities in Timisoara of which UPT is a prominent institution.

The most dominant industries are the IT, automotive, and construction industry. On the other hand, the key players of the innovation ecosystem are universities, municipalities, county councils, Chamber of Commerce Industry and Agriculture Timis, West Regional Development Agency, international companies (Continental, Nokia, Hella, BanatIT, Flex, etc.), Regional Cluster for Information and Communication Technology, Automotivest – Regional Automotive Cluster, ROSENC – Romanian Sustainable Energy Cluster.

A huge opportunity of the region is the implementation of local and regional development strategies of which the government's program for encouraging students to become entrepreneurs (InnoTech Students) shall be highlighted. The development of the West Region Digital Innovation Hub, with the core on Industry 4.0 shall also be mentioned among the relevant initiatives.

Some related projects are over the implementation phase, and can be referred to as beds practices: Tehimpuls Association "*Eco-Innovative Enterprises in the West Region*", a project supported - in proportion of 90% - with Norwegian non-reimbursable funds granted through the Norwegian Financial Mechanism-Norway Grants for the Green Innovation funding field in The Romanian industry (https://adrvest.ro/). „*Boosting Smart and*

Innovation-Driven Growth for Romanian SMEs" is the RO-Boost SMEs Consortium, partner of the Enterprise Europe Network since 2015. The *Regional Innovation Exhibition – InnoMatch*, has been organised since 2013.

There are some nice examples of involvement in the innovation ecosystem: INCUBOXX is the biggest business incubator in IT&C in Romania. Nokia Innovation Garage is a business incubator in Communications Technologies, that regularly organises the European researchers Night. Banat IT is a non-profit association that regularly organises Hack TM, the biggest hackathon in Eastern Europe.

At the same time the university is also active in managing the innovation ecosystem. UPT organises regularly the competition International Digital Multimedia Student Contest that encourages joint student project implementation using smart technologies.

VIA: Vidzeme Region

Vidzeme is one of the most important historical and cultural regions of Latvia. The capital of Latvia, Riga, is situated in the southwestern part of the region. Among the strengths of the region is its closeness, short physical and network distances, ability to adapt and react quickly. In terms of innovation management the region's opportunity is its openeness to different type of cooperation; access to international know-how; potential for start-up and spin-off development, especially R&D spin-offs and technology start-ups.

Within the region there are several ongoing projects and initiatives which are usually fragmented and end with the end of the project. There are some joint initiatives among university and municipality in research. The key players and key leaders building and managing a working innovation ecosystem are companies, SMEs, local authorities, legislators, innovators, clusters, and chambers.

The key industries by turnover are forestry (including wood processing), retail industry, construction industry and food and beverage production; by employment rate are retail industry, agricultural industry, forestry, anf the construction industry.

The most important entities that formulate the regional innovation ecosystem are:

- Vidzeme Planning Region, Vidzeme Entrepreneurship Centre – local authorities
- Valmiera Development Agency – business agency created by local municipality
- Valmiera Business Incubator, the branch of of Investment and Development Agency of Latvia. It is a part of national network of incubators.
- Institute for Environmental Solutions – research institution, innovators
- Valmiera Business Club – companies, SMEs
- Latvian Food Bioeconomy Cluster, managed by Vidzeme Planning Region - cluster
- SIA „ZAAO" – one of the biggest companies in the region

The connection with the regional innovation ecosystem is very vague. The regional startup ecosístem is developing due to the university's joint cooperation with Valmiera Development Agency, Valmiera Business Incubator in the Vidzeme planning region.

III.   Innovation management at the EUDRES universities

This chapter, in two paragraphs, is intended to present the Universities' innovation ecosystem, innovation related activities and innovation management processes. In this part we also discuss the Institution's motivation systems to catalyse the implementation of innovative ideas by students / teachers / researchers, their working processess on utilization of results, R&D activities and strategic planning.
Imputs on above topics are collected based on the questions listed in each paragraph.

Introduction of the Universities' innovation ecosystem, the innovation management processes and strategic planning regarding innovation activities, goals and developments.

- *Does the strategic plan of the University include innovation activities, goals and developments?*
- *How do you assess the University's innovation ecosystem?*
- *Does the Institution have a dedicated unit/department responsible for Innovation?*
- *If yes, describe the organization: (How is the organization integrated into the university's operational structure? How does the organization work? What is the structure of the dedicated organization?)*
- *What activities is the organization responsible for? (coordination, administration, liaison,…)*
- *What resources does the organization manage? (human, financial, data, infrastructure, etc.)*
- *What are your University's role in supporting regional innovation ecosystems?*

Europe´s top-ranked scientific universities act within a global competition in a digitally connected world. Thus, scientific universities usually focus on specific theoretical academic questions, value their scientific publications and other established performance indicators rather than on regionally-anchored, applied professional skills and cross-disciplinary, cross-sectoral and cross-actor innovation for smart and sustainable regions, and more than their social and economic impact within regional ecosystems.

Considering the above, higher education institutions should act as key players in tackling the aforementioned challenges. Through their activities in higher education and training, mission-oriented research and innovation as well as multidirectional knowledge exchange they could be drivers of rural development, important stakeholders in regional innovation ecosystems and essential elements of progressive regional policies. To achive such goals, it is necessary to have innovation and entrepreneurship included in Institution's stratgeic planning as a central topic.

EUDRES universities overall goal is to become widely recognized for ground-breaking approaches to challenge-based higher education, mission-oriented research, human-centered innovation as well as engaged knowledge exchange, so they pay special attention to this in their institutional development planning. In approaches and details of those topics slight differences are reported.

The below summary also shows that all partners of the alliance have important and determinative role in the closer regional innovation ecosystem. Divers initiatives and cooperations are in place already, however improvements in effectiveness, stronger influencing and partnering and new collaboration with wider regional areas are needed.

The institutional ecosystems have been evaluated by the HEInnovate self-assessment tool. The members of the alliance show similar results in many aspects. Existing institutional strengths include for instance, that (1) entrepreneurship is a major part of the HEI's strategy, (2) there is a model in place for coordinating and integrating entrepreneurial activities across the HEI, the HEI (3) provides diverse informal learning opportunities and experiences to stimulate the development of entrepreneurial mindsets and skills, (4) increases awareness

of the value of entrepreneurship and stimulates the entrepreneurial intentions of students, graduates and staff to start-up a business or venture, (5) is committed to collaboration and knowledge exchange with industry, the public sector and society, (6) demonstrates active involvement in partnerships and relationships with a wide range of stakeholders. Some institutional challenges include: (1) results of entrepreneurship research should be more integrated into the entrepreneurial education offer, the HEIs (2) should offer or facilitate access to business incubation, (3) they should more actively use open educational resources, open science and open data practices to improve the performance of the institution and increase its impact on its ecosystem, (4) more attention to be paid on internationalisation as part of the HEI's entrepreneurial agenda, the HEIs (5) should be more successful to attract international and entrepreneurial staff.

STPUAS: St. Pölten University of Applied Sciences

The strategic plan of STPUAS includes innovation as an overall goal – however it is currently not specifically defined with qualitative and quantitative settings.

The Institution committed itself to the concept of the platform for collaborative innovation. This means, that it interacts and includes:
- a diverse variety of institutions and organisations, such as global companies as well as regional SMEs and start-ups, NGOs, schools and training centres, science centres and museums, co-working spaces and innovation hubs, accelerators and incubators, science and business parks, research labs and other higher education institutions, regional and federal governments, interest and pressure groups, funding agencies and others,
- a diverse variety of ambitious and smart individuals, such as pupils, students and alumni, lecturers, scientists and developers, artists, practioniers and industry experts, business angels and investors, decision makers, responsible citizens,
- a diverse variety of various disciplines and industrial sectors,
- a diverse variety of business models and processes as well as learning, teaching, research and innovation methods especially emerging from digital technologies.

The Institution's ecosystem is well developed and quite ahead of other regions in Austria. It has a dedicated organization that is responsible for innovation – it is called: service unit: "Research and Knowledge Transfer". In addition to that, innovation – especially in the context of higher education innovation - is directly anchored at the Management Board of UAS. The service unit: "Research and Knowledge Transfer" is as other service units (legal department, financial department, HR, …) directly associated to the Management Board of STPUAS. The unit is responsible for networking, coordination, administration, strategy, events, stakeholders, liaison, budgeting, ecosystem. Human and financial resources are managed by the unit itself but it is responsible for reporting.

STPUAS partnerships in the innovation ecosystem is shown on below figure.

Higher Education Institutions as Platforms for Collaborative Innovation
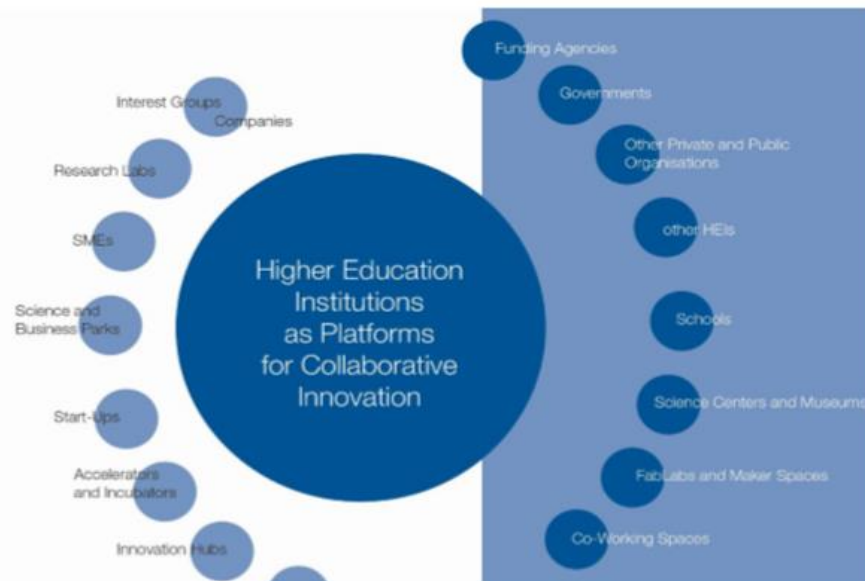
STPUAS collaborates with a wide range of different stakeholders. A study by the technopolis group in 2015, describes, 90% of the collaboration partners in the framework of research and innovation are within a radius of 100km. STPUAS also particpates in several innovation projects and networks, and even leads some of them. For example, STPUAS is leading one of 6 currently funded Digital Innovation Hubs in Austria and is partner in two more. STPUAS is one of further strategic partners of the "Haus der Digitalisierung", an initiative funded by the Lower Austrian government to foster the knowledge transfer from higher education and research institutions to companies, with special focus in digitalisation.

IPS: Polytechnic Institute of Setúbal

IPS strategic plan includes a pilar dedicated to innovation and entrepreneurship and also encompasses a series of direct mentions to several innovation activities, either at pedagogical and research path.

The institution defines below effects, improvements by supporting innovation and entrepreneurial mindset and actions:
- By creating incentives for pedagogical innovation and promotion of good pedagogical practices, namely through reflection, shared workshops or prizes;
- By supporting innovation and entrepreneurship it is intended to enhance the interconnection between research activities and their applications within industrial or business scope;
- By promoting the entrepreneurial, creative and innovative culture embedded in the education system, it should enhance the development of the appropriate skills to the creation or management of SMEs;
- By ensuring the conditions to operationalize the support structures for the Research Centers it promotes the development of research activities in a multidisciplinary way and articulating research with teaching and enhancing student learning;
- By paying a particular attention to teaching, curricula and improvement of laboratory infrastructures it promotes mechanisms that articulate teaching, research, technology and innovation.

Beyond "entrepreneurship opportunity", IPS tends to promote and consolidate opportunities for valuing initiatives, capacities of students and teachers. Activities intend to stimulate the creation, development and application of innovations that are socially useful and respond to the needs of the community, entities and companies. An emphasis is also put in supporting the development of programs that consolidate relations with companies and entities of the community and training human resources that are early involved in experimentation activities, project work and in the guided practice of research activities.

IPS has a well built and stronly functioning ecosystem. Their strengths are preparing and supporting entrepreneurs and knowledge exchange and collaboration.

At IPS there is a dedicated unit designated as Support Unit for Innovation, R&D and Entrepreneurship (UAII&DE-IPS) that centralizes de contacts concerning project management and entrepreneurship for all the Schools of IPS (multidisciplinary). This unit fully assists researchers and entrepreneurs in their activities and projects. It does not work as an independent organization in the sense of having dedicated budget. It operates with a team of 4 people (at the present date). When managing projects, it's under UAII&DE-IPS premisses to also manage project budget (in the strict sense of the project) as well as the human resources (scholarships). The unit acts as a liaison with other IPS services, such as human resources or financial. The unit has different roles: coordination when it comes to the Incubator; administration when it comes to funded projects and IP; and liaison when it comes to TT and industrial links issues. The unit works in a centralized and transversal way to all IPS structure. Currently it encompasses 4 people in its staff and covers different areas of support:
- Management of structured and funded projects (internal, national and international);
- Supports IPS Research Centers;
- Manages Intellectual Property (IP) and Technology Transference (TT) issues;
- Manages the Academic Business Incubator (IPStartUp);
- Links to the industrial stakeholders.

Through IPSartUp (the academic business incubator), IPS supports the development and acceleration of business ideas from graduates, students and teachers, giving rise to startups (either technological based or not) and spinoffs. The promotion of regional innovation is increasingly based on dynamization of the regional quadruple helix, through of the existing interactions between the education system higher education, companies and public institutions, associated with civil society. (IPS)

This Institution is a funding associate of the regional organizations that are part of the innovation ecosystem (e.g. ADREPES, AISET) and joins their activities. Also, it is part of several innovation actions and projects, either as a leader or as a partner. In the region, IPS is recognized and is a credible partner with a close proximity to several regional stakeholders and is involved with several projects.
Regarding new business initiatives, such as the creation of startups, IPS leads by starting its own incubator, but also joins regional initiatives that conduct to such results (e.g. municipalities initiatives).

As a weakness, IPS struggles to influence and partner to other parts of the Setúbal region. As it encompasses 9 municipalities, a stronger bond with all of them would be of the utmost importance in order to get the maximum impact.

The Instituion is undergoing an integration and reorganization process. The rules and regulations of the new Institution are currently being developed by the legislative bodies and management board of the University. It certainly supports innovation and entrepreneurship and gives those a central role in the Intitution's future plan. It defines innovation activities in different areas, e.g.: professional development, cooperation with different stakeholders, regional devlopment.

The university has 5 campuses and 22 different institutions including Economics, Technology, Crop Science, Food Science, Horticulture, etc. Thus, the university's added value lies in its opportunity to generate multidisciplinary projects and cooperation by merging the characteristics and specialties of different areas. Also, the University is responsible for the implementation of some key elements of the Hungarian Government's Digital Agricultural Strategy and some connected governmental programs like Artificial Intelligence Strategy's Agriculture Unit, the 5G Strategy's Agriculture Unit, etc., what means the university has the opportunity to develop its innovation ecosystem in these aspects.

Hungarian University of Agriculture and Life Sciences has a dedicated department (Innovation Centre) to deal with innovation-related services and activities. Innovation Centre has a headquarter and two regional offices: in Gödöllő and Kaposvár. The headquarter is responsible for administration, coordination, while regional offices are engaged with the daily operation of the university's innovation activities.

Innovation Centre operates under the direction of the Director for Coordination. As Hungarian University of Agriculture and Life Sciences has five campuses and 22 institutions, Innovation Centre established strong cooperation with all these units in terms of R&D related assessment, administration, analyses, communication. The Centre developed "Single Point Contact Point" to make corporate-relation processes more transparent.

Innovation Center has two regional offices. One covers the Middle and East part of Hungary and the other is responsible for the Trans-Danubial Region of the country.

The headquarter is responsible for:
- Assessing and evaluating the university's R&D activities, infrastructure, etc.
- Managing the university's innovation services, and intellectual property portfolio
- Creating the communication strategy towards any university departments that are involved in innovation activities, etc institutions, campuses, student organizations, etc.
- Creating the administrative system and processes to record R&D related activities at the university.

The regional offices are responsible for:
- Organising student programmes, like hackathons, education programs, bootcamps
- Organising programmes for researchers and lecturers, like trainings
- Communicating with the corporate sectors, strengthening ties with local enterprises, SME-s, etc.
- Developing regional ecosystems by connecting relevant actors, generating projects, etc.

The Innovation Centre is responsible for its own operation, regulations, and financial sustainability. For this, the Centre has created its business and operational model which is currently being tested and finetuned. At this stage of operation, the utilization of resources is also being finetuned, however, the resources that the Innovation Centre manages are the following:

- The Centre is entitled to use all R&D related data and information of the university (including business related information) to finetune its service-portfolio.

As for human resources the Centre has 4 dedicated colleagues who gained expertise in different fields of innovation management and intellectual property, and has part-time colleagues dealing with proposals, data-management, etc. Based on the knowledge of its employees and co-workers, the Centre develops marketable services for the corporate sector.
- The centre has the right to check and control all business related activities of any institutes and campuses.
- As for finance, the Centre maintains itself for government support (calls) and incomes of R&D activities.

Establishment of the Innovation Centre is the first step to create a central driven, well organized ecosystem. Both Regional Offices cheris and maintain good and strong relationship with stakeholders which enable for further development of the innovation ecosystem in the reagions.(PEER ASSESSMENT)

Ongoing projectsconsidering regional collaboration with knowledge triangles:
- FIEK 4.0 project: Large scale corporate-university project to create smart agriculture solutions
- Establishment of Agriculture Data Centre to unleash te potential lies in R&D data sets built in recent years

UCLL: University College Leuven Limburg

In the DNA of the Institution MOVING MINDS OF UCLL is written the following: INNOVATIVE, ENTREPRENEURIAL NETWORKER , aimed at innovation, improvement and / or development in its professional network; takes initiatives to adjust his / her own actions; takes responsibility for improving professional practice; takes a creative and problem-solving approach and actively contributes to innovation in and with his network.

UCLL has a dedicated unit called Research&Expertise (R&E). UCLL R&E is the launch and landing base for innovative practical research and services for the 5 faculties (Teacher Education, Health, Social work, Management and Technology) and 8 campuses in the region of Limburg and Flemish-Brabant that coordinates research & innovation activities. It builds on a network of local & international players. It has 8 centers of expertise active in welfare & health sectors, education, ICT, sustainability & technology and business. All 8 expertise centers have focus lines around which their research projects are submitted. With the involvement of 450 employees they work as a team on:
- administrative & financial support
- advise for project management
- communication
- business development
- valorisation support
- Startup ecosystem support (UCLL StartMinds)
- coordination (also a member of the direction staff of UCLL)

There is 1 overall coordindator & 1 adjunct-coordinator for R&E, together with the 8 R&E experts there is a two-weekly management meetings. UCLL R&E has a team who coordinates central tasks like administration, financial

support, communication, project management, business development, valorisation , startup support for all 8 centres of expertise. The centres of expertses are active in all different type of research, set up services based on research projects and continuing education for professionals, build on a external network.

UCLL R&E manages their own resources and function as an independent organisation within UCLL. They have their own budget to make strategical choices on all aspects of their business.

There is also an investment of R&E resources in 'VODO', it's a dutch worth meaning intertwining education & research activities. The results of projects has to influence, bring innovation within the education programs, that is an important goal of UCLL R&E. Also building an external network is such an important goal because centres of expertises has to cooperate. Communication is key on this and that is why the communication person works in the communication team of UCLL.

UCLL is an active partner in many projects that are started up and rolled out in the region. All practice-oriented research projects are always started in co-creation with the professional field. A valorisation center that supports research groups in this.

UPT: Polytehnica University Timisoara

One of the main goals of the Politehnica University of Timisoara strategic plan for 2020-2024 is to create an innovative environment for a professional development of students, in agreement with the tradition of the university. The Chapter 4.3 - Scientific research, innovation and technology transfer of this strategic plan underlines the need to extend the access to research funds, to develop the partnership with the private sector and to operationalize the Centre for Innovation and Technology Transfer.

Politehnica University of Timișoara deploys innovation activities on several directions. Three organizations/structures are in charge with the management of innovation process:
- (i)   The Research & Development Department through the Office for Research Valorisation,
- (ii)   The Centre for Innovation and Technology Transfer Politehnica 2020,
- (iii)   Research Institute for Renewable Energies.

Also, UPT has 27 more research centres, each centre concentrating its activity on a certain specific field of research such as: Research Centre for Multimedia, Research Centre for Engineering and Management, Research Centre for Mechatronics and Robotics, Research Centre for Thermal Machines and Equipment, Transportation and Environmental Pollution Control, Research Centre for Smart energy conversion and storage, Research Centre for Computers and Information Technology, Research Centre for Intelligent Signal Processing etc.

The Research & Development Department represents an administrative structure inside the university. Within this department, the Office for Research Valorisation integrates a Unit for Innovation and Technologic Transfer and a Unit for spin-off and start-up development. The Centre for Innovation and Technology Transfer Politehnica 2020 represents a new structure within the Research Institute for Renewable Energy (Politehnica University of Timisoara), which will facilitate collaboration with SMEs for technology transfer. The Centre is coordinated by prof. Nicolae Muntean who is subordinated to the vice-rector responsible for the Research and Development activity, prof. Liviu Marșavina. The Research Institute for Renewable Energies (ICER) is the materialization of an

ambitious project of the Politehnica University of Timișoara, is managed by prof. Viorel Ungureanu, who is subordinated to the vice-rector responsible for the Research and Development activity, prof. Liviu Marșavina.

Each research centre has a director who collaborates with the vice-rector responsible for the Research and Development activity, prof. Liviu Marșavina
More information can be found on the research, development, and innovation activity website (http://www.research.upt.ro/)

The main activities of the Research & Development Department through the Office for Research Valorisation are: technology dissemination, know-how transfer, intellectual property rights, spin-off and start-up development. The Centre for Innovation and Technology Transfer Politehnica 2020 is coordinated by Prof. Nicolae Muntean. This centre is placed under the umbrella of Research Institute for Renewable Energy. The centre has a broader purpose, namely to intermediate the technology transfer between universities / research institutes and companies. This entity is crossing an ongoing accreditation process by the Ministry of Education and Research. The mission of the Research Institute for Renewable Energies (ICER) is to sustain and perform RDI activities, including formation and perfection of highly qualified human resource in the domain of engineering sciences, aiming for excellency in strategic multidisciplinary domains of development of the society, in a quest for progress in technology, scientific fundamentals, technical solutions, processes, materials, infrastructure and competencies. R&D priorities are: (i) Energy sources (ES): renewable energies; conventional energies; energy conversion; power grids; (ii) Energy efficient materials and technological processes (EEMTP): advanced materials (composite, ceramic, magnetic nanofluids); automotive; equipment and installations; robotics and automation; artificial intelligence; (iii) Climatic changes and sustainable development (CCSD): the impact of climatic changes on the built environment; protection and rehabilitation of the built environment; waste management; materials, solutions and technologies for energy efficient buildings.

The Research & Development Department manage human resources only. The Centre for Innovation and Technology Transfer Politehnica 2020 manage human resources, European funded projects, collaboration projects with SMEs. The ICER Institute manage human resources, partnerships with national and international R&D bodies: universities, large companies and high-tech SMEs, European/national funded projects etc.

Politehnica University of Timisoara represents a key player in the regional innovation ecosystems. The strength and weaknesses as well as the opportunities and threats are shown in below SWOT table:

Strengths	Weaknesses
Highly specialised teaching staff in new technologies, smart manufacturing, innovation and technology transfer	Small capacity to underline the institution's competencies to support the regional innovation ecosystems
Updated list of bachelor and master specialisation, with a focus on smart technology and industry 4.0 applications	Lack of efficiency in the spinn-off implementation
Good collaboration with the industry and local authorities.	
Innovation infrastructure	
Human resources	

Opportunities	Threats
Involvement in different projects as Innotech Student to promote start-up activities among students	The lack of coordinated actions at the university level
Involvement in European projects promoting new/smart technologies: Cloud computing, IoT, Blockchain technologies, Big Data and Open Data, Augmented and Virtual Reality etc.	Economic crisis triggered by COVID-19, with negative budgetary impact at national level
New funding schemes at European level through the National Plan for Recovery and Resilience	
European Universities initiative	

VIA: Vidzeme University of Applied Sciences

ViA strategy 2016-2021 does not include innovation activities in direct form, however currently there is work going on with new strategy 2021-2027 where the innovation activities, goals and development plans will be included as part of study process and research.

VIA has no dedicated Innovation department but instead there is Knowledge and Technology centre (KTC), that works with student innovation projects (I-Lab), student business projects and student involvement in industry related problem solving – a mix of I-Lab and internship approach. KTC is a department/unit in the university. There are 3-4 full time staff positions. The centre works according to their own annual work plan and in line with general university strategy. KTC is responsible for coordination and organisation of life long learning courses, student innovation event organisation, teacher and academic staff education course organisation; applied research project administration; innovation projects administration. KTC is managing primarily – human and financial resources that are connected to university researchers and labs.

ViA is regional higher education and research centre, University collaborates closely with private sector and governmental institutions, has experience in organising hackathons, bootcamps, conferences ect.
Strength – cooperation with Regional business incubators has been developed; experience in organising student innovation activities and student involvement in SME problem solving;
Weaknesses – small student groups; lack of experience in organising interdisciplinary student groups.
Opportunities – SME need for innovations increases in the region both in private and public sector; High demand for high school teacher trainings in EdTech and innovation mind set;
Threats – Lack of administrative capacity to organise and conduct sufficient amount of iLabs; lack of qualified personnel that can help "clients" innovate;

Existing innovation activities are being redesigned and launched in cooperation with local and regional business incubators.

Introduction of the EUDRES universities' motivation systems to catalyse the implementation of innovative ideas by students / teachers / researchers (Including incubation programs) and applied approach and methodology to utilize the results, innovations, know-how of its R&D activities

- *How does the university motivate the innovation activities of teachers, students and researchers, the implementation of innovative ideas? Are the students provided with enough impetus in the field of innovation? Are they open to entrepreneurship and participate in student competitions, hackathons, etc?*
- *Does the university have its own incubation program to support start-ups and marketable ideas? If so, please introduce it briefly! (Operating model, results, etc.)*
- *How does the university utilize the results, innovations, know-how of its R&D activities?*

E³UDRES² co-creates a vibrant I-culture for challenge-based higher education, mission-oriented research and innovation and knowledge exchange together with learners, educators, researchers, innovators and entrepreneurs as well as various other stakeholders and the wider public.

To develop and implement an inspiring, innovative, intercultural, international, interdisciplinary, intersectoral, inclusive, and intense environment and culture, students, teachers and researchers should be motivated to implement innovative ideas, they should have also enough incentive to trigger entrepreneurial mindset.

As summarized below, all partners of the EUDRES alliance promotes interdisciplinarity and innovation in education and research, manages platforms to stimulate entrepreneurship, organizes events that involves various stakeholders (students, staff, entrepreneurs, innovators, SMEs, ventures, policy makers, etc.) to run hackathons, bootcamps and rural innovation residencies and having grant or developed incubation programs to further develope innovative ideas.

STPUAS: St. Pölten University of Applied Sciences

STPUAS promotes interdisciplinarity and innovation in education and research. Incentives are given to establish interdisciplinary projects and to develop new strategic topics.

Several years ago, STPUAS identified the 7-steps-to-start-up approach. On all steps of this approach, students will be provided with information and different opportunities to gain experience in entrepreneurial and innovative thinking. Those steps are usually part of the different curricula and only some of those activities are extracurricular.

Some examples for those activities are:
- Lectures in entrepreneurship and innovation basics
- Internal events to present projects
- Idea challenges, innovation calls, i-labs
- Expert talks

In collaboaration with external partners, events like hackathons and bootcamps are organized to foster direct collaboration between students, researchers and companies. One example is the future tech bootcam , which is organised in collaboration with the initiative "industry meets makers". At STPUAS there exist specific i-lab classes, where students work on issues that directly come from industry. There are courses that specifically prepare students to become entrepreneurs and found their own business.

The Start-Up initiative "Smart-Up" supports students, alumni and third parties moreover the technology transfer office supports teachers and researchers to realise their own business ideas. There are many student and staff competitions at STPUAS and teachers, students and researchers – as well – as non academic staff participate in those competitions. STPUAS has its own pre-incubator (CPI = Creative Pre-Incubator) which has been developed from STPUAS and Accent (Regional Founder Service Agency). In the meantime the programme is rolled out successfully all over the regional Universities of Applied Sciences.

The Institution's pre-incubator program takes two semesters (appr. 1 day of Workshops per month). Every year there are about 3-5 teams (each 1-5 participants) who have been choosen by a jury through a pitching event. If the participants are students they receive after successful completion 15 ECTS. Most of the time one team founds its own company by the end of the programme. Other teams move on to an incubator programme.

The exploitation of results, innovations and R&D activities are shared via scientific publications, open access platforms, at conferences, workshops, discussion rounds, following research projects as well as for creating spin-offs (currently work in progress for two specific projects). In the recent years, STPUAS also pushes open access and open source.

IPS: Polytechnic Institute of Setúbal

IPS running several projects where innovation activities are included:
1. IPStartUp (business incubator)

Starting in 2015, the incubator already supported more than 40 projects and 7 companies were created.

Students are called to participate after passing Poliempreende or any other competition. Since 2018 the incubator runs a project called "IPS junior consultant" that calls for students, from any knowledge areas to join the incubator or the startups and helps their development. In 2021 there are 5 students engaged.

In 2020 a new funded project was prepared (+business-waste), to run under curricular units and to strengthen innovation and entrepreneurial competencies among students, in the circular economy area. 400 students already engaged.

2. Poliempreende

IPS is part of a National business-oriented ideas competition (Poliempreende), that started in 2001 and currently involves 21 Applied Sciences Universities, being an example of partnership and cooperation between institutions. The development of Poliempreende includes several workshops, culminating in the delivery of business and financial plans of each of the participating teams. These business ideas are presented to a jury of

external entities linked to financial or business areas. The use of teaching methods that foster creativity and innovation contributes to the development of skills and competences among students, teachers and alumni. Despite being a business plan competition, Poliempreende is based on a methodology of motivation and entrepreneurial education. Poliempreende has provided remarkable results and impacts in the academic and business community, with the creation of companies and records of patents. Every year there's a significant number of students, teachers and alumni who benefit from the training provided.

In 2011, Poliempreende was the national winner of the European Business Promotion Awards (Portuguese stage) in the category of "Investment in entrepreneurial skills." IPStartUp links directly to Poliempreende, as the latest one is the first door of entrance to the Incubator.

3. Summer School Design Thinking

The Summer School in Design Thinking, launched in the summer of 2020, was founded by Portuguese National Agency for Research (FCT) and allows to develop a set of activities involving students, teachers and partners organizations. The results are 4 projects developed by students' teams with partners from industry, social sector and public administration. These projects were presented in posters in a final workshop involving several stakeholders. The assessment of this week suggest that students developed some relevant competencies such as creativity, time management, team building, communication etc . The partner local organizations also are consensual about the importance of reinforce the linkages with IPS and the possibility to have motivated students working in them to solve real problems.

4. Summer School on Technological Entrepreneurship

Launched in 2020, this initiative allowed for students to develop entrepreneurial competencies while researching a specific theme, with a technological basis. All students engaged with a senior researcher (IPS teachers) and a specific laboratory, either alone or in teams. During 3 months and receiving a scholarship, they discovered the business perspective of the research and evolved from a research base mindset to an integrated research-business mindset. 16 students engaged.

5. Demola

IPS developed since 2021 an International Project to promote pedagogical innovation, involving teachers from IPS, teachers from professional schools, students and companies. This project applied Demola methodology for co-creation. Demola is an international innovation challenge platform (about 50 universities, 750,000 students around the world) that brings together students and leading brands. With Demola, global and local organizations challenge university students to co-create solutions. The first edition of this project is in course in IPS and includes 9 facilitators (teachers from IPS and professional schools) about 50 students from IPS and from another national and international universities, 6 companies and 2 municipalities. The students' teams are multidisciplinary, and this project is articulated with Poliempreende, to develop entrepreneurial competencies and eventually new business ideas.

6. IPS Research centres

Through the nine IPS research centres initiatives and projects, students are invited to participate. Most of initiatives are research base, but there are already some initial work towards the creation of spinoffs, with the involvement of the Incubator.

The Incubator Support model has three phases: pre-incubation, incubation and business development.

Pre-incubation encompasses the beginners' phase, mostly with students that arrive from ideas competitions and still need a lot of support when it comes to capacitation on business model and innovation. It usually takes less than 6 months but at the first years of the incubator, teams use to stay longer. Most of the participants are studying at the same time and have less time dedicated to the development of the idea. The incubator's internal team develops some dissemination and recruitment activities such as communication activities inside classes;

workshops for raising awareness about entrepreneurship; and other activities towards an internal entrepreneurial culture.

Incubation encompasses the time needed to develop a first prototype, along with the piloting of the business model, the first business plan and financial estimates. Most of the teams that enter this phase directly came from the Poliempreende competition.

Teams enter the business development phase after incorporating. In November 2020 there were 17 teams in the incubation process (all three phases), from which 4 were already companies and 1 association. Two of these teams were accepted under the governmental programmed Startup Visa. All teams are less than 3 years old and most of them are 1 year old or less. Business ideas come from different fields of knowledge, representing the diversity of the HEI itself.

Until this date IPS utilized the results mostly for research use. Strategic plans foresee innovation and R&D results as a ground base for spinoffs and technology transfer processes (such as licencing or commercialization). Intellectual Property and spinoffs regulation are being prepared at this date.

MATE: Hungarian University of Agriculture and Life Sciences

The university has regular hackathons, bootcamps. The university has a Proof of Concept micro grant program for early-stage innovations which is granted to researchers, students, and lecturers.

In INNOPOOL CAMPUS initiative MATE offers a student innovation mentor programme. MATE Innovation Office has developed a student innovation career model that assists students in defining their short- and long-term goals, selecting a research topic, problem-based idea generation, and analyzing and implementing ideas. To support these activities, we are constantly developing our student innovation service portfolio, which includes elements such as consulting, consultation, idea analysis or the organization of student innovation programs, competitions and attitude-forming events (https://innopool.hu/). The university has an incubation program for students.

The university has its R&D portfolio with the project results of the previous years. The Innovation Centre's task and responsibility to strengthen the Institution's service portfolio with these items.

UCLL: University College Leuven Limburg

5 years ago the Institution set up UCLL StartMinds which is a platform to stimulate intra- & entrepreneurship amongst student of all factulties and also teachers. It has several inspiration sessions, talks with experts, … in hugging points on the different campuses every week. 1 to 1 coaching, group sessions, Hackatons, bootcamps, innovation programs are setup for students & teachers about different themes. Also Small Business Projects (SBP's) are setup in nearly all programs , where students setup their own startup in an 'safe' environment.

In recent years there has also been more attention for 'soft skills' within the various programs. For example, 'soft skills with 3 ECTS' will be implemented for industrial engineers from next year.

Also multidisciplinary projects are gaining more influence in the programs. For example, the 'Technology in healthcare' project has brought a lot of positive flow within the organization. UCLL also involves students in many of their research projects, such as the 'wanderful stream project' that works on circular design. Students participate in hackathons and bootcamps together with designers and technical people.

Marketable ideas of research results are followed up by the valorisation service that was set up 3 years ago. From the beginning of new researchproject there is a lot of effort in the valorisation part. A team of experts within UCLL is dedicated to this task. 1 FTE is dedicated to the task of valorisation within all programs and she is surrounded with a team of experts within the organisation.

UCLL strongly committed to interweaving research in education. For example, they ensure that education is up to date, but they also believe it is important that their teachers include research activities.

UPT: Polytehnica University Timisoara

Politehnica University of Timisoara has in place internal programs to support the research and development activities of teachers and PhD students (e.g. publication grants and awards, other awards). At national level there is an annual competition for teachers in terms of awards allocated for innovation patents. In addition, the ANIS partnership between industry and academia offers scholarships to support young teachers in integrating innovative teaching methods and new technologies into the university curriculum.

The students are equaly motivated to develop innovation activities and to be part to the UPT entrepreneurial movement. They have participated in different events like Innovation Labs, FameLab, Interactive Digital Media Student Contest, Tech Talks, Open Education Weeks or Timişoara Open Culture Hackathon. In terms of entrepreneurial attitude, the students actively participate in entrepreneurial projects as Build Your Future Through Internships or Secure Your Future through Education and Entrepreneurship.

Politehnica University of Timisoara sustained the start-ups through an incubation program ended in 2018. The development of two start-ups within the university is ongoing: UPT.EVENT and UPT.HR.
Also, UPT supported the graduates to set up start-ups and spin-offs. The most successful spin-off is BeeSpeed Automatizari SRL Timisoara founded in 2007. BeeSpeed offers technical solutions - turn-key projects - for automation and performance improving in different industrial processes, reduces levels of electrical energy and raw materials used by equipments conceived, realized, and tested in compliance with environment settlements and legislation, work health and security. Today, BeeSpeed - the automotive component - is part of the ZF Friedrichshafen AG group.

Development of entrepreneurial profile of students and staff (e.g. the Student Entrepreneurial Society in UPT), spin-offs, third parties research grants, technology transfer (The Centre for Innovation and Technology Transfer).

VIA: Vidzeme University of Applied Sciences

ViAs motivation of innovation activities are as follow: Innovation activities are included in teachers, students and researchers workload. If there is project financing, the teachers and researchers get additional payment

for their activities. Students are open to participate in competitions, hackathons, ect. But the motivation is higher if this has also the impact to the degree program results.

ViA has no systematic approach in utilization of results, innovations, know-how of its R&D activities. Applied approach depends on the individual researchers who have worked on the specific results.

IV. Involvement of the EUDRES Universities in the regional innovation ecosystem

The aim of this unit is to introduce and provide detailed information about the links between the region's innovation ecosystem (including the key players, the largest industries, small and medium-sized cities and their rural environment) and the EUDRES university. To get the right inputs, the following questions were applied:

- *Are some actors in the region connected and cooperate in the field of innovation and entrepreneurship? In which areas does the Institution have an R&D and Business Development-related relationship with the economic and civil ecosystem of the region?*
- *What are the key activities that the Institution conducts with representatives of the ecosystems of the region? (companies, SMEs, local authorities, legislators, innovators, clusters, chambers).Please list some players and some examples on the connections (what way they link to the institution).*
- *Give some examples for the university's and further regional players' cooperation in the field of sustainability and smart technologies / systems.*
- *Does the Institution support or cooperate with the regional start-up ecosystem in any form? (investment, share, incubation program)*

Innovation ecosystem in the St. Pölten Region

The institution (STPUAS) has R&D and Business Development-related relationship with the economic and civil ecosystem of the region on the areas like cyber security, digitalisation, Artificial Intelligence, digital health, digital media and blockchain technologies. The key players who actively take part in the formulation of the regional ecosystem are the City of St. Pölten, Lower Austrian Regional Government, Ecoplus Business Agency of Lower Austria, Riz up Regional Innovations and Start-Up Center of Lower Austria, Tecnet (regional partner for research-to-value & venture capital), Accent (tech incubator) as well as international companies like ABB, HP, Mayr-Melnhof, Palfinger, Greiner Packaging, Nestlé, ACP IT Solutions.

Most important activities and areas for cooperation involve start-Up inivitiatives, research projects, students projects, commissioned research, operating digital innovation hubs, innovation challenges, creating citizen science projects, organizing hackathons, bootcamps, workshops on entrepreneurship, knowledge transfer workshops, I-Labs.

As a key player of the regional innovation ecosystem, STPUAS has its own pre-incubator (CPI = Creative Pre-Incubator) which was developed by STPUAS and Accent (Regional Founder Service Agency). In the meantime this innovation programme is rolled out successfully all over at the regional Universities of Applied Sciences. The pre-incubator takes two semesters (appr. 1 day of Workshops per month). Every year there are about 3-5 teams (each 1-5 participants) who are chosen by a jury through a pitching event. If the participants are students they receive after successful completion 15 ECTS.

Besides this, on behalf of the city of St. Pölten, the FH St. Pölten coordinates the innovation and StartUp program of the city (SMARTUP) which is now a successful regional and sustainable start-up initiative. Digital Innovation Hub East is a successful regional and sustainable implementation of knowledge transfer, workshops, expert exchange on regional, societal challenges in the context of digitalisation. Digital Makers Hub is a successful regional and sustainable implementation of knowledge transfer, workshops, networking and matchmaking of relevant stakeholders. House of Digitalisation Hub-Expert is successful regional and sustainable knowledge transfer for a successful digitalization strategy throughout the regional business landscape (mainly for SMEs).

Innovation ecosystem of the Setúbal Region

In 2019 IPS launched an initiative to fund R&D projects from the IPS internal funds in a yearly call. This program will have its 3rd edition later this year. Within its 2 first editions, a total of 5 R&D projects and 8 exploratory research projects were awarded funding in the following areas: Additive Manufacturing, Materials Science, Buildings Energy, Circular Economy, Sustainable Food Production, Integrated Management of Natural Resources, Wine and Sea Tourism, Tourism Management, Digital Literacy and Digital Inclusion, Wellbeing & Ageing and health ICT applications. All these projects encompassed partners from industry or social sector.

In the region specialised services provided to business and organizations, which aim is to promote their resilience and competitiveness through science and technology projects developed in co-creation and that, indirectly, contribute to the economic development of the region and to employment creation.

Key activities by the university and the representatives of the regional innovation ecosystem include visits from companies to university labs, visits from the university to the companies, joint conferences, joint workshops, joint training programmes, joint courses, joint master dissertations, internships, summer schools (design thinking and technological entrepreneurship), open classes with speakers from the industry, juris for ideas competition, joint laboratories for study and research.

There are some remarkable examples for the university's and further regional players' cooperation in the field of sustainability and smart technologies / systems.

Externally funded R&D projects, such as Tesse2b and SCORES (H2020) or DECIDE, WISDOM, AGIR, SPLIT and MyBack (National) that have successfully developed innovative solutions and products in the areas of sustainable energy, water management and health. These projects have in common a strong involvement of final users and/or stakeholders that helped developing technologies well suited to the needs of the prospective users or buyers and can be further used to fuel cooperation and growth inside the region.

Community intervention projects in areas such as environment (Ostraqual & IPS-Eco), social inclusion (Recriar-se) or social entrepreneurship and innovation (Knowledge Aliances projects: Co-Care, KABADA and DiGiTOOL_to_CE). Whyle some of these projects run with European partners, its results can be profitable for the region and IPS can be an important player in bringing innovation to the region.

Incubation Services: IPStartUp incubates new science- or technology-based projects or startups that result from work either developed in the above-mentioned R&D projects or as result of applied projects that are part of the curriculum of a number of classes in all courses that the IPS offers (PBL). Throught the establishment of new companies, the Setúbal region can profit from their innovation.

Specialised services to business and organizations, which aim to promote their resilience and competitiveness through science and technology projects developed in co-creation with us and that, indirectly, contribute to the economic development of our region and to employment creation.

As for startup programs, at this date there are some colaboration in a starting point. Some of the municipalities are preparing their own programmes for startup support and are contacting IPS to be a partner. As a starting point, IPStartUp may assist in sharing practices about incubation program.

Innovation ecosystem of the Gödöllő Region and of the Kaposvár Region

In the Gödöllő region the corporate side actively cooperates with the university, for many reasons. On one hand the university provides the human resource supply to the diverse portfolio of companies that operate in the region. MATE has faculties and institutes related to business, HR, financing, agriculture, food sciences as well

which provide an excellent talent pool for the companies of the region. On the other hand the R&D capacities of the university (laboratories, etc.) provides a stable basis for cooperations: the university makes a remarkable income from marketizing its unused R&D capacities. Also there are several more forms of cooperating with businesses, like joint educational programs, university-corporate consortium at R&D calls, etc. Finally, in many cases, the outcomes of the University's R&D activities are utilized by the corporate sector, which has a strong impetus on launching new projects. Due to the government's "innovation call structure" corporate actors are expected to cooperate and develop their innovation processes with the universities. Disadvantage of the size and diversity of university is that these collaborations and the result of these collaborations are not always transparent.

As it was stated earlier, another key player of the innovation ecosystem is the National Research, Development and Innovation Office (NKFIH - a department of the Ministy of Technology and Innovation)'s Regional Innovation Platforms which is a bridge between the university, the corporate sector and the government. Since 2020 the Office provides outstanding innovation management service portfolio to the higher education institutions which helps universities to best utilize and marketize their R&D resources towards the corporate sector, which resulted in a florishing innovation ecosystem.

Also, MATE actively participates in the implementation of the Hungarian Government's Digital Agriculture Strategy. For this the university established its Agriculture Data Center to support R&D activites of the region.

As for the startup ecosystem, it shall be stregthened in the region, since incubators, spin off companies move to the neighbouring capital city due to better prospects. In spite of this, MATE has run its own incubation program for a couple of years, however it operates at the university, not at the regional level.

The development of an innovative city is the key element to be permanently competitive. In Kaposvár, the MATE Kaposvár Campus strengthens innovation and R&D. The University is able to have a significant impact on the economic life of the region, especially in the field of multidisciplinary agricultural research.

One of the greatest values of Kaposvár is its intellectual capital, which is the engine of productivity growth and directly raises the city's economic potential and local incomes. At the same time, the developments will also catalyze newer innovations from other companies, which could create new innovative jobs. In the case of the university centers of the region, it is important to expand the innovation capacity of the institutions in order to strengthen the radiating effects of the region. The economic relations of MATE need to be expanded, building on the intellectual capacities concentrated here. The university has a unique position in the region, as it represents an agricultural and food innovation line in terms of R & D & I activities, which can contribute to economic growth and strengthen competitiveness. Collaborations and joint developments (strengthening R & D & I collaborations, strengthening jointly developed R & D & I project plans, strengthening knowledge management and knowledge transfer, adapting the higher education profile to local needs) directly support the realization of the objectives set out in RIS3, Science Innovation and Entrepreneurship development programs and, indirectly, Employment and (through healthy food research) the Health Program. In order to increase the competitiveness of the region, it is essential to adjust the training and research portfolio of higher education institutions to the structure of the domestic economy, and to strengthen its cooperation with the local and regional economy by strengthening the role of knowledge transfer and knowledge management. MATE (as a higher education and research institution) plans to extend the triple helix model based on the cooperation of companies to the quadruple helix model by involving civil society actors (chambers of commerce and industry and chamber of agriculture). Our goal is also to create opportunities for the establishment of start-up companies and to support their professional development, thus contributing to the establishment of utilization enterprises related to technology and knowledge transfer.

Since it's establishment the Kaposvár Campus continuously maintaines various relations with SMEs and companies engaged in agricultural activities inside and outside the region. By its coachimg, training and research professionals, the university regularly provides individual and group advice to farmers and businesses in the region. The aim of the Campus' research and development activities is to ensure compliance with the ever-tightening food safety regulations, to protect and brand Hungarian products, to promote health-conscious nutrition, to manage the entire vertical meat production, and to monitor and ensure the quality of produced meat. Research will be extended to the field of nutrition.

In the last 10 years, the university has implemented the following projects: Establishment of the Product Development and Monitoring Research Center; Establishment of the Agricultural and Food Science Knowledge Center; Establishment of the Digital Competence Center.

The long-term goal of the University's regional role is to significantly increase its role in the Hungarian R & D & I sector, as well as to encourage the establishment of projects that are implemented in cooperation with the University's research sites and institutions. With the help of the knowledge potential created through planned investments, the University intends to provide R & D & I + O support to the Agricultural and Food Industry, which is currently struggling with structural problems. The aim is to increase the competitiveness of the sector, the safety of the produced products, and the effectiveness of the development background.

The Center for Agricultural Higher Education and Industrial Cooperation (AgIT FIEK) established with the support of the National Research, Development and Innovation Fund at MATE's headquarters in Gödöllő provides an important basis for the development of the local innovation ecosystem. Within the framework of the four-year project launched in 2017, MATE and its consortium partners (Axiál, Asseco, Energotest, SKC Consulting) have established a cooperation center that promotes the digitalisation of Hungarian agriculture, especially the agro-machinery industry. Priority programs at the center include the establishment and operation of a laboratory to test IT technologies for agricultural machinery, the development of integrated digital systems, and the maintenance of the Big Data research group on the utilization of data generated during digitization. AgIT FIEK is an integral part of the network of higher education and industrial cooperation centers operated by NKFIH, and through this network it also provides access to the experiences and services of FIEKs with other themes. The MATE Kaposvár Campus is an effective mediator between the relevant FIEK capacities and the region.

Innovation ecosystem of the Limburg Region

Since the academic year 2021, UCLL R&E have focused strongly on business development from the 8 ECs. For example, the university become strategic partners with whom the institution set up collaborations that on the one hand benefit their research & service activities but can also stimulate educational activities. These cooperation areas include health, Digital, well-being, education, business, circular economy.

UCLL works with a professional field committee that provides input on their education program on a regular base. At university classes the institution works with reallife cases where students meet stakeholders. They also work in co-creation with the ecosystem for their research projects, they are also part of the research board. In close relation with the chambers, UCLL works on Social Media Mondays for SME's in the region. Also, UCLL works closely with the nearest & biggest cities in Limburg: Hasselt and Genk for research & educational projects, like HasselAIR – where they are working on real-time air quality measurement in Hasselt. Also a research project called Co-Circ on circular hubs the university works with Hasselt.

A project to stimulate entrepreneurship with students in cooperaton with these cities is called 'Pitch Please'. The local authority projects are also in close relation with UCLL as a partner: XR lab for example or the 'prototyping centre'.

The university is in a close collaboration with the limburg startup network, in which UCLL supports startups in their operation with students. They actively participate in the community and also have their place at the incubator. UCLL also regularly conducts studies into the start-up climate in the region.UCLL also takes part in some innovation related-regional projects, like S-Lim (detailed earlier), 'Hack The waste' (https://www.ucll.be/international/short-programmes-international/virtual-projects/hack-waste), 'Wanderful.stream' (https://www.wanderful.stream/nl/)

Innovation ecosystem of the Timisoara Region

The regional actors, including Politehnica University of Timisoara are connected and jointly develop research and institutional projects, conferences and other innovation and entrepreneurial events. Conferences and other events are co-organized in partnership with the regional IT companies and local municipalities (e.g. Hack TM, HackTalks, Upgrade My City, InnoMatch exhibition, webinars #onlinetogether, etc.)

Research and development projects are carried out in partnership with the local municipalities (e.g. Electric, Electronic and Green Urban Transport Systems) or the Chamber of Commerce, Industry and Agriculture Timis (e.g. Social surveys, Economic activity dynamics, Social-demographic dynamics for Ghiroda community, Timis County – Ghiroda and Giarmata-Vii villages. Also, the university provides services for study regarding the regional impact analysis of business supported by the project SIA VEST - Support for Entrepreneurial Initiatives, etc.). UPT puts huge efforts in the curricula adaptation to the industry needs (The Advisory Committee of the university includes 15 CEOs from the main companies in the region).

UPT also takes part in some regional and international project with huge importance, like Electric, Electronic and Green Urban Transport Systems (Interreg - Danube Transnational Programme, DTP1-454-3.1 eGUTS) in partnership with the local municipalities. They support studies regarding transport system, Mobility for Transport for Ghiroda community, Timis County – Ghiroda and Giarmata-Vii villages (partnership with the Chamber of Commerce, Industry and Agriculture Timis). The university participates in the co-creation of the plans to transform Timisoara into a Smart City, through the project UpGrade My City (https://www.upgrademycity.ro/).

The university plays an active role in the regional startup ecosystem. INCUBOXX is a regional business incubator for the IT&C sector. The Student Entrepreneurial Society from UPT, together with INCUBOXX organized in 2018 the event "Entrepreneur 21".

Innovation ecosystem of the Vidzeme Region

Some actors in the region are connected and cooperate in the field of innovation and entrepreneurship. These cooperations mostly cover the inofrmation technologies sector.

To further stimulate innovation activities, the university runs an external advisory board, involves external experts of boards in study fields and experts in the thesis final evaluation committee. Actors of the regions work on joint large scale development projects. At the moment the university together with Valmiera Development Agency is applying for national investments in future industry sectors (information technologies, wood construction) and industrial area development in Valmiera.

The Institution cooperates with the regional start-up ecosystem, especially with Valmiera Business Incubator – ViA teachers as experts in evaluation committees and as mentors; also some joint events and workshops.

V. Areas for improvement, vision and objectives

EUDRES approach and ideas to participate in the work of the regional innovation ecosystem

Considering the content of the current report and the aims of the EUDRES project, members of the consortium defined the priorities for improvement / development within the project and beyond.

Ideas for improvement of the innovation environment at the university

- Work in a more integrated way (multidisciplinary) inside the institutions and organize integrated teams with teachers and students that can change the organization culture
- Evaluate the entrepreneurial and innovation competencies at the university: how effective are the entrepreneurship courses at the university? How transversal are they?
- Create concepts to motivate researchers to start working on their start-ups (e.g. opportunities o re-join the university for a certain period of time in case they wish to come back, sabbaticals)
- Promote interdiscipliarity
- Offer free innovation and entrepreneurial courses
- Ensure closer cooperation within research and education
- Dtimulate Co-work initiatives between the campus, students and entrepreneurs by, among other things, 'internship plus' places for bachelor programs
- Obtain funds for developing the innovation infrastructure

Participation in the work of the regional innovation ecosystem
- Take part in the identification of the regional sustainable development needs
- Map the innovation ecosystems at a wider regional level (beyond the location of the campuses)
- Have a clear management structure of the relations with the regional innovation stakeholders at institutional level
- Evaluate each stakeholder action (with focus groups) and prepare mechanisms for follow and moniting
- Implement the bank of ideas from the industry and other regional organizations that could be worked under curricular units (multidisciplinary)
- Experiment with small pilot projects in the regions and target national and international students by scaling up the project
- Generate new ideas and work on more cooperation with the ecosystem and make this visible within the organization
- Integrate with all EUDRES regions to achieve the goals above

Generating ideas to increase the attractiveness of small and medium-sized cities and their rural regions for experienced innovators and companies

- Develop specific programmes of upskilling and reskiling people of all ages (including +50 people)
- Grant access to equipment, laboratories, databases and staff knowledge, to external entrepreneurs
- Develop specific curricula for graduates that want to develop business ideas jointly with big companies, for the appropriate scholarships and with rural areas for the residence (open to families)
- Organize open challenges from the regional industry and social organizations, that would allow for a network of potential customers or suppliers, aligned with the endogenous raw materials and society needs

- Consolidate the wider geographical influence of the university
- Grant access to EUDRES European campus
- Respond to market needs and come up with solutions for their challenges together with EUDRES universities
- Run joint projects with local authorities or local action groups for development of entrepreneurial skills among the rural population, for technology transfer with SMEs, in order to encourage the development of the rural business environment
- Be an active player that is able to bring together the activities of the economic and innovation ecosystem, maintain their awareness, and play an advisory role in the field of technical development and management development

Achieving and evaluating results in the fields of sustainability & smart systems / technologies

- Evaluate the regional systems with specific tools (e.g. tool in development under project REACT-ERSMUS+); Plan concrete targets and new concepts of evaluating results in the fields of sustainability & smart systems / technologies
- Identify best practices of sustainability & smart systems / technologies in each region and regarding strategic regional sectors
- Define following actions
- Dissemination for other stakeholders of the best practices identified in all regions
- Functionally of the Centre for Innovation and Technology Transfer

Motivating and inspiring the actors of the university innovation ecosystem

- Create a motivation system for each type of actor (teachers, researchers, students, new startups/spinoffs, already established companies, agencies, universities, other organizations)
- Create an additional budget for researchers who aquire thirdparty-funds successfully
- Establish a co-creation and peer-learning atmosphere to support the overall university innovation ecosystem
- Help creating win-win actions between all parties of a project
- Use the UN Sustainable Development Goals as a basis for the development and growth of ideas; for instance, in case of students different study strategies, or the the project-based learning concept shall be applied.
- Dedicate more focus on budget and expertise so there will be more recognition in the region

Goals to be achieved within the project

During the creation of the report, members of the project were asked to provide keywords that would describe the institution in 2030 in the area of innovation and entrepreneurial activities. Representatives of the universities compiled the collection of keywords that would describe the six consortion members:

- Positive impact business (further than sustainable)
- Challenging (curious minds connected despite age)
- Flexpert (flex experts: go beyond the academic skill)

- Data-driven
- <u>Central role</u> in knowledge transfer and knowledge management services,
- <u>Open Labs</u> to strengthen cooperation between universities, research centers and companies
- Internationalization
- Robust Innovation Community & Ecosystem
- Entrepreneurial Mindset across all parties across STPUAS
- Deep TechnologyTransfer Expertise
- Labs: to explore, to enlarge
- Disrupter - work – live – learn differently
- Adaptability
- Digitization
- Academic excellence

To achieve these goals, project members defined the following actions:

- To internally align the community (teachers, staff, students, directors) in terms of what it means to be an entrepreneurial university
- To align with the best international practices in terms of entrepreneurial culture and entrepreneurship support
- To develop strong networks with the EUDRES partners in terms of sharing programmes; business support structures; exchanging entrepreneurship programmes; shared curricula
- To get national and international recognition for the entrepreneurship programmes
- To gain strong knowledge base to prepare more robust proposals with enhanced probability of success in the upcoming European calls
- Spread entrepreneurial mindset across all partners including own institution, build up a new Future University that is built on open innovation, citizen science, mutual respect & development and transfer of sustainable state-of-the-art technology and digitalisation in the service of humanism.
- To be the game changer in the region that approaches education and research in a flexible and totally different way
- Make the digital shitf to new learning design
- Stimulate and support lifelong and entrepreneurial learning
- Show extra commitment to talent development programs (mentorship, internship, …)