



UNIVERSITY-BUSINESS COLLABORATION IN A TIME OF RECOVERY AND RESILIENCE

Thematic University-Business Forum and
National Operational Programme "Research &
Innovation" 2014-2020 Annual Event

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Authors



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Executive Summary

The Thematic University Business Forum took place on 22 and 23 February 2022 in Italy on the topic of cooperation between academic and business sectors in a “time of recovery and resilience”. The two-day event was hosted by the Italian Ministry of University and Research and by the *Agenzia Italiana per la Coesione Territoriale* (Italian National Governmental Agency for Territorial Cohesion), with the support of the European Commission (DG EAC and DG REGIO).

The first day of the event covered the National Recovery and Resilience Plans (NRRP), with initiatives dedicated to University-Business Cooperation (UBC), presented by four Member States (Italy, Slovenia, Portugal, and Spain). Participants had the opportunity to discuss UBC themes (innovation, research, green and digital transitions, regional development, and agribusiness) in depth during parallel workshops. The key take-aways of the workshops were presented by a panel of PhD student rapporteurs during the start of the second day of the event. Finally, two panel sessions took place, one exploring UBC in the Mediterranean, and a second one that looked at sustainability issues through a range of UBC project examples.

A key focus of the event was the UBC in the Mediterranean area linking Europe, Africa, and the Middle East. The area is characterised by high levels of youth unemployment. UBC in the region can have an important effect, not only on the individuals and economies in this region, but also on issues like climate change. The Mediterranean faces high levels of water scarcity due to the effects of global warming and UBC can also positively boost innovation in the region.

The event was also an occasion to showcase best practices of various institutions, organisations, and projects. This exchange of knowledge and experience showed how higher education and business can effectively cooperate across different countries, through shared goals, namely increasing the employability of young people. BUSINESSMED and EIT Food gave practical examples of this.

From the higher education perspective, this involves tackling challenges such as the skills mismatch between graduates and industry needs, promoting the teaching and development of soft skills such as networking and communication to complement the more technical skills learnt in higher education institutions, as well as enhancing regional cooperation with international opportunities while students are still at university. There was also a strong emphasis on upskilling and micro-credentials, and students need to have the opportunity to do more tailored courses in order to gain the specific skills they need for their career plans.

From the business perspective, there is a responsibility to work with universities to offer internships and develop opportunities for young people who want to gain industry experience. Companies have much to gain also from investing in PhD students, for example, who can be trained in new niche sectors that contribute to the green and digital transitions, as well as the circular economy, as highlighted by the company Circular Materials that re-purifies polluted water by recovering precious metals.

Some organisations and universities are now working on programmes with businesses and companies to partner up interested students with an experienced entrepreneur to help them set up their own start-ups and businesses. Universities

are now creating short courses in Master's programmes that are centred around an innovation project to tackle a key challenge faced by a certain industry in the present day. These real-world applications using technical skills learnt in higher education institutions are crucial not just for young people's future careers, but also in solving societal problems.

In the context of recovery and resilience in the Mediterranean region post Covid-19 pandemic, the objectives for UBC included: targeting people living in more rural and marginalised areas; promoting more South-South cooperation in addition to North-South cooperation; and encouraging young people to become involved in the dialogue in their own countries about how to better their opportunities and contribute to socio-economic and environmental challenges.

The response to teaching and learning during the pandemic was highlighted. The pandemic sped up distance and hybrid working in many companies but there is always a need to further refine the tools we use. Higher education institutions must invest more in distance learning, potentially adopting more decentralised approaches to teaching and research to encourage cooperation and the sharing of best practices across borders.

A key take-away of the event was the need for continued support for the development of skills, helping to match future innovators with companies and businesses to fight challenges, such as brain drain from the Mediterranean region. This calls for continued University-Business Cooperation with regional partners that can offer more opportunities at local level, as well as further develop in the areas of sustainability and resilience.

1.0. Introduction

The Thematic University Business Forum (UBForum), with a focus on **University-Business Collaboration (UBC) in a Time of Recovery and Resilience**¹, took place on 22 and 23 February 2022 in a hybrid (physical and online) format. This report summarises the presentations and discussions.

The event was hosted in Rome (Italy) by the Italian Ministry of University and Research and by the *Agenzia Italiana per la Coesione Territoriale* (Italian National Governmental Agency for Territorial Cohesion), with the support of the European Commission (Directorates General: DG EAC and DG REGIO).

During the first day, the focus was on national Recovery and Resilience Plans (NRRP), with initiatives dedicated to UBC presented by four Member States (Italy, Slovenia, Portugal, and Spain). Successful projects and initiatives funded with different EU programmes were also showcased, covering:

- The first results of some initiatives financed with the REACT EU² programme (Recovery Assistance for Cohesion and the Territories of Europe).
- Projects funded by the Italian National Operational Programme for Research and Innovation³ (NOP R&I).
- Erasmus+ Knowledge Alliances⁴ and Alliances for Innovation⁵.
- Projects undertaken by the European Institute for Innovation and Technology⁶ (EIT).

Participants had the opportunity to attend thematic workshops that explored UBC themes in more depth. The second day, started with presentations from PhD students on the main takeaways of the thematic discussions. A panel session followed, exploring UBC in the Mediterranean, and sustainability issues, through the presentation of a range of UBC projects.

The focus on the Mediterranean as a body of water that links Europe, Africa, and the Middle East, was particularly relevant in the context of the recent EU-Africa Summit⁷ and the aims for a *"partnership are solidarity, security, peace and sustainable and sustained economic development and prosperity for the citizens of the two Unions"*.

A key objective was to share good practices on how higher education (HE) and business can effectively cooperate in different countries, with the use of different resources and approaches whilst looking at common priorities and objectives.

¹ Event site: <http://www.ponricerca.gov.it/comunicazione/eventi-annuali/annual-event-2021/>

² https://ec.europa.eu/regional_policy/en/newsroom/coronavirus-response/react-eu/

³ <http://sfe.inl.infn.it/ponri/>

⁴ <https://erasmus-plus.ec.europa.eu/knowledge-alliances>

⁵ <https://erasmus-plus.ec.europa.eu/opportunities/organisations/cooperation-among-organisations-and-institutions/alliances-for-innovation>

⁶ <https://eit.europa.eu/>

⁷ <https://www.consilium.europa.eu/en/meetings/international-summit/2022/02/17-18/>

2.0. DAY 1

2.1. Introduction

Sara Rossi, Director of the “National Operational Programme on Research and Innovation” Managing Authority, introduced the event.

She noted that this Thematic UBForum would provide the occasion to showcase excellent practices of University Business Collaboration (UBC) that use different resources and types of partnerships. This was facilitated with the UBForum being organised back-to-back with the yearly event where Italy presents the ongoing results of its National Operational Programme for Research and Innovation (NOP R&I).

She welcomed stakeholders from both business and academic worlds and introduced the agenda and speakers of the event (Annex 1).

2.2. Welcome and opening statements

Maria Cristina Messa, Minister of University and Research, welcomed participants to a unique meeting that builds on two flagship initiatives: the Thematic University Business Forum and the Italian National Operational Programme “Research & Innovation” 2014-2020 annual event.

The event is in line with the recent Communication from the Commission on the “**European Strategy for Universities**”⁸. This strategy presents an invitation for closer cooperation between countries and actors of the higher education sector within the **European Education Area**⁹ (EEA), the **European Research Area**¹⁰ (ERA) and the **European Higher Education Area**¹¹ (EHEA, Bologna process).

In its Communication on the European Strategy for Universities, the European Commission underlines:

“Synergies are needed in areas such as transnational cooperation and the institutional transformation of universities, support for fundamental academic values and scientific freedom, developing academic careers, innovative and interdisciplinary learning, teaching and research, as well as the interconnectedness between these, knowledge circulation, international cooperation with partners in EU and beyond the EU and the contribution to the United Nation’s SDG’s”¹².

Recent policies and investments of the Italian Ministry of University and Research were going exactly in this direction. They focus on the reinforcement of the human capital while also facilitating its mobility, fostering a closer and stronger cooperation between high education sector and business. This is coupled with investment of more than €6 billion with actions included in the **Recovery and**

⁸ <https://education.ec.europa.eu/document/commission-communication-on-a-european-strategy-for-universities>

⁹ <https://education.ec.europa.eu/>

¹⁰ https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/our-digital-future/era_en

¹¹ <http://www.ehea.info/>

¹² <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0016>

Resilience Facility¹³, including quantitative targets for a green and digital transition¹⁴.

*"The green and digital transitions require future-proof education, research and innovation, in close cooperation with the related industries and stakeholders and the significant disparities in digital skills across the EU must be overcome"*¹⁵

European Commission

This event represented a rich opportunity to foster dialogue on these topics, by presenting successful cases of collaboration between Higher Education Institutions (HEIs) and a range of stakeholders, thanks to incentives and support from European, national and regional funds for research and innovation.

Participants heard from managing authorities and beneficiaries of different European funding programmes, such as **Erasmus+**, **Horizon 2020**, **EIT**, **Marie Skłodowska-Curie Actions** as well the **Italian National Operational Programme on Research and Innovation**. A set of successful cases of discoveries and entrepreneurial education were presented, as well as personal stories of learning, university-business co-creation and community empowerment, which had benefited from the **quadruple helix of innovation**: universities, business, civil society and public administration.

The following speaker, **Nasser Kamel**, Secretary General of the Union for the Mediterranean, noted that the UBForum provided an excellent opportunity to give greater visibility to academia and business, which is very valuable in fighting one of the main challenges in the Mediterranean, namely youth unemployment, and orientating education more towards future skills.

The Union covers 42 countries with 30 million university students, and in some graduate unemployment is high. The COVID-19 pandemic provides opportunities for economies to grow together with more cohesion and inclusiveness. In this sense, it becomes clear that any recovery plan needs to start with our youth. This requires the establishment of the right tools in skills and know-how. This also requires quality jobs, Mediterranean internships, and partnerships between academia, business, and policy makers.

The Union for the Mediterranean is working with the German Ministry of International Cooperation, producing publications, developing digital and national training, and providing regional coordination. The Union has also supported research initiatives with clear added value to transform businesses and to achieve sustainability: for example, through the established partnership for innovation and research in the Mediterranean which has funded sustainable growth in the region, or blue growth and jobs in the region.

Nasser Kamel concluded saying the UBForum provides a useful and welcome reflection in preparation for a conference on R&I in June 2022. He recommended

¹³ https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en

¹⁴ https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/shaping-europe-digital-future_en

¹⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0016>

that similar meeting formats are explored between the North-South in the Mediterranean Sea to promote cooperation and to share knowledge.

The following speaker, **Claudio Pettinari**, Rector of the University of Camerino, and a Board member of the Conference of Italian University Rectors, discussed the role of collaboration from the perspective of the Italian universities, in the context of a university developing its recovery from the pandemic and focussing on the priorities of the future.

There was a fragmentation of SME activity during the pandemic, where it was difficult to manage research and development. The pandemic also slowed down the evolution of demand for technology and innovation.

As a result, the University decided to make research and human capital available to businesses in the local area to help improve territorial development. They promoted discussion within academic and research community through permanent working groups, a committee of supporters, and consultancy services. Overall, there was enhanced technological transfer at all levels, in synergy with local institutions.

Hubs for research inside companies were created fostering UBC. An example is the collaboration with the Nuova Simonelli coffee machines company where materials for machinery and coffee characteristics were researched.

"We put the lab in the company, creating an on-site analysis laboratory"

Claudio Pettinari, Rector of the University of Camerino, Board member of the Conference of Italian University Rectors

Collaboration also exists through regional projects with technology platforms, for example on innovative materials and or robotics. Another alternative is the creation of laboratories for specific sectors (digital, health, etc.). Some of these examples would be presented during the afternoon thematic sessions.

Initiatives with the Chamber of Commerce are also being organised to foster collaboration. He emphasised the benefits for SMEs, to be able to compete in the technology and circular economy fields and be able to scale up to an 'industrial' scale.

Themis Christophidou, Director General of DG EAC, welcomed participants to the event on behalf of the European Commission. She discussed the crucial role of cooperation between higher education and business to advance the green and digital transitions, which is a cross-cutting strand of policy work related to the recently adopted **European Strategy for Universities**.

On 18 January 2022, the European Commission adopted a **higher education package** that includes the European Strategy for Universities and a proposal for a **Council Recommendation** on building bridges¹⁶ for effective European higher education cooperation.

¹⁶ <https://education.ec.europa.eu/document/proposal-for-a-council-recommendation-on-building-bridges-for-effective-european-higher-education-cooperation>

These initiatives were proposed to fully harness the potential of HEIs, to support them in adapting to the changing conditions, and to contribute to Europe's recovery and resilience.

Skills needs evolve fast, and there is a need for the higher education sector to cooperate closely with the related industries and stakeholders. The role of business, in cooperation with HEIs, should be strengthened to boost innovation and entrepreneurship and foster the new and emerging skills of the rapidly changing labour market.

Universities, and the entire higher education sector, have a unique position at the crossroads of education, research and innovation, in shaping sustainable and resilient economies, and in making the European Union greener, more inclusive and more digital.

The European Commission provides support to higher education institutions and businesses through diverse actions and initiatives relating to University Business Cooperation, such as **HEInnovate**¹⁷, the **Alliances for Innovation** and the **Higher Education for Smart Specialisation (HESS)**¹⁸ project that helps to propose ideas to better mobilise HEIs in the smart specialisation strategies and human capital development of their regions.

Joining forces between the higher education sector and Member States across Europe is the range of UBFora organised since 2008 by DG EAC. The main goals of this cooperation are to encourage knowledge sharing, support mutual learning, create long-term partnerships and opportunities for cooperation, and drive innovation, entrepreneurship, and creativity.

This UBForum allows participants to focus on challenges and opportunities for recovery and resilience in UBC. This is a great opportunity to discuss synergies and opportunities offered by our various programmes, not only the flagship **Erasmus+**, but also the **Recovery and Resilience Funds**, the **Next Generation EU**, and the **Cohesion Funds**.

¹⁷ <https://www.heinnovate.eu/en>

¹⁸ <https://s3platform.jrc.ec.europa.eu/higher-education>

2.3. Plenary Session: UBC challenges and opportunities for recovery and resilience

Alessio Cavicchi, Professor at the University of Macerata (Italy), moderated this session that explored UBC challenges and opportunities for recovery and resilience from different perspectives, both at Member State and European level.

The Italian perspective

Sara Rossi, Director of the “National Operational Programme on Research and Innovation” Managing Authority presented the Italian National Programme for Recovery and Resilience, and its connection with the NOP R&I 2014-2020.

The operational NOP programme was established in 2015. In the framework of the regional objectives, the national plan provides incentives for laboratory initiatives. This helps them to develop innovation and a group of companies and start-up incubators, to be capable of developing synergies, to increase human capital to meet specific needs of companies, and creating a skills match between supply and demand.

The operational programme was replanned in December 2020 based on the specific indications of the Ministry, in line with the indicators for the southern regions. As a result, specific initiatives have been identified, including measures to support HEIs, and targeted initiatives.

Dedicated actions have been directed to increase the ability of the health sector to face the pandemic, such as increasing the number of staff, or designing new innovative PhD programmes with industrial connotations in line with the national strategy for smart specialisation¹⁹. Actions include scholarships to support measures to increase the continuity of study for students that face difficulties. Others focussed on enhancing the material and non-material infrastructure.

During the replanning phase, a new education and research axis to the programme was introduced thanks to the REACT EU programme. The Ministry is also working with DG EAC on the “Higher Education for Smart Specialisation” HESS²⁰, with the participation of 18 universities and 53 students working to improve administrative procedures.

Building on this topic, **Dr. Fabio Ciampo**, on behalf of Antonio di Donato, Director of the “National Recovery and Resilience Plan - Education and Research” Managing Authority, discussed the UBC potential for sustainable reconstruction.

Initiatives are supported by the National Operational Plan (NOP) in line with the NRRP presented to the European Commission. The NOP insists on many issues that have always been very important for national plans such as innovative research, technology transfer, enhancing human capital and research centres.

¹⁹ <https://www.agenziacoesione.gov.it/s3-smart-specialisation-strategy/?lang=en>

²⁰ <https://s3platform.jrc.ec.europa.eu/higher-education>

40% of the total budget has been allocated to Southern Italy. Research is an essential component with €11 billion dedicated to increasing the number of researchers, the reinforcement of research centres, and improving infrastructure.

In the coming months, the Ministry of University and Research will publish further notices for extended partnerships, aiming to fund at least ten research programmes based on a holistic approach with university networks, private research networks, and other private high level research initiatives.

The measures will introduce an innovative governance structure, allowing hubs to be responsible for the implementation of each measure. They will also support the fight against brain drain, facilitating access into the market for young researchers and graduates in the country. In addition, the measures will also promote a simplification in the use of funds. Together, this wide range of innovation measures has the potential to support inclusive growth in Italy, and especially in Southern Italy.

The EU Member States perspectives

Slovenia

Duša Marjetič, Head of Higher Education Division, Ministry of Education, Science and Sport, Slovenia, showed how the Recovery and Resilience Facility had been used to fund initiatives that improve UBC in Slovenia, including investments in the digital sphere. The main project has an overarching message for HE to reform its system in order to respond to environmental needs and create a highly skilled workforce for the jobs of the future.

The aim of the HE reform is to ensure HE is more **adaptable, resilient and responsive** to environmental needs and consequently improve the relevance of HEI's role for economic recovery, increasing productivity, promoting cohesion and a more balanced societal, environmental, and economic development.

The project focusses around three dimensions: green, digital transition, and employability, aiming to introduce systemic changes around content, infrastructure (the environment for students and teachers, such as a platform for training the teachers); and normative (the legislatively compulsory part of the programme).

The proposal of the European Commission to the Council on micro-credentials for life-long learning and employability coincided with the national reform for HE in Slovenia. The proposal helped to start with a common definition of micro-credentials and introducing more flexible pathways into HE.

The common definition for **micro-credentials**: "*Micro-credentials means the record of the learning outcomes that a learner has acquired following a small volume of learning. These learning outcomes have been assessed against transparent and clearly defined standards*".

Courses leading to micro-credentials are designed to provide the learner with specific knowledge, skills and competences that respond to societal, personal,

cultural or labour market needs. Micro-credentials are owned by the learner, can be shared and are portable. They may be standalone or combined in larger credentials. They are underpinned by quality assurance following agreed standards in the relevant sector or area of activity.

To date, the Slovenian system had not put emphasis on life-long learning in Bologna study programmes. Except for teacher education, there was little demand or support for life-long learning for learners or employers. Therefore, the reform aims at upskilling and re-skilling through micro-credentials.

Slovenia participated in the peer learning exercise as part of the LMRO²¹ (Labour Market Relevance and Outcomes of Higher Education Partnership Initiative) with the European Commission together with Portugal, Austria, and Hungary. The focus was to see how to use data on employability for curricula development. Participants were invited to join international peer learning seminars²².

Portugal

Nuno Gomes Ferreira, Advisor of the Minister of Science Technology and Higher Education, Portugal presented an overview of the Portuguese NRRP.

The programme has helped to promote knowledge transfer in HE. Actions have been structured around four priorities: widening participation (reducing cost, including students from different backgrounds), diversification and specialisation, better jobs and internationalisation (Figure 1).

Figure 1: Portuguese Science, Technology and Higher education – main priorities

Widening Participation	Diversification and specialization	Better Jobs	Internationalization
<ul style="list-style-type: none"> Reduce the costs associated with the HE participation by limiting maximum tuition fees and improving accommodation conditions for displaced students;  Reinforce and simplify the access to Social Support mechanisms, promoting the participation of students from disadvantaged backgrounds and with special educational needs; Promote the entry of students from vocational pathways 	<ul style="list-style-type: none"> Modernize educational offering Promote upskilling and reskilling through higher education short term courses, encouraging lifelong learning Enhancing digital competences <p><i>Recent Measures</i></p> <ul style="list-style-type: none"> Youth STEAM Impulse and Adults Impulse  UPskill - Digital Skills & Jobs INCoDe.2030 "Skills 4 post-Covid-Competences for the Future" and LMRO participation 	<ul style="list-style-type: none"> Improve academia-business linkages Develop scientific and academic careers, increasing its mobility <p><i>Recent Measures</i></p> <ul style="list-style-type: none"> Scientific Employment Interface Program Network of 35 Collaborative Laboratories  	<ul style="list-style-type: none"> Stimulate international mobility and participation of HEI's on European networks Reinforce the participation on research and innovation international networks <p><i>Recent Measures</i></p> <ul style="list-style-type: none"> Study & Research in Portugal PERIN – Portugal in Europe Research and Innovation Network GoPortugal – Global Science and Technology Partnerships Portugal Ciencia LP Modernization and Valorization of Polytechnic Institutes

Source: Speaker PowerPoint presentation, 2022

The programme includes an impulse to youth learning for STEAM (science, technology, engineering, the arts, and mathematics) through support programmes to be implemented by HEIs, as well as adult learning (re-skilling and up-skilling). It is intended to promote a network of at least ten schools or alliances for postgraduate training in collaboration with companies.

²¹ <https://heinnovate.eu/en/other-initiatives/labour-market-relevance-and-outcomes-he-lmro>

²² <https://www.wpz-research.com/lmro-partnership-initiative/>

These programmes are also aligned with other initiatives. The two programmes were developed in alliance and include four features: results oriented, integrated and flexible programmes, labour market relevance, as well as open and simplified process.

There were 35 applications submitted, 105 meetings between the Evaluation Panel and the application promoters, resulting in 33 projects selected for funding. The programme aims to:

- Graduate over 15,000 students in STEAM fields by 2025.
- Qualify around 80,000 adults by 2025.
- Promote 14 alliances or graduate schools with companies, including six of them in low population density regions.

The programme is funded through Cohesion and Horizon 2020 funding. The programme has already shown to have developed dynamic and professional short-term courses in collaboration with polytechnic institutions and employers fostering knowledge transfer and the creation of networks which can, in turn, increase trust between private and public actors.

Spain

Ignacio García Fenoll, Deputy Director General for the Coordination of Innovation, Ministry of Science and Innovation, Spain, presented initiatives connected with the NRRP, including the recently launched EECTI²³ and National Plan 2021-2023.

Spain has three levels of governance, and the initiatives introduce public-private cooperation, a new framework for knowledge and transfer including less administrative burden, and more support for researchers to collaborate with the private sector.

The public-private collaboration framework has been developed with the Ministry of Science and Innovation together with the Ministry of Universities to promote collaboration with two main objectives:

- First, to reach shared and evidence-based understanding of the current state of public research-business collaboration and identify priorities for policy reform.
- Second, to develop a policy implementation roadmap with concrete, evidence-based and actionable policy measures, tailored to the Spanish context (Figure 2).

²³ Estrategia Española de Ciencia y Tecnología e Innovación (EECTI) 2021-2027: <https://www.ciencia.gob.es/Estrategias-y-Planes/Estrategias/Estrategia-Espanola-de-Ciencia-Tecnologia-e-Innovacion-2021-2027.html>

Figure 2: Roadmap of the public-private collaboration framework

Source: Speaker PowerPoint presentation, 2022

An assessment was conducted with the OECD, and building on interviews, data analysis and a stakeholder workshop, they have developed recommendations for a roadmap for the framework:

1. Put in place stronger foundations for all Science Technology and Innovation (STI) policy - resource and policy frameworks.
2. Reform governance systems for enhanced autonomy and accountability.
3. Implement effective personal and institutional incentives.
4. Nurture a healthy and professionalised knowledge intermediary system.
5. Support business capacities to innovate, and to exchange knowledge.
6. Invest in implementation, monitoring and analysis capacities.

Among the lessons learned and transferable elements for other Member States, it is important to include public-private cooperation in the design of strategies in order to better tailor them to their needs.

The European Commission perspective

Luciano Conte (DG EMPL), rapporteur for the European Social Fund (ESF), presented the research programme focus from a social perspective, building on the earlier presentation from Sara Rossi.

The ESF programme has had 40,000 participants involved in the programme up to 2020 and has shown its capacity to adapt to the needs of the pandemic, in terms of implementation criteria and in terms of funding available.

Thanks to additional funding from REACT EU, the ESF fund was increased by five times, within two interlinked programmes: research innovation, and fostering access to tertiary education. These are interlinked because they provide a holistic approach including a cycle of skills upskilling and reskilling, adult learning, as highlighted by case of Slovenia.

The context of ESF and ESF+ (2021-2027) is the **European Pillar of Social Rights**²⁴ made of 20 principles for a stronger, fairer and more inclusive Europe, with three main objectives to increase employment rates, and fund policy initiatives and reduce the number of people at risk of poverty and social exclusion. There has been progress in Italy in terms of tertiary education attainment, but it is far from the EU average. Thus, there is a need to go fast for the implementation of the programmes.

Monika Weymann (DG EAC) presented the tools and instruments for university business cooperation provided by the Directorate General for Education, Youth, Sport and Culture.

HEIs can best be drivers for transformation and innovation when they are connected and engaged with their environment, locally, at national and international level. Cooperation is crucial to create societal impacts. We also can consider the term business in a wider sense; it involves companies (small and large), public authorities, hospitals, museums, cities, and regions.

Since 2008, 25 UBForums have been organised: eight high-level European University Business Forums in Brussels and 17 Thematic Forums in the Member States. Unfortunately, the COVID-19 pandemic prevented us from holding these UBForums since the last event held in October 2019, and this thematic event in Italy is the first online University Business Forum. There are **important European policy tools** that complement these events. Three of these policy tools are summarised in the boxes below.

Knowledge Alliances (now Alliances for Innovation)

What? Structured partnerships bringing together businesses, higher education institutions and VET working on the modernisation of teaching and learning.

Why? Innovation is their main objective, including innovation to improve the relevance and employability-focus of education and training.

How? Design and deliver new multidisciplinary curricula and innovative courses and involve students and professors in learning through solving real-world business problems. They are large-scale projects. Need to involve 4 Erasmus+ Programme Countries, minimum of 8 full partners; a partnership is composed of 3 labour market bodies (e.g. a business) and 3 education or training providers. In each proposal there has to be at least one HE institution and one VET provider as full partners.

Results: In the previous programming period 156 Knowledge Alliances were funded.

HE Innovate

What? Guiding framework launched in 2013 by the Commission and OECD.

Why? Aims to support individual higher education institutions and higher education systems to assess and develop their innovative and entrepreneurial potential.

²⁴ https://ec.europa.eu/info/strategy/priorities-2019-2024/economy-works-people/jobs-growth-and-investment/european-pillar-social-rights_en

How? Diagnoses areas of strengths and weaknesses, opens up discussion and debate on the entrepreneurial / innovative nature of the institution and it allows it to assess evolution over time.

Results: Has been used by more than 1400 Higher Education Institutions in the world. The OECD has conducted 13 country reviews on the results of HEInnovate).

HESS

What? Project carried out in collaboration with JRC since 2016.

Why? Aims to understand and support HEIs to align their different missions with Smart Specialisation Strategies priorities, as well as to analyse how funding solutions can further this objective.

How? In 2022 and 2023, HESS activities are not focussing anymore on new case studies in specific regions or countries, but on creating synergies with the other innovation-related activities (such as the European Institute of Innovation and Technology, HEInnovate, Knowledge Alliances (Alliances for Innovation) and others).

Results: Has been instrumental to include the “human capital” priority into the Commission’s proposal for the ERDF (“Skills for smart specialisation, industrial transition and entrepreneurship”), opening up the possibility for EU regions and Member States to ERDF funds that can be used for human capital investments.

The Mediterranean perspective

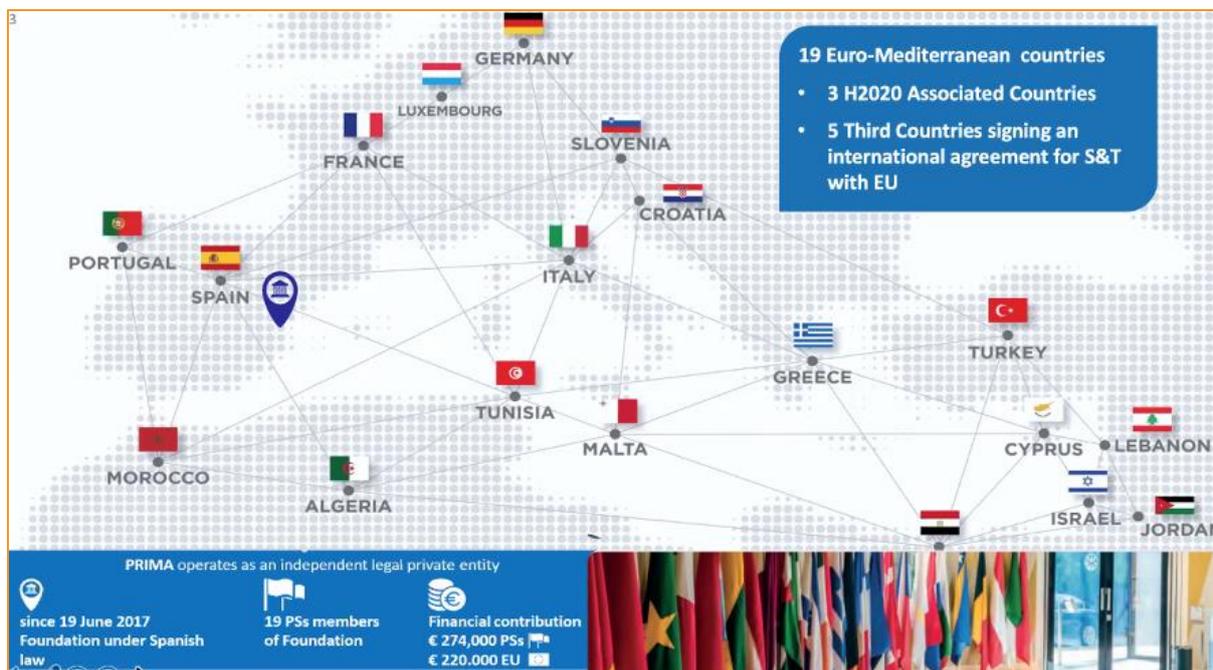
Angelo Riccaboni, Chair of the PRIMA Foundation, presented the Mediterranean perspective, discussing how Research and Innovation can help overcome the challenges in the region through the case of the PRIMA Foundation²⁵, governed together with the European Commission.

PRIMA was launched in 2017 to promote R&I and communities. There are 19 participating states, 11 of which are European (Figure 3). The PRIMA foundation has been used to develop knowledge for agri-food systems, funding 168 projects in four major thematic areas: sustainable, nexus between water, food, and ecosystems. There are around 40 new beneficiaries each year, including one third from the southern regions. The example of the project 4CE MED²⁶ was given to show how it has been supporting farmers to decrease soil erosion.

²⁵ <https://prima-med.org/>

²⁶ <https://www.4cemed.eu/>

Figure 3: PRIMA Member countries



Source: Speaker PowerPointPresentation

Giuseppe Provenzano, Union of the Mediterranean²⁷, emphasised the importance of continuity of research and innovation in the area of the Mediterranean. HE research centres play a key role in economic development with huge potential. However, challenges still exist in the area regarding education attainment and unemployment. The Mediterranean region covers 22 Member States with different education profiles and there is a big skill mismatch.

The region is particularly affected by climate change, characterised by water scarcity that calls for more trained people who can bring innovative solutions. The Union supports innovation through projects²⁸ and resources²⁹.

²⁷ <https://ufmsecretariat.org/>

²⁸ <https://ufmsecretariat.org/what-we-do/projects/>

²⁹ <https://ufmsecretariat.org/info-center/publications/>

2.4. Thematic Sessions

Block	Workshop 1	Workshop 2
1	From Research to Business	Supporting Innovation in Teaching and Learning
2	Supporting the Green Transition	Supporting the Digital Transition
3	The Role of HEIs for S3 and Regional Development	Innovation in Agribusiness

WORKSHOP 1.1: From Research to Business

The session was moderated by **Gabriella Colucci, Arterra Bioscience (Italy)**³⁰. She emphasised that strong connections between research and business are crucial for addressing the challenges Europe is currently facing, including the need for a green transition. Since many promising research projects end without leading to the development of new companies, it is particularly important to share and discuss experiences of projects and researchers that managed to take this step.

Gerarda Fattorusu, University of Sannio (Italy) focussing on her PhD project that was funded by the Italian National Operational Programme on Research and Innovation³¹ and earned the 'Guido Dorso' award. The research involved analysing decision-making processes and applying mathematical models to support organisational control systems in the automotive sector.

It was completed in collaboration with project partners at the University of Portsmouth (UK), NEOMA Business School (France), and the Stellantis plant in Pratola Serra (Italy). Outcomes included the design and implementation of innovative multi-criteria analysis methods that are flexible enough to be adapted to different contexts and enhance the quality and speed of decision-making processes in a variety of sectors, including public administration.

Through her collaboration with international universities and an automotive manufacturer, she was able to bridge the gap between academic research and the business world. Essential for the fruitful collaboration between researcher and private business partner was the existence of shared goals. It was both in the interest of the automotive manufacturer and the PhD project to successfully apply mathematical models to improve quality control in production.

With this background, both parties were motivated to exchange knowledge and information, leading to innovative results and the potential for further cooperation. It is planned for research results to be implemented in additional Stellantis plants, whilst the University of Sannio is generally looking to expand the collaboration of students and researchers with businesses.

³⁰ <https://arterrabio.it/en/>

³¹ https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/italy/2014it16m2op005

Gianluigi Franci, University of Salerno (Italy), shared his experiences of trying to extend results from his work as a professor and researcher in the field of microbiology into new biotech companies. Originally inspired by winning an entrepreneurship competition in 2010, he has been involved in seven attempts to create such start-ups, of which some were partially funded by the Italian National Operational Programme on Research and Innovation.

He emphasised the importance of having the chance to make and learn from mistakes when starting out as an entrepreneur. Being able to draw on a wide range of experiences is essential when wanting to turn research results into a marketable product. Pointing out that he attempted to create a first university spin-off without experience of how to achieve this, Mr Franci underlined that it was crucial for the success of later attempts to not give up.

At the same time, he acknowledged that persevering alone is not enough and that certain criteria need to be met in order to successfully establish a growing business. First, it is important to have the right group of people working with you as a team. Success also depends on timing, for example not launching a product too early, before there is sufficient demand for it. Finally, it is crucial to secure funding for maintaining and possibly growing the business.

He introduced several of his ongoing projects focussing on the development of different innovative drugs for the treatment of cancer, cardiovascular diseases and herpes virus infections. In some of these cases and with collaborating partners, he managed to secure patents and the medical devices needed to develop the drugs. Among the greatest obstacles on the way to bringing these drugs to market is the difficulty to obtain the large amounts of funding necessary to get them through clinical trials and subsequently approved.

Didier Zimmermann, EIT Raw Materials³² (Germany), focused on the 'HEI Initiative'³³ of the European Institute of Innovation and Technology (EIT). It is among the main objectives of the initiative to strengthen the innovation and entrepreneurial capacity of higher education institutions, for example by providing them with coaching, funding as well as access to a network of business partners and research institutes already working with EIT. The initiative received hundreds of applications during the 2021 pilot phase, where HEIs could seek support to design institution-wide action plans to strengthen innovation and the entrepreneurial culture across all institutional levels. The HEI initiative is currently in a second pilot phase and will soon evaluate the initial impact.

Promoting greater cooperation between education, research and businesses is essential for addressing pressing global issues. It is important to foster and support the talents we need for the future and EIT is partly trying to achieve this through a 'Jumpstarter'³⁴ initiative as well as booster and accelerator programmes. EIT also focusses on supporting innovation projects, such as upscaling joint ventures between businesses and universities. Through the activities of EIT, higher educational institutions are meant to be better prepared to turn innovative research into tangible, societal value.

³² <https://eitrawmaterials.eu/>

³³ <https://eit-hei.eu/>

³⁴ <https://eitrawmaterials.eu/eit-jumpstarter/>

Maria Fátima Lucas, Zymvol³⁵ (Spain), shared experiences as co-founder and CEO of Zymvol, a biotech company specialising in the development and application of molecular modelling software for enzyme optimisation. Since this is a state-of-the-art field, the company is compelled to constantly conduct research and development activities. It is therefore in need of not only attracting some of the best scientists but must also find ways to keep them.

Whilst the co-founders of Zymvol initially could make use of their own networks to hire some of its current researchers, the company has been supported in holding on to its talent by the MSCA Research and Innovation Staff Exchange (RISE) scheme under Horizon 2020³⁶. The RISE scheme funds the travelling and the relocation of scientists between universities in different countries, or between academia and industry. It was therefore particularly appealing to Zymvol, as its researchers had to some extent lost their connection to the academic world by joining the company – a fact that could cause some of them to leave in the long run.

Through the RISE scheme, some of the company's researchers could be sent to universities or participate in collaboration with larger businesses, thereby getting the opportunity to keep up to date with the latest developments and findings in their scientific field. Likewise, Zymvol has used the scheme to open its doors to international PhD students. They can receive training at the company, whilst at the same time being of value to it when sharing insights from their research projects.

She emphasised that companies wanting to attract promising talents must acknowledge their individual needs. PhD students at Zymvol, for example, are not only wanting to complete their research, but also aim to advance their career. It is therefore important that they can use the innovation they are working on in their thesis or other publications. Companies are therefore challenged to be more open about the sharing of knowledge that they traditionally preferred to keep to themselves.

It is important to remove some of the pressure on scientists and researchers to deliver results. Whilst acknowledging that milestones in a project must be met, she underlined that there needs to be the flexibility to allow time for imaginative and creative thinking when wanting to bring about innovation in research.

Alessandro Sannino, University of Salento (Italy), highlighted that there is no shame in failing when trying to bring research results to market. Failing is just part of being an entrepreneur, as it leads to important lessons on how to do better in the future. To support his argument, he described how he became involved in developing a specific polymer, and how several of his efforts to use it in marketable products failed before a successful application was achieved.

Originally, he worked during his PhD project on the development of a biodegradable, superabsorbent polymer, since there was a demand for it from a multinational company wanting to develop the world's first completely biodegradable nappy. Once he succeeded in creating a polymer with the desired qualities, the company expressed that they were not actually interested in using it for production. Instead, they simply

³⁵ <https://zymvol.com/>

³⁶ The scheme is now part of the EU framework programme Horizon Europe and referred to as MSCA Staff Exchanges (SE): <https://marie-sklodowska-curie-actions.ec.europa.eu/actions/staff-exchanges>

wanted to let their competition know that they now were capable of producing sustainable diapers, should this give them an advantage in the market later on.

Following this initial failed attempt, he and his fellow researchers worked together with the Italian Ministry of Scientific Research and Education to explore the possibility of using the superabsorbent, biodegradable polymer for irrigation purposes within agriculture. Initial results were very positive. By adding a small amount of the polymers to the cultivated soil, it was possible to keep it moist longer during dry spells, leading to improved crop growth. However, this time around it proved difficult to secure necessary funding for upscaling production to industrial scale.

The failures caused them to return to the drawing board and identify other areas of application for the polymer they had developed. This time, they decided to also make the substance biocompatible in order to use it in the medical field. Following extensive research and development, the innovative polymer has now found its way to market as an active substance in capsules helping to treat the causes of obesity and gastrointestinal-related chronic diseases.

The product is being sold by Gelesis³⁷, which he helped to establish in Italy and where he currently is employed as Lead Project Scientist. It has succeeded in bringing products to market in the USA, where it was listed on the New York Stock Exchange at the beginning of this year. Ending his presentation on this note, he pointed out once more that failures lead to valuable experiences and can be the driving force for success.

WORKSHOP 1.2: Supporting Innovation in Teaching and Learning

The session was moderated by **Rui Coutinho, Nova School of Business and Economics (Portugal)**. He told the audience know that the session would not be comprised of individual presentations with slideshows. Instead, the different panellists had agreed to join him in a conversation on innovation in teaching and learning, whilst trying to address audience questions posed in the online chat as the discussion progressed.

He noted that progress in how we teach and learn new competencies is a necessity, given that we are currently experiencing a range of societal transitions and pressing challenges, such as increased automation and a growing skills gap in the western world, as well as the global climate crisis. The conversation to follow should therefore focus on what role collaborations between universities, businesses and the society at large could play to drive the innovation needed to tackle these issues.

Members of the session's panel included:

- **Klaus Sailer**, Professor in Entrepreneurship at the Munich University of Applied Sciences (Germany) and CEO of the Strascheg Center for Entrepreneurship³⁸ (Germany).

³⁷ <https://www.gelesis.com>

³⁸ <https://www.sce.de/en/home.html>

- **Andrea Rosalinde Hofer**, Policy Analyst and Project Leader, Labour Market Relevance and Outcomes Partnership Initiative, OECD.
- **Vanessa Tierney**, CEO Abodoo³⁹ (Ireland).
- **Paola Dal Zovo**, Santer Reply SpA⁴⁰ (Italy).
- **Agostino Marengo**, University of Foggia (Italy) and co-founder of OSEL⁴¹ (Italy).

Each panellist was encouraged to share how they are working towards greater innovation within teaching and learning.

Klaus Sailer explained that he focusses on raising awareness among his entrepreneurship students that they have the possibility to bring about systemic innovation. It is the responsibility of universities to help students recognise that they can make a real difference and bring about the change they would like to see. As part of such efforts, universities should create bridges between faculties as well as to other companies. They ought to function as hubs connecting students to relevant contacts and creating collaborations that lead to innovation.

Andrea Hofer described how the OECD is supporting innovation in the field of education by stimulating peer learning activities and the exchange of good practices. The organisation works to bring together those who are creating innovative learning environments and teaching methods with those who are thinking about how to develop the higher education systems in a way that supports institutions and students.

Whilst acknowledging the importance of promoting innovation from below and above, she also pointed out that there is a need for a greater focus on study guidance. With increasing attention given to lifelong learning and the development of higher education institutions, she recommends that students are helped to better understand what skills they can learn in which courses and why these skills could be relevant for students' careers.

Vanessa Tierney shared background information on Abodoo, the company she has co-founded and currently leads as CEO. It works with skills data mapping and offers an online platform, which can be used by businesses, educational institutions and government to inform key strategic recruitment, investment and education decisions. Among the driving factors behind the development of the platform were on perceived skill gaps, and a wish to create matching technology that promotes diversity.

Abodoo works towards more inclusive skills matching by not only mapping hard skills, but also soft skills and emotional intelligence, which are increasingly in demand. Recognising that a growing number of people work remotely, the company also matches people wanting to work from their location of choice with companies being based elsewhere. It is crucial for graduates to know what skills the industry is looking for today and what it may need in the next five years from now. This must happen with the perspective that they may be based in Europe, whilst potentially working for companies globally.

³⁹ <https://www.abodoo.com/>

⁴⁰ <https://www.reply.com/concept-reply/en/HomePage>

⁴¹ <https://osel.it/>

Paola Dal Zovo works as a consultant for the Reply group, which advises private and public organisations in the use of new technologies, such as artificial intelligence and machine learning, cloud computing as well as augmented and virtual reality. She is part of a unit focussing on the application of technologies related to the Internet of Things, for example in the context of smart cities and industrial production processes. Whilst not being directly involved in developing innovative approaches to teaching or learning, she pointed out that she could contribute to the panellists' discussion by sharing how a company like the Reply group is trying to bridge the skills gap.

Agostino Marengo has insights into both academia and the business world, being both a professor at the University of Foggia and co-founder of a university spin-off company. He shared that it was a difficult endeavour to found OSEL thirteen years ago, due to his lack of knowledge about entrepreneurship. The company works with the development of digital learning technologies and methodologies, primarily offering learning management systems to private companies. In terms of innovation, OSEL is currently exploring how blockchain technology and non-fungible tokens could be used to innovate academic teaching and learning.

Rui Coutinho suggested that panellists address what they perceive as current trends and possible future disruptions in the field of education and learning.

Referring to the significant impact that the COVID-19 pandemic has had on societies, **Klaus Kaiser** underlined that breakdowns often offer the opportunity for renewal. German industry traditionally had high innovative capacities due to the presence of leading companies and highly skilled mechanical engineers. But when it comes to more recent, digital technologies, such as artificial intelligence and machine learning, China and other nations have surpassed Germany. Therefore, German companies are increasingly aware of the need to attract young talent, and to collaborate with universities in order to create innovation. One approach to answer this need would be the opening up of universities into platforms where networks and cooperation between students, faculties and companies can thrive.

Vanessa Tierney agreed that higher education institutions have a key role to play in bringing education and businesses closer together. The priorities for change should include integrating new teaching methods into the curriculum, like developing new activities to stimulate entrepreneurial mindsets, providing the support to start-ups within the university, as well as strengthening the knowledge exchange and collaboration between universities and businesses. Pointing once more to the growing trend of remote work, she underlined that universities should think about and develop virtual environments for long distance learning.

In this context, **Agostino Marengo** stated that for a long time he experienced resistance at companies in Italy to embrace remote or blended learning. However, this changed dramatically during the COVID-19 pandemic and related lockdowns, where demand for e-learning solutions increased. Keeping this transition in mind, universities can also be organised in a more decentralised way to foster collaboration with businesses.

Andrea Hofer referred to developments in terms of micro-credentials and other modular forms of teaching. She argued that the learning that currently takes place in extracurricular activities or as part of diploma supplements, should be integrated into study programs. Any such update of study programs would need to be based on

assessments of which skills should be taught, by whom and in what kind of learning environment. Universities could better utilise existing research collaborations to understand what the emerging skill needs are, but there is currently a lack of incentive at universities to do this kind of work.

Klaus Sailer shared his experiences with establishing an associated institute of entrepreneurship at the University of Munich. The institute was established from the bottom up, starting out with individual projects drawing on collaborations between designers, business partners and students. It took many years for the institute's work to get acknowledged more widely.

Bringing innovation to universities is a transformation process, which requires a clear strategy and time. Therefore, it is important to explore how different structures can be implemented at universities that may speed up innovative processes. Agreeing, **Agostino Marengo** underlined that one of the most important soft skills in this context is the ability to network. To bring about collaboration on innovation, relationships must be established between the persons working in companies and at universities.

The conversation then turned towards topics related to personally tailored learning and individual career design, such as more opportunities to take electives and increased mobility between universities for individual career design. **Vanessa Tierney** argued that students should be given – and are likely to increasingly demand – customisable paths through their academic education. Future students should be able to see when starting out on this journey how the acquirement of certain skills will affect where and how they might be able to work, as well as for what salary.

Results from skills data mapping should be used to empower students to make more informed decisions on their own education. **Rui Coutinho** pointed out that there also needs to be an awareness of the fact that students are different. They learn in different ways and have different interests and abilities when it comes to acquiring new knowledge and skills. He argued for a greater use of short-term learning experiences leading to micro-credentials to create more flexible ways of up-skilling.

Being asked about her thoughts on how universities are trying to bridge the skills gap, **Paola Dal Zovo** shared some examples of initiatives involving the collaboration between universities and businesses. Among these were projects in line with the Knowledge and Innovation Communities⁴² under the European Institute of Innovation & Technology. Using these examples, she pointed out that university and business collaborations can promote skills through a range of different formats, including case studies for students, mentoring, peer to peer training and competitions.

Towards the end of the session, all panellists were asked to share what they have planned as their next step to strengthen innovation in teaching and learning. Whilst the OECD has a range of activities and initiatives in the field of education on the horizon, **Andrea Hofer** chose to underline efforts to get more students into STEM by integrating arts and design into science, technology, mathematics and engineering. She highlighted that this step would need to be accompanied by clear guidance for prospective students, allowing them to understand what awaits them in terms of academic requirements.

⁴² <https://eit.europa.eu/our-communities/eit-innovation-communities>

Agostino Marengo concluded by emphasising once more that the focus should be on human resources and on creating environments for collaboration and networking between universities and companies. As her final statement, **Paola Dal Zovo** pointed out that this is easier said than done. Collaborations between these partners can be difficult to initiate and typically develop on the background of existing relationships.

Klaus Sailer argued for the creation of an international platform allowing for the collaboration between different universities and their regional networks. He would like to see students being able to move between universities more easily as well as for businesses and universities to get more seriously involved in today's biggest challenges, for example by jointly developing sustainable responses to climate change.

Finally, **Vanessa Tierney** emphasised that students need to be supported in acquiring the skills they need to be capable of meeting the challenges they will face in their professional life. The skills related to entrepreneurship play an increasingly important role in this regard. In this context, it is a positive development that many colleges and universities are extending their study programs and dedicating a period in the final year to work placements.

The experiences from such placements are essential to give students the confidence to pursue particular jobs or to start their own businesses. Concluding the session, she stated that university graduates represent an immense potential to stimulate innovation and entrepreneurship. They are capable of inspiring others and may show future graduates a path that they can follow.

WORKSHOP 2.1: Supporting the Green Transition

This workshop 2.1, moderated by **Luca Basile (University of Bologna)**, discussed the role that university-business cooperation can play in supporting the green transition.

The first intervention was by **Alessandro Leonardi**, Managing Director and co-founder of the company **Etifor**⁴³ and coordinator of three Erasmus+ Knowledge Alliances. These initiatives came from the department of land, environment, forestry, and agriculture of the University of Padova.

Etifor offers support to stakeholders in developing, financing, and implementing green initiatives. It has existed for ten years and employs 40 members of staff, of which 40% hold a PhD. The knowledge alliances involve close cooperation between Etifor and the University of Padova. Each of the alliances has a specific, interdisciplinary focus: the 'Ecostar' alliance supports green start-ups; 'Green4c' promotes activities in contact with nature which promote physical and mental wellbeing, health, and social inclusion; 'UForest' brings together urban planning and forestry to develop green cities.

The common approach for these initiatives is 'Join – Learn – Action', and the success of the initiatives depend in part on the fact that financing is integrated from the start enabling initiatives to grow – all the initiatives have developed marketable products, as well as fundraising strategies.

⁴³ <https://www.etifor.com/en/>

The next presenter was **Luise Heidenreich**, Co-Head of Education and Learning at of **EIT Climate KIC**⁴⁴. She presented EIT Climate KIC, which is Europe's largest public-private partnership addressing climate change. Its aim is to transform places, industries, and value chains by 2030, and to better integrate education, research and business. She stated that innovation is essential, but not in the sense that it has been done until now. What is needed is an approach that allows the building of portfolios of relevant innovations that will enable systemic changes, and here, the Climate-KIC is well placed, having 440+ partners across Europe and having incubated 1,800+ climate-positive start-ups.

She highlighted that actors from across society need to acquire new capabilities if the Paris targets for decarbonisation are to be met. The barriers to change include a wide skills gap, meaning that the workforce is unprepared for the green transformation. Therefore, EIT Climate-KIC provides education at the local level for citizens to become future change makers.

Of special relevance to UBC, she noted the EIT Cross-KIC Higher Education Capacity Building Initiative. The initiative, which is part of Horizon Europe, aims for HEIs to become engines of innovation, to achieve a green digital and inclusive society. The eight KICs have launched a call for proposals for consortia of universities and non-universities. The results of a pilot call last year indicated a high interest from universities to become more entrepreneurial and innovative, and to work with non-university partners for developing and implementing new actions.

The KICs bring in tested strategic programmes in innovative methodologies as well as new approaches such as future literacy or sensemaking. Furthermore, they bring in an advanced learning platform and operating system, a range of online courses, their international network of changemakers and solution finders, and finally, their newly established 'climatised community' platform.

EIT Climate KIC is always looking for partners who can bring commitment to the community to solve climate change, a willingness to bring in challenges, a cohort of participants, co-delivery capacity, and match funding.

Franco Coren, Director of the geophysics department in **OGS**, the Italian National Institute of Oceanography and Applied Geophysics, described the IPANEMA⁴⁵ project (Implementation of Panarea Natural laboratory of ECCSEL and Marine Observatory). ECCSEL⁴⁶ is the European Research Infrastructure for CO₂ Capture, Utilisation, Transport and Storage (CCUS).

Panarea is a small volcanic island to the north of Sicily, characterised by significant submarine activity and different types of CO₂ emissions. In 2002, a violent gas burst took place, causing the introduction of huge quantities of CO₂ and H₂S into the surrounding sea. Thus, Panarea represents a natural example of what occurs in the leakage of CO₂ and can be used to study climate change effects on marine ecosystems.

The IPANEMA project has established the ECCSEL NatLab Italy of Panarea. It involves five countries (Italy, France, the Netherlands, Norway, and the United Kingdom), 23 facility owners, 88 facilities, and a research infrastructure. The objective is to allow

⁴⁴ <https://www.climate-kic.org/>

⁴⁵ <https://www.inogs.it/en/node/1618>

⁴⁶ <https://www.eccsel.org/about-eccsel/eccsel-highlights/>

multidisciplinary studies in physical, chemical, biological and geological sciences in a 36-month project. The basic funding of the project comes to €8.8 million from the National Operational Programme.

When partners want to use the ECCSEL facilities, they need to bring their own funds. The laboratory equipment includes seismic and acoustic instruments, an underwater microscope, a drone, a ROV (a remotely operated underwater vehicle), and an AUV (autonomous underwater vehicle) that enables measurements at large depths. A submarine observatory is setup to monitor CO₂ emissions constantly.

However, he emphasised that the project is not only about advanced equipment, but also about people: €2 million have been set aside for 21 fellowships for the duration of the 36 months. The fellowships will give researchers working in this field free access to the entire infrastructure and equipment of the project.

Next, **Letizia Magaldi**, Executive Vice President of Magaldi⁴⁷ presented the technologies for energy storage developed by her company. The Magaldi Group was created in 1929 and specialises in materials handling technologies for industry, in particular technologies for handling materials through high temperature production cycles.

In 2021, Magaldi established Magaldi Green Energy⁴⁸ as a response to the challenges associated with the objective of replacing fossil energy sources with renewables. While renewables mainly produce electricity, 74% of industry energy consumption is in the form of heat, and 90% of heat is produced by fossil fuels. In addition, energy from renewables is intermittent by nature, so technologies to store energy are needed.

To overcome these challenges, Magaldi Green Energy is developing heat accumulation technology which employs a system of mirrors that reflect concentrated solar heat into a bed of fluid sand. From this bed, electricity for industrial use can be released using steam turbines, just like heat can be supplied as super-heated steam or hot air.

The first prototype of the STEM-CSP (Solar Thermo-Electric Magaldi – Concentrated Solar Power technology) is operating in Sicily. STEM-CSP has been patented. It has been developed with financial support from the National Operational Programme. The key advantage of the technology is the use of fluidised sand to store energy up to 1,000 degrees celsius. There is fast response time and charge and discharge.

Magaldi is also extending the method to LDES (long duration energy storage, i.e. for more than 6-8 hours. The MGTES (Magaldi Green Thermal Energy Storage) is less expensive than electrochemical batteries and can enable the conversion of fossil fuel power plants into thermal energy storage clusters. Applications include industrial plants, surplus renewable energy, fossil fuel plants, and power grids.

At this point, the moderator opened the floor for questions.

Alessandro Leonardi was asked by a participant to describe the cooperation between his company and the university. He replied that in their case, they had two options for the spinoff – either the university could take the role of a shareholder, or they could rely solely on external investment. Preferring the first option, they

⁴⁷ <https://www.magaldi.com/en>

⁴⁸ <https://www.magaldigreenenergy.com/en>

presented their business plan to the university board. In hindsight, the business plan was quite incomplete, but it was approved. Since then, however, Italian universities have to leave all spinoff companies (financially), so they are no longer on the board.

The moderator then raised the question whether the demand for future university graduates will focus more on broad skills or whether still more specialised skills will be needed. **Alessandro Leonardi** answered that either will be in demand and referred to his own company that offers two career paths – a transversal path and a ‘guru’ (vertical) path.

Luise Heidenreich agreed and added that just as much as technical expertise is needed, the green transition also calls for people that know how to navigate and deal with complexity, who can ideate, who have communication skills, and can handle transition through various contexts. Such skills are important for all, including technical experts, and there is the need to learn to deal with complexity and to work in transdisciplinary teams.

Finally, the moderator asked presenters how University Business Cooperation can contribute to the green transition. **Alessandro Leonardi** replied that what is lacking currently are people with the soft skills that enable the technical skills for the green transition. For the next recovery plan, he said, we need enablers, facilitators, who can put a minimum of technologies in place to move towards the future. **Luise Heidenreich** responded that the university-business nexus is very important. She urged corporates to come to universities with challenges, and universities to adopt more challenge-based approaches. For this to happen, listening skills on both sides are important.

Franco Coren remarked that the cooperation is on the right path – stakeholders just have to keep walking it again and again. All the ingredients are there; no big actions are necessary. Finally, **Letizia Magali** proposed that the role of the university vis-à-vis the public is to sustain a conversation about technology. Today the technological choices are made by people, so they should be educated to make the right choices.

WORKSHOP 2.2 Supporting Digital Transition

This workshop was moderated by **Paola Inverardi**, professor in software engineering at the University of L’Aquila⁴⁹. The workshop discussed the role of University Business Cooperation in supporting the digital transition.

Marika Huber, project manager of the Erasmus+ Knowledge Alliance DIFME⁵⁰ (Digital Internationalisation and Financial Literacy Skills for micro-entrepreneurs) presented the activities and results of the Knowledge Alliance, which was in operation from 2019 to 2021. It involved 11 partners from 7 countries - 5 higher education institutions and 6 business organisations.

The rationale for the project was that micro enterprises hold a considerable potential for growth and job creation. She cited findings by OECD that the development of affordable digital tools and platforms has provided new opportunities for micro enterprises to tap into foreign markets in a way that would previously have been unimaginable.

⁴⁹ <https://www.univaq.it/en/>

⁵⁰ <https://difme.eu/>

The COVID-19 pandemic and ensuing lockdowns have further accelerated the reliance of businesses on digital technologies. However, micro enterprises are often disadvantaged with respect to financial and digital tools and skills, since entrepreneurs are more often than not self-taught in this field.

In the project, nine research topics were divided among HEI and business partners. They developed learning outcomes, learning tools, and learning modules. In all DIFME partner countries, a series of piloting, workshops, and thematic events were organised, allowing micro-entrepreneurs and students to take the eLearning modules onto a real working context. The learners were supported by university tutors, who were also upskilled in the project.

The project delivered the following results: the creation of a training model addressing financial literacy and digital techniques; a multilingual toolkit based on hands-on techniques to keep a business going, with e-learning content available online; a standardised curriculum; a cooperative learning model, fostering cooperation between HEIs and entrepreneurs; dissemination events; reports for all partner countries based on surveys and interviews and a synthesis report including feedback from >450 entrepreneurs; and the creation of an SME HUB with a community-driven repository of solutions.

The next presenter was **Katarina Engel**, Senior Desk Officer Digital Internationalisation & European - Higher Education Policy at the German Academic Exchange Service (DAAD), European Digital Education Hub. She spoke about how transnational collaboration can support innovation in digital HE.

DAAD⁵¹ supports HEI internationalisation, as well as mobile students. It works in three fields: 'Change by Global Exchange' (funding international university-business collaboration); 'Change for Exchange' (supporting HEI digital transformation); and 'Change by Exchange', exchanges within international communities of practice.

Under the first heading, she noted the international partnerships that DAAD has in its portfolio, including universities and businesses both in Germany and in developing countries. DAAD has established eight Global Centres for Climate and Environment, and for Health and Pandemics.

Concerning 'Change for Exchange', supporting the digital transformation, the aim is to facilitate seamless international mobility for university leadership, study programmes and curriculum developers, and teachers. To enable this, DAAD provides: digital services along international learning pathways ('Erasmus without paper'⁵²); high quality digital learning embedded in curricula; and virtual exchange, i.e. learning opportunities that utilise co-teaching, co-creation, and co-learning methods to enable student groups from different institutions and countries to work and learn together.

She then detailed the involvement of DAAD in the Digital Education Hub, an initiative within the European Commission's Digital Education Action Plan⁵³. The idea behind the Digital Education Hub is to build a community of practice open to all sectors of

⁵¹ <https://www.daad.de/en/>

⁵² <https://www.erasmuswithoutpaper.eu/>

⁵³ <https://education.ec.europa.eu/focus-topics/digital/education-action-plan>

education that will enhance the collaboration across sectors, facilitate knowledge sharing and mapping of best practices and accelerate innovation in digital education.

DAAD will support the development of the Hub. The following formats are planned: webinars, community workshops, mentoring programme, thematic squads, teachers-as-researchers seminar series, clinics (one week of expert consultations), design thinking projects and workshops, prototype testing, acceleration programme, and training and mentoring.

Next, **Pietro Ferraro**, CNR⁵⁴ (the Italian National Research Council), presented the SiRIMaP⁵⁵ Project. SiRIMaP stands for Systems for the detection of marine pollution from plastics and subsequent recovery-recycling. The project is funded by the National Operational Programme, Action II.2 with €3.3 million. It is implemented by six partners (two universities and four businesses).

He explained how microplastics are omnipresent in the oceans. They can be found on the surface, at the bottom, and in the water column. The sources include cosmetics, particles from abrasion, from textiles, tyres etc. It is not only found in oceans, but also in rivers, lake, soil and snow: up to 154,000 particles per litre have been found in Alpine snow.

Therefore, microplastics are a challenging issue of high complexity characterised by being multi-scale, involving multi-materials, and being mixed with other particles (living as well as not). There is a lack of advanced tools for studying and monitoring microplastics, and also no commonly accepted protocols for collection and sample preparation.

To ameliorate this situation, the SiRIMaP project has adopted an approach built on a convergence of life science, physical science and engineering. The project partners carry out research using large amounts of satellite images, footage from drones, and in-situ observation and collection of specimens.

The multi-material nature of microplastics meant that the project had had to develop new tools for characterisation by microscopy and spectroscopy. The research group uses intelligent microscopes allowing detection, sorting, identification, counting, and characterisation. They combine holographic imaging with machine learning, seeking distinctive holographic signatures, so that the microplastics could be distinguished from living organisms (e.g., algae).

The methodology was transferred from 'Lab on Chip', an application within human health (personalised medicine). The methodology can be further transferred into use within environmental pollution or marine ecology. There is interest, particularly in the US and in Korea to use the Lab on Chip on smartphones, which may in the future facilitate self-diagnosis by smartphone.

The technology is in line with the concept of 'one health' where human health is considered along the health of animals and plants and the health of the environment. If digital transformation is guided by these parameters, it will be of benefit to all.

Finally, **Giovanni Zappatore**, CEO, BionIT⁵⁶ Labs presented the project 'Adam's hand' which he called the first truly bionic hand. BionIt, founded in 2015, is a medical

⁵⁴ <https://www.cnr.it/en>

⁵⁵ <http://www.daccampania.com/en/sirimap-2/>

⁵⁶ <https://www.bionitlabs.com/>

company dealing with bionics and human machine integration with the mission of turning disabilities into new possibilities. The company currently employs 25 staff. Their goal is to bring meaningful changes in the prosthetic industry and in particular, to upper limb prosthetics.

Currently the choice for people with upper limb amputation is between mechanical hooks (operated by the other arm using a harness and cables), characterised by low dexterity and being quite uncomfortable, and poli-articulated or bionic devices using five motors which are difficult to use, very expensive (up to €70,000), noisy, and heavy. For that reason, only 40% of upper-arm amputees in developed countries use a prosthetic, in developing countries even fewer.

To ameliorate this situation, Bionit Labs has developed 'Adam's hand' and is currently preparing a product launch. 'Adam's hand' is a bionic hand featuring a modular design and is highly compatible with existing systems. The hand automatically adapts to the grasped object's size and shape, so no external sensors are required. It is easy to use, light and compact and comes at a lower cost than existing bionic hands. It is operated using AI-based software that can react to muscular signals using electrodes.

For managing the hand, Bionit Labs has developed an app (MyoLogic Pro App) utilising Bluetooth to calibrate the device and guide users through learning process. It includes user manuals. There is a version for clinics that can be used for error detection as well as management of patient databases.

The company has raised more than €5 million so far. They are in the course of developing a small model for children and consider bringing their expertise into the field of handling robotics, space robotics and robotic harvesting.

The moderator asked the following question to all panellists: 'According to a recent survey from Deloitte, the pandemic has accelerated the digital transformation. What are your views on this?'

Marika Huber found that during the pandemic, an increasing gap emerged between micro entrepreneurs that saw an opportunity to speed up digitalisation in order save costs for storage space and store fronts, and those that did not make the most of the opportunity and have suffered as a consequence.

Katharina Engel reflected that for an organisation like DAAD, remote teaching and international exchange was a huge challenge during the pandemic. The pandemic has accelerated the introduction of tools for online learning, but a certain fatigue is increasingly noticeable. In this respect, the work on the Digital Education Hub is more relevant than ever, to ensure the evolution of methods for effective digital learning that does not wear people out.

Pietro Ferraro pointed out that the need to develop medical tools for distance diagnosing and treatment has accelerated telemedicine and improvements for patients and staff. Also, the equipment for experimental research from remote locations has become much better and provides a real opportunity that can be developed much further.

Despite these digital improvements, **Giovanni Zappatore** observed that the pandemic demonstrated that not everything can be digital. BionIT has digitalised as much as possible, but still builds physical products, and users need to try them on. Still, considering the lessons from the pandemic, all companies are not forced to redesign their processes to accommodate digital solutions.

WORKSHOP 3.1 The role of HEI for Smart Specialisation Strategies and Regional Development

Smart specialisation strategy (S3) is a place-based innovation policy concept to support regional prioritisation in innovative sectors, fields or technologies through the 'entrepreneurial discovery process', a bottom-up approach to reveal what a region does best in terms of its scientific and technological endowments (Interreg). S3 has inspired regional innovation strategies in the EU in recent years. HEIs can be integrated into S3 policy, to spend European Structural and Investment Funds more effectively. The respective workshop reflected on how to strengthen the role of HEIs within the 'quadruple helix' of innovation through a collaboration of government, academia, business, and civil society.

John Edwards, Secretary General of **EURASHE** and coordinator of the Erasmus+ Forward Looking Cooperation Project UASiMAP⁵⁷, presented on the topic "measuring regional impact of universities", especially for professional oriented universities. The respective project UASiMAP looks on a range of contributions universities can make, not just focussing on the economic impact, but also on the social and cultural impact, and on the contribution to governance and regional strategy development.

The project developed quantitative and qualitative indicators to be used for self reflection, based on the RIIA framework looking at the regional innovation impact of HEIs. This approach goes beyond the quantitative benchmarking and ranking as it also uses the narratives. Making HEIs use these narratives is based on the impulse that universities need to think about their impact.

Bárbara Coelho Gabriel, Deputy-Director for Internationalisation and Cooperation at the Department of Mechanical Engineering at the **University of Aveiro**⁵⁸ presented how her own university focusses on universities (and people) for smart specialisation and regional development. The main challenge was how to strengthen the role of universities in the community or in regions.

The University of Aveiro is a young university and was founded based on regional needs (qualified professionals of telecommunications, ceramics, and electronics). Addressing labour market needs and building capacity and knowledge was the objective of the university from the beginning on. The university defines itself as an agent of knowledge and competencies and as a key-driver of local and regional communities linked with a global landscape. Some specific projects were presented to make this key objective clearer.

The University of Aveiro focusses on different innovation platforms: sustainable industrial solutions, enhancements of natural endogenous resources, technologies for quality of life and territorial innovation. With this innovation focus, the university creates a link between global challenges (such as the green transition, social transition, and digital transition) and regional development. The objective is to create sustainable employment, internationalisation, and synergies between different funding programmes.

⁵⁷ <https://uasimap.eu/home>

⁵⁸ <https://www.ua.pt/>

To improve the S3 of the region, active participation of HEIs is needed. They can help to build capacity and promote synergies. She gave a set of recommendations for HEIs to have more impact for the regional development: knowledge (to understand each other, to develop a shared vision), synergies (within funding programmes, different lines of financing to be able to capitalise), and people (with the right profile, the ability for proper communication and act within the regional ecosystem). Research projects should be developed in way that they bring added value to the regions.

Krzysztof Klincewicz, University of Warsaw⁵⁹, presented innovative pathways for higher education institutions, based on some practical examples of projects, initiatives, policy measures and ideas that were used from researchers from the University of Warsaw to enact new innovation ecosystems in other regions (specifically Italian universities participating in these ideas).

The drivers are strategic tensions for HEIs: that universities meet societal demands, handling ethical pressures, enhance scientific excellence and intensify industrial collaboration. Innovative pathways for HEIs go beyond technology patenting and transfer and spinoffs. They go either into a co-creation with users and producers (like the EIT Food RIS Consumer Engagement Labs) or into a commercial use of research infrastructures (like the EIT Food RIS Research Infrastructure Network). All these projects were funded by the European Institute of Innovation and Technology (EIT), promoting communities of scientific and industrial partners addressing specific societal changes.

Co-creation comes from management science and social sciences, involving users and producers: dialogue, exchange of ideas. Co-creation is perceived often as consumer oriented, but HEIs can act as facilitators and therefore can link users and producers. The commercial use of research infrastructures can create valuable assets for university infrastructure that is costly in maintenance and less academic than expected. HEIs can provide competitive assets, which was not so widely known by universities before.

Key lessons learned:

1. Moving beyond the traditional patenting + transfer + spinoff models
2. Universities can benefit from innovative approaches, including co-creation and commercialisation of research infrastructures
3. Revealing own strengths
4. Offering value to industrial partners

Adolfo Morais, Deputy Minister to the Basque Region, Department of Education, presented the keys for a Basque Regional Academy connected to RIS3: "Auzolana". The Basque region can be described as an industrial region, with large investments in research and development. The approach for the Basque Regional Academy is connected to a Horizon Europe project, but already in 1997 the Basque Country started with a strategy that tried to combine all stakeholders into common challenges.

⁵⁹ <https://en.uw.edu.pl/>

This first approach was followed by S3, which was created to guarantee autonomy and work, using talent as the basis for development. Now the Basque RIS3⁶⁰ areas cover “smart industry, cleaner energies, personalised health and are following three main transitions: technological-digital, energy-climate, and social-health. It is elaborated mainly by the increase of educational, scientific, and social impact of the university ecosystem in the Basque Country (started in 2004), by promoting and enhancing its connection with multiple local and European actors in the framework of universities, business, and society.

One major policy connected to the development of RIS3 in the Basque Country is the hubbing and clustering of different universities (in an “all-university” approach). This also includes cultural creative industries and a broad approach of industries. S3 is also connected to the European University Initiative in the Basque Country. One flagship project is the specialisation in basic research aligned to S3. All these developments are covered within the Basque University-System Plan. The background is that all stakeholders (universities, business, society) are speaking the same language, which means that they know about their expectations and possibilities.

Flexibility is key. In flagship programmes the institutions are given much flexibility to use the funding for the development of projects, where funding is combined and strategically planned for the next ten years. Another key is the knowledge to deliver expected results, and the need to transfer this knowledge.

Alessandro Zona, University of Camerino⁶¹, presented a project funded by the National Operational Programme Research and Innovation, based on the changed lives of many people by a massive earthquake in Italy in 2016. The project aims to use collaborative innovation to create furniture to be used as lifesaving equipment in schools. Universities, the furniture industry, the furniture certification centre, and information technology industry are working together, going beyond already available non-systematic “earthquake-proof” solutions (generally being expensive and heavy, impractical in everyday life and economically unaffordable in most situations).

The collaborative project resulted in integrated smart furniture (desks, bookshelf equipped walls, partition walls and an automated distribution module). The furniture was conceived, designed, tested, optimised, and prototyped, resulting in a furniture concept which is much less expensive and lighter than traditional earthquake-safe furniture. Also, the collaboration of students and teachers in the event of an earthquake using the protective furniture was part of the project. A main challenge of the project was the collaborative work of researchers that scale with various partners and including very different competences from all actors.

WORKSHOP 3.2 Innovation in Agribusiness

Agricultural development is the key to world nutrition for a growing world population in a time of shrinking agricultural areas and growing pollution. Growing demand and limited resources is a global challenge. Bringing together multiple actors such as

⁶⁰ <https://www.spri.eus/en/ris3-euskadi/>

⁶¹ <https://www.unicam.it/>

farmers, researchers, advisers, businesses, environmental groups, consumer interest groups or other NGOs is crucial to advance innovation in the agricultural and forestry sectors. This workshop addressed the role of multi-actor approaches to enhance digital transition in food supply chains, in sustainable food systems, and in rural areas.

Maarten van der Kamp, Director of Education at EIT Food⁶² (European Institute for Innovation and Technology), presented an approach based on the knowledge triangle, especially between business and academia.

Sustainability and impact are necessary to be understood for innovation in this approach. EIT Food is one of eight knowledge innovation communities, focussing on the food system and all related sub-systems and covering more than 50 partners. It brings together social, environmental and entrepreneurial perspectives by putting the food system in the centre and creating different perspectives on it and around it.

Customers are seen as key stakeholders, but the trust of customers in the food system is much lower than in other industries. Therefore, the development of trust in the food sector is central to EIT Food, in parallel to other objectives: create consumer valued food for healthier transition; build consumer-centric connected food systems; enhance sustainability through resource stewardship; educate to engage; innovate and advance (transversal) and catalyse food entrepreneurship and innovation; build transversal access to resources and act as pipeline to other sectors.

The involvement of different partners from the knowledge triangle is based on building trust, which is crucial for collaboration between different partners, coming from different perspectives. If this happens, the knowledge triangle is an engine for innovation as an integrative concept and is therefore very useful.

Paola Pittia, University of Teramo, introduced the Erasmus+ Knowledge alliance "AskFood"⁶³, which is an alliance for skills and knowledge to widen food sector-related open innovation, optimisation and development. The project ended in June 2021. The knowledge triangle between innovation, education, and research and technology was taken as new a challenge to promote innovation in the food industry. Challenges faced were the upgrading and modernisation of training and educational methodologies, improving academia-industry interplay and to create an innovative and entrepreneurial mindset of graduates.

The project started with an academic core (HE teachers, students, and trainees) and was enlarged step by step by involving other training providers, business, enterprises and policy makers. "ASK" means "Anticipate, Analyse and Activate", "Share and Stimulate, Support", and "Know and Know-up". Main products were virtual tools to support training and learning in the food sector and for self-assessment and self-training, but also to anticipate training gaps and define possible career maps in food manufacturing, food research and food services. The project involved 50 companies and about 250 students. After the project ended the virtual tools are still working and being used.

Gianluca Brunori, Professor of Food Policy, University of Pisa, presented the Horizon 2020 project DESIRA⁶⁴, showing the socio-economic impact of digitalisation

⁶² <https://www.eitfood.eu/>

⁶³ <https://www.askfood.eu/>

⁶⁴ <https://desira2020.eu/>

as a case for reflection on innovation in rural areas. Rural innovation is undergoing discussions between goals of innovation and mechanisms of innovation.

Within DESIRA a key question was “is digitalisation a basic need for rural people?”. DESIRA changed the narrative from the idea the technology is challenge to technology as the means to support overcoming different challenges. It also tried to overcome a linear approach to describe innovation (“farmers as end of the line of innovation” for a more interactive approach (“all stakeholders involved in innovation”). This change in perspective and approach to innovation was crucial to include all actors (especially farmers) in innovation.

The project proposed the living lab method as a network of farmers, knowledge intermediaries, stakeholders, policy makers constituted around an emerging problem within a given field and will to develop solutions through collaboration.

The DESIRA project introduced 20 living labs in DESIRA, where framing and permanent reframing of problems took place. The identification of the problem, the analysis of the context and the technical systems, and the identification of objectives related to sustainable development goals took place as collaborative process. The baseline for this was the development of better communication between all stakeholders and the inclusion of digitalisation.

Digital technologies were used to enhance the communication and especially to integrate observations of farmers in the loop. This helped to strengthen the communities, and to provide a function and remuneration for farmers in their observatory work (e.g. for land management). If just automated processes had been used (drones, satellites without farmers), this would have had a different impact on society and especially a loss of social fabric and community.

Beniamino Gioli, National Research Centre of Italy, introduced the project E-CROPS⁶⁵ funded by the National Operational Programme. This project is about digital and sustainable agriculture, containing several specific pilots that were developed to validate the technologies. Digitalisation (“Agriculture 4.0”) should help to overcome bad climate conditions and manage crops and risks, realise field pilots and develop decision support tools for farmers.

The project partnership is consisting of public and private partners (public research bodies, ICT companies and farms). New sensors (on new platforms for sensing and phenotyping) were developed and integrated into existing communication technologies. Data collected could be plant biomass, fruit counts, fruit maturity, etc. The data relate to data about meteorology, irrigation, soil, etc., to better control the growth of plants and fruits.

The project is still running (in its second year now) and will be finalised in 2023. The main challenges are the multi-disciplinary actors, to build bridges between the roles of public bodies, and to introduce technologies into agriculture SMEs.

⁶⁵ <http://www.ponricerca.gov.it/comunicazione/example-projects/industrial-research-and-experimental-development-projects-in-the-12-specialization-areas/e-crops-technology-for-sustainable-digital-agriculture/>

3.0. DAY 2

3.1. Opening

Sara Rossi opened the second day of the UBForum which would focus on the challenges needed to overcome to reach the Sustainable Development Goals (SDGs).

Luca Perego, Head of Unit for Innovation and EIT at DG EAC, noted that the theme of the UBForum “UBC in time of recovery and resilience” is an important topic that brings a forward-looking perspective to post-pandemic recovery, and towards the transition to a sustainable, green and digital Europe. This would involve taking advantage of the tools created (e.g. Cohesion and REACT EU funds) to enhance and create more links between European and regional levels, and to reinforce cooperation between HEIs and business.

The recent Communication on the **European Strategy for Universities** highlights tools to accelerate recovery and resilience, for example: the extension of the EIT label to lifelong learning; activities such as mentoring, and reskilling; boosting Erasmus+ abroad to reach more students; further developing HEInovate; and supporting innovation in schools to inspire young people about the EU.

Francesco Cupertino, Rector of Polytechnic of Bari - CRUI (Conference of Italian University Rectors) delegate for industrial relations, discussed the role UBC through the GenerationEU programme.

The programme has acted like a training ground, to learn the same language of innovation between stakeholders. A powerful tool has been research doctorates, which should become a tool for accessing entrepreneurial linkages.

In Italy SMEs characterise the business sector of the South, and to benefit from them research collaboration between industry and academia should be fostered to allow their growth and innovation (e.g. through industrial doctorates, access to business incubators, living labs, etc.), and through innovative teaching.

“Teaching will need to adapt towards more multidisciplinary modes, from hyper specialisation to the contamination of knowledge, we need to teach *how* but also *why* to solve a problem”

Francesco Cupertino, Rector of Polytechnic of Bari - CRUI (Conference of Italian University Rectors)

3.2. Wrap-up - Presentation and discussion of conclusions of parallel sessions

Alessio Cavicchi, Professor at the University of Macerata, opened the session that explored the conclusions of the parallel thematic sessions that took place during Day 1 of the event. The main take aways were summarised by the PhD students acting as the rapporteurs of each workshop session. This opportunity was given through a call for expression of interest, allowing students from Italian Universities to participate in the UBForum, and gain meaningful practical experience.

Abbas Shams, University of Campania Luigi Vanvitelli, Caserta (Focus on Mediterranean)

Abbas Shams attended the Focus on Mediterranean session and highlighted the presentation given by **PRIMA** (Project for Research and Innovation in the Mediterranean), a project that has existed since 2017 with funding received from Horizon 2020.



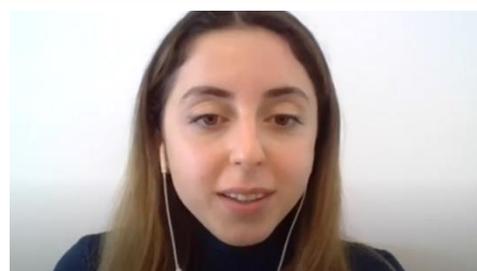
The Mediterranean Sea is a junction point between three continents (Europe, Africa, and Asia) characterised by exposure to climate change, water scarcity, and with almost 25% unemployment among young people who have been through higher education. There is therefore a great need for those highly trained people, who understand the region and its problems, to be able to bring innovative solutions.

The organisation makes links between these three continents, with 19 different countries working together on the theme of agri-food and water management. They use the nexus of water, food, energy and ecosystems to do this.

Inspiring aspects were that **PRIMA** uses blockchain technology in their projects, along with unconventional modern resources for irrigation purposes.

Mine Dastan, Polytechnic University of Bari (W1.1 From Research to Business)

The three main topics identified were: a focus on the knowledge triangle (higher education, research and business collaboration); learning through business failure; and, teamwork, understanding 'market time' as enablers for success. Panellists identified key takeaway points.



Gerarda Fattorusso (Control System in automotive sector) emphasised the role of sharing and knowledge exchange in UBC bringing significant reciprocal mutual benefits. Mutual exchange and trust eases the problem solving and decision-making processes.

Gianluigi Franchi (Castavir) noted that apart from a good project idea there should be teamwork, market analyses (existing or new markets), and the successful acquisition of new clients for business success.

Didier Zimmermann (EIT raw materials). Knowledge triangle partners can allow faster innovations, and education is the first step to change the mindset and create the talents for the future. Good tools and collaboration support entrepreneurs and start-ups to upscale projects with universities.

Maria Fatima Lucas (Zymvol). More than half of the team are scientists, they support talents for the future not only for company benefits but also the individual's career. The knowledge triangle provides a continuous flow of information through sending scientists to university and having exchange students in the company.

Alessandro Sannino (Gelesis): Failure is part of the success. Failure can build consciousness and awareness for new entrepreneurs, and failure must be channelled constructively to promote innovation.

Luciano D'Apolito, University of Campania Luigi Vanvitelli, Caserta (W 1.2 Supporting Innovation in Teaching and Learning)

In this workshop the key theme was UBC supporting new forms of teaching and learning, and where universities can be platforms where different people can co-create and collaborate.

Speakers presented new ideas when it comes to academic teaching and learning, such as using tools like blockchain NFTs. It is better to use technology to help in the development of human beings, and therefore by extension in our learning and development. For example, LMS (learning management systems) were incredibly useful during the pandemic. Overall, we need to start thinking about the entrepreneurs of the future by looking at the students of today.



Nicola Mignoni, Polytechnic University of Bari (W 2.1 Supporting the Green Transition)

During the "Supporting the Green Transition" workshop, the topics discussed covered three important challenges: the environment, climate change, and renewable energy. Experiences shared by the speakers focused not only on the degree of technological innovation, but also on how the obtained results were achieved by a fruitful collaboration between universities and businesses.



The story of Etifor, a company which started as a spin-off of the University of Padova, is an example of research being successfully translated into business. Their main objective is to provide environmentally compliant solutions for businesses, from nature governance to eco-tourism. During its development, Etifor created knowledge alliances with other start-ups born in the same hub. This proves how the collaboration

between higher education and business also enables companies to effectively cooperate on common working grounds and missions.

Environment and climate change are also the main focuses for the EIT Climate-KIC, which is the largest European public-private partnership with the aim of creating a net-zero-carbon economy and society. Their goal is to promote innovation, but not as a chain of independent ideas, but by creating a network of interconnected projects sharing the same objectives. In this way, complex issues, such as climate change, can be tackled locally, in order to build a shorter path towards a global solution.

On the technical side, one of the presented projects was the IPANEMA program, which consists of the implementation of an ECCSEL Natural Laboratory and Marine Observatory at Panarea, a small island located in the north of Sicily. Panarea is characterized by a consistent natural emission of carbon dioxide in its surrounding waters, which makes it a perfect spot for studying the effects of CO₂ emissions in the marine environment. It also gives an opportunity to test the Carbon Capture and Storage technology, which could reduce the overall level of carbon emissions in the atmosphere. For this reason, the project has gained the attention of different partners across Europe.

The FOAK STEM project, carried out by the Italian company Magaldi, focused on the development of an innovative energy storage system, which is composed by a field of mirrors reflecting the sunlight towards an energy accumulator. The core element of the accumulator is the fluid sand bed which gets heated by sunlight. The stored heat can be either converted to electric energy by means of a turbine, or it can be directly dispatched for industrial applications.

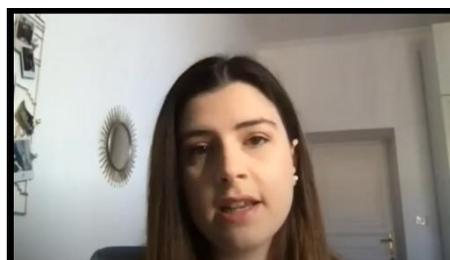
Finally, to achieve the objectives of the Green Transition, whether they deal with energy, climate or environment, the opinions of the speakers converged on some common points: it is essential to provide adequate soft and hard skills to workers, while fostering the participation of all stakeholders, from universities and companies to governments and citizens.

Margherita Faleppa, Roma Tre University, Rome (W 2.2 Supporting the Digital Transition)

The workshop presented many initiatives supported by European funds linked to the digital world. The first key message was the importance of **investing more in digital skills**, and speakers showed how this message applies to different sectors.

DIFME is an Erasmus+ Knowledge Alliance focussing on the digital internationalisation and financial literacy skills for micro-entrepreneurs, for whom acquiring knowledge of the digital is key to bridge the gap that separates them from competing with bigger firms.

In the education sector, the German Academic Exchange Service (**DAAD**) has explained how digitalisation is indeed a tool to achieve international mobility. The European Commission has recently launched the European Digital Education Hub as part of the Digital Education Action Plan, which will aim at building a community of practice across all sectors of education.



The environmental sector needs digital tools, and **SIRIMAP** is dedicated to the detection of marine pollution from plastics and subsequent recovery-recycling. SIRIMAP is using data analysis methodologies that elaborate satellite images to map plastics in the sea and identify accumulation zones.

Digital tools are also pivotal in the health sector. Products like **Adam's Hand** have shown the importance of digital in bringing meaningful changes to prosthetics, to allow upper limb amputees a wider choice.

The second, and final, key message of this workshop was about **using this momentum to accelerate the digital steps that were made because of the pandemic**. COVID-19 has sped up digital transformation and technologies by several years and our speakers have shared that all sectors need to work to make sure that these changes remain in the long run.

Silvia Calderoni, University Sapienza, Rome (W 3.1 The role of higher education institutions for Smart Specialisation Strategies and Regional Development)

A contemporary innovator is a designer of efficient solutions to real problems, and is someone who exploits resources and uses them to solve a problem in the face of adversity.

The digital social and climate transformations pose an interesting question about the ability of today's society to adapt to a rapidly changing environment: **what is needed to create collective value to innovation?**



The workshop answered this by outlining different projects developed by Mediterranean higher education institutions aimed at stimulating growth and prosperity by enabling regions to focus on their strengths. Universities, civil society and businesses working together with synergies can have a large-scale impact on society, by making knowledge and skills socially relevant.

Four key concepts were highlighted:

- Development needs to be measurable: entrepreneur related resources represent a critical index, needed especially for enthusiastic young generations that want to create a positive social impact.
- Systemic vision: stakeholders are part of a system of interactions and together they build up knowledge and capacity.
- From need to solution: creating synergies at both regional and international level is a necessity, a process and a result of social development.
- Openness and sharing: the workshop gave insights about new inside-out models for universities, where new research infrastructures can be used for commercial purposes and a co-creation approach with industrial partners to create values and increase employability.

Each of us as European actors can be designers of current and future knowledge, strategy, and politics.

“Innovation today has the face of design.” Luciano Floridi

Arianna Del Gaudio - University of Naples “L’Orientale” (W 3.2 Innovation in Agribusiness)

Agribusiness needs innovation because of the high number of challenges it is facing due to climate change, and because of such diverse eating habits and needs of consumers. Stakeholders involved in food industry started to consider the link between the population increase and the limited availability of resources to combine these issues and find solutions.



Speakers shared the findings of projects based on a multi-dimensional and multi-sectorial approach, providing insights to develop new research questions.

What they have in common is mainly linked to the exploitation of the knowledge triangle and the challenges of digitalisation, social and cultural changes.

Besides the many success stories related to the finding of food solutions and the development of new technologies in agri-food sector, there are key messages:

- A need to promote innovative training programmes that can transform ideas into new businesses related to food industry and the digitalisation process. And, to support rural communities evaluating of risks and opportunities.
- The importance of co-creation and collaboration between stakeholders belonging to different contexts to establish proximity in their relationships and find ways to understand each other.
- Need for public engagement, so people and communities can become key agents in the change of the food system.

The workshop highlighted the importance of using a more interactive approach that gives the opportunity to share experience and create a more innovative, inclusive, and sustainable food system. Communication and cooperation are at the base of responsible research and transfer of knowledge to create a sustainable future. So, even though the journey is still quite long, we can say that Europe is working hard to develop strategies and tools to obtain lasting results over time.

Maria Palladino, Policy Officer at DG EAC, thanked everyone, highlighting the success format of merging two initiatives, showing the possibility to create more synergies and to inspire each other. She reminded participants the recording of the event, presentations, and report would be available.

Alessio Cavicchi closed the session, quoting the Communication of the Commission on the European Strategy for Universities:

“The aim to: reinforce universities as drivers of the EU’s global role and leadership through deeper international cooperation within Europe and beyond; support universities in becoming more outward looking and competitive on the global scene; and in contributing to the evolution of the development of the higher education

systems in partner countries; is in line with European values. This will help in turn in boosting Europe's attractiveness not only as a study destination but also as an attractive global partner for cooperation in education, research and innovation."

3.3. Plenary session: University-Business Collaboration in the Mediterranean

The moderator of the plenary session **Giuseppe Provenzano, UFM Secretariat Project manager for Higher Education and Research**, introduced the plenary session focusing on UBC in the Mediterranean.

UBC in the Mediterranean is trying to foster and support the development of the region towards more sustainable and innovative approaches. In this sense, alliances are important to advance the employability skills of students and to help close the innovation gap.

The first panellist, **Omar Amawi, Deputy Director at PRIMA Foundation**, who previously worked for the higher Council of science technology in Jordan, presented the work and main achievements of PRIMA.

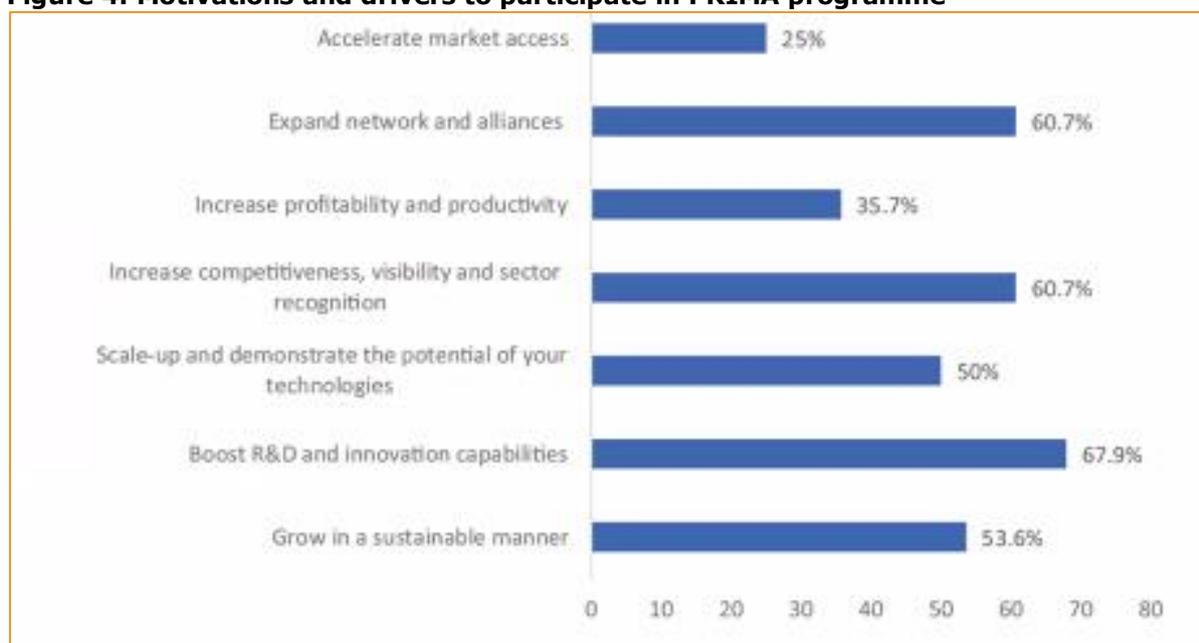
As one of the founders of PRIMA, he gave an overview of how the organisation started its operations in 2018, although the idea was already there in 2012. The headquarters are in Barcelona, and it is administered by the Union for Mediterranean. The core values of PRIMA are the working together and bringing minds together, thus bridging the gap between science and business.

The main achievements of the organisation are the public-private partnerships it has forged over the course of its five annual work programmes; the last one of these is still open. The role SMEs has been very important. They have received over 2,000 applications due to the good reputation of the programme. Unfortunately, this has also rendered the programme extremely competitive, with only 168 projects having been funded. Italy and Spain are the main project coordinators, and they operate via a system of co-management and co-decision.

A specific example is the HortiMED project⁶⁶, which uses DSS software in greenhouses to facilitate efficient all year-round cultivation.

A survey asked participants about the main motivations to participate in the PRIMA programme. The highest motivation was to build capabilities instead of profitability, which would have been the usual expectation (Figure 4).

⁶⁶ <https://www.hortimed-prima.eu/hortimed-project/>

Figure 4: Motivations and drivers to participate in PRIMA programme

Source: PowerPoint Presentation 2022

Begoña Pérez Villarreal, Director CLC South at EIT Food, presented the work of EIT Food. The agri-food sector faces different challenges, from food-tech, to changing consumer needs, to needing to become more sustainable. Consumers are much more aware of these factors themselves now and this has been reinforced in the last two years due to the pandemic. There is a big need to innovate but there are very few start-ups in this sector (only 4% in comparison to the rest of the sector). As a result, there is an urgent need to equip people with an entrepreneurial mindset, and tech innovation skills.

In Valencia there was an example of bringing together citizens to produce ideas on the food circular economy. There are also examples of working with larger food companies on this topic (e.g. Danone, Logifruit), who are looking for outside input to help them adapt to the current situation.

Linked to this is the idea of a Challenge Lab. Universities and corporate partners bring together talented and creative minds to define solutions around a relevant change. The one in 2022 will have two rounds – one with northern and one with southern Europe and then a 'grand final'. This is a really nice experience for the students, as they get to do real-life problem solving, complementing the teaching they receive, while getting to know corporate companies.

There are also various skills matching programmes. Woman entrepreneurship targets young women from a STEM background, to help them find a professional path through their specialised skills. The Team-up programme matches scientists with entrepreneurial innovators. A concrete example of this was a young PhD student in Greece who was looking to start up his own company and was matched up with an entrepreneur. They founded the company together and received support from the university as well. At the University of Bari, a team of three founded the company ReWow. They use the reactor at the university to create their products for the cosmetic industry, to make it more sustainable.

Damiano Petruzzella, Project manager at CIHEAM Bari, presented the Open Innovation Lab created to connect CIGEAN VAR, research organisations, universities, companies and institutions to face together innovation paths that generate solutions centred around the real needs and challenges of companies.

CIHEAM Bari works at the intersection of training, internationalisation and open innovation. Projects and objectives of the organisation include: a youth entrepreneurship and innovation ecosystem (youth empowerment); working to improve the support of Innovation Support Organisations; the creation of a Technological Transfer Office; capacity building of innovation ecosystem manager (innovation manager, broker and coach); support to start-up creation in the agri-food sector. It also coordinates the Mediterranean Innovation Partnership.

The primary focus of the presentation however is the Open Innovation Lab. The idea behind it is to bring innovation to a company by first identifying and defining the challenges and needs of the company and then, to find answers through the creativity of students and technical expertise. Young talents work weekly with a team of senior partners from a partner company assisted by experts and researchers and are managed by a senior coach.

In tandem, a Master's programme in open innovation and youth entrepreneurship has been created. It is a 13-week programme where students define with the company a business challenge and then work through that challenge in the Open Innovation Lab. At the end of the process a concrete prototype is produced. There are already 13 students taking the programme from 11 different Mediterranean countries.

Jihen Boutiba, Director general at BUSINESS MED, presented the company, highlighting the social partners it represents as well as members of the private sector. BUSINESS MED was founded in 2014 representing 25 employer associations from 20 different countries, commissioned by the UfM, European Training Foundation and Centre for Mediterranean Innovation. The aim of the company is to reduce graduate unemployment by facing the job market from a skills perspective, thus bridging the gap between universities and businesses.

Academic institutions make the most of harnessing human capital, by allowing people to be more competitive in the labour market. However, there is a proliferation of skills mismatch in society, and this is what causes high cases of unemployment, especially among youth and women in an increasingly complex labour market. Leveraging private sector cooperation with social partners, as BUSINESS MED advocates⁶⁷, is therefore important to further foster linkages between the different actors and contribute to the sustainable development of society in research, innovation and development.

It aims to achieve this through these key objectives:

- A proposed strategy for better connection between VET and HEI. A stakeholder consultation indicated that we need to boost private sector engagement in skills training.

⁶⁷<https://www.businessmedumce.org/sites/default/files/Summary%20conclusions%20UfM%20social%20dialogue%20meeting%20rev%20EMPL.pdf>

- Development of process of reform⁶⁸.
- Development of an educational system to prepare youth for jobs created by the partners' firms.
- Foster entrepreneurial collaboration among youth in the region.
- Move towards a union for a Mediterranean strategy⁶⁹.

Concrete steps taken have involved partners and projects including: **Ebsomed**⁷⁰, **Med4waste**⁷¹, **SOLID**⁷², **CREACT4MED**⁷³, and **HOMERE**⁷⁴. Other examples include an investment project launched in 2020, where BUSINESS MED has a role in preparing youth in education for the job market by fostering creativity and innovation, financed by the NICBC MED programme. Start-ups and entrepreneurs are also being provided with innovative training programmes, targeting middle eastern countries and particularly women.

There are also attempts to create strong and substantial links with national and international institutions, such as the LUMSA University. Here BUSINESS MED conducted the assessment of tools and skills necessary to design training that best meets the expressed needs. Another project targets students in their last year of study before graduation to better prepare them for the labour market and to avoid this endemic of graduate unemployment in the Mediterranean region.

Jihen Boutiba ended her presentation by launching a call for more enhanced cooperation and dialogue between HEI and business in order to address this complex challenge and to pave the way for more balanced and inclusive labour market in the Mediterranean region. It is crucial to adopt new approaches to forge strong and sustainable linkages not forgetting the public-private partnership initiative in education.

The final speaker, **Silvia Marchionne, Project manager at UNIMED**, explained how this network of 140 universities and research centres from 23 countries promotes the institutional autonomy of universities, reinforces social responsibility of universities, and promotes economic, social and cultural cohesion for better regional integration. There are 12 thematic subnetworks, all of which share information and good practices with the main actors in the different sectors to create new synergies and initiatives.

The focus of the presentation was the employability subnetwork, which is coordinated by the public university in Lebanon. It was launched under the Erasmus+ programme in 2018 as a project called **RESUME** and is still active. It is made up of 31 institutions from 15 countries.

⁶⁸<https://www.businessmedumce.org/sites/default/files/Regional%20Report%20%20Final%20skills%20dev%20and%20vocational%20training%20BUSINESSMED.pdf>

⁶⁹https://www.businessmedumce.org/sites/default/files/Towards_a_UfM_Strategy_BUSINESSMED.pdf

⁷⁰ <https://ebsomed.eu/en/various%20documents?language=en>

⁷¹ <https://www.enicbcmec.eu/projects/med4waste>

⁷² <https://solidmed.eu/en>

⁷³ <https://creativemediterranean.org/>

<https://businessmed-umce.org/en/content/projet/creact4med>

⁷⁴ <https://businessmed-umce.org/en/content/projet/homere-2nd-phase>

The four main priorities of RESUME are:

- Establish inter-ministerial committees and connections for entrepreneurship training in order to improve collaboration (Minister for Higher Education, Minister of Education, Minister of Labour, and Minister of Employment).
- Establish a programme of education and exchange of best practices on the topic of employability and entrepreneurship.
- Establish cooperation among and between universities.
- Encourage an entrepreneurial mindset through capacity building of trainees. Mobility of students and staff.

To achieve these priorities RESUME:

- Conducts analyses on this topic – encourages dialogue and mutual exchange of information.
- Organises international events, seminars, workshops.
- Established institutional partnerships. It has worked with the ETF, Union of Mediterranean, BUSINESS MED, UNICEF.
- Has adopted an integrated approach.

Finally, the three main messages in order to cope with the phenomenon of unemployment are:

- Strengthen university governance – there is an urgent need for southern Mediterranean countries to guarantee more institutional autonomy to their universities (financial, academic, etc.) To do this we need to strengthen cooperation between relevant ministries and university leaders in a more integrated approach. This will build capacity for HEI not only in teaching but in innovation and research.
- Enhance quality assurance concept – this needs to be strengthened and promoted in all dimensions of university life. It makes universities more competitive and promotes the social role of the university in their country.
- Internationalisation of HEI – Erasmus+ is the most important scheme for universities in this field. This ought to be highlighted in Mediterranean area, further promoting education for sustainable development.

To conclude, Silvia Marchionne advertised the launch of the fourth edition of a start-up student competition, which gives students from the employability network the opportunity to pitch their own business idea.

There followed a short **Question and Answer** session, where **Giuseppe Provenzano** asked each of the speakers to give their ideas for future steps in the UBC in the Mediterranean region, in the context of recovery and resilience.

For **Omar Amawi**, effective partnerships and international cooperation are key. We have to adopt a more integrated approach to solving problems, building of bridges between academic and business communities, in order to find sustainable solutions to socio-economic and environmental problems.

Damiano Petruzzella opted to focus more on marginalised and rural areas, where there are often many young people facing issues such as desertification and needing

more support socio-economically. This is not just a problem for southern Mediterranean countries, but for other European countries as well.

The idea proposed by **Jihen Boutiba** was a multistakeholder approach and to try and encourage youth to get involved in the dialogues of their own countries, namely what reforms they think are needed in the context of connecting the labour market to universities. Internships are also very important for students to understand the realities of the job market in their own region and could help to avoid this brain drain of southern Mediterranean countries, as they may discover opportunities in their home countries instead. There also needs to be a platform that brings all the stakeholders to the same table.

Silvia Marchionne agreed with all of the above. As a further discussion point, she highlighted how we need to look beyond North-South cooperation. South-South cooperation is a very important dimension that needs to be promoted and reinforced. We should share experiences and good practices from countries from the same region. When considering the impact of a project, we should also start to look at that impact at the regional level, rather than just the immediate local effect.

To conclude this session **Giuseppe Provenzano** thanked everyone for bringing their qualified perspectives to this conversation and thank you to the organisers as well.

3.4. Pitch session: Sustainability in action

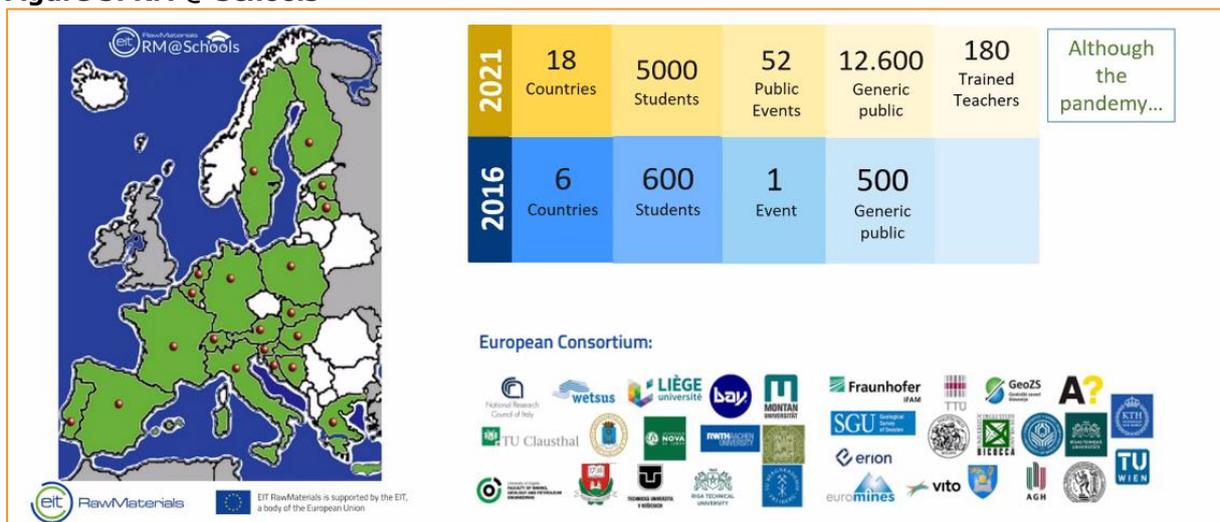
The moderator, **Raffaele Trapasso, OECD**, introduced the session and speakers which would highlight how sustainability, greening, inclusion themes are entering into the Italian education system through the presentation of different projects.

The first speaker **Armida Torreggiani, Researcher at National Research Council of Italy and Coordinator of RM@Schools⁷⁵**, presented her work, emphasising the role that schools will have in introducing sustainability through a process of innovation, and how they are overcoming challenges linked to sustainability, mainly through:

- Better understanding of science and technology.
- Better equipping future actors with the necessary knowledge.
- Enhancing the educational process.

RM@Schools (Figure 5) was funded thanks to EIT RawMaterials (it is the flagship programme in the Wider Society Learning segment of EIT RawMaterials). It aims to make European challenges and science education attractive for youngsters, involving 27 partners from 18 countries, and a strategic consortium made up of schools, companies, and universities and research institutes. Together they work on a large range of actions aiming to promote sustainability and circular economy strategies, and to raise awareness of the importance of raw materials.

Figure 5: RM @ Schools



Source: Speaker PowerPoint Presentation 2022

Young people are becoming active participants in society before they are even out of school nowadays and the role of schools has changed as a result. They are no longer

⁷⁵ <https://rmschools.isof.cnr.it/>

just places to absorb information, rather students need to be engaging with what they are learning from an early age.

RM@Schools proposes active learning by involving students in lab experiments and comms activities. This can be done by transforming classes into labs and use the educational toolkits developed by the consortium: explorational mining, recycling, substitution and the circular economy. Students are also sometimes taken to a research institute or university to see how the experiments work in real life and what they can achieve, e.g. transforming waste into a new resource.

Another tool used is the game Eco-CEO⁷⁶, to build the most successful company on the basis of circular economy principles. There are also RM Ambassadors who introduce these topics to younger students via lessons, lab experiments, study visits to a company and they then become multipliers of this knowledge.

The annual European RM@Schools conference is also a chance for students to explain what they have achieved during the project. In order to empower teachers on these topics as well, there are train the trainer programmes. The first international teachers' workshop took place in Berlin in March 2019. To conclude her session Armida Torreggiani played a video to show the project in action⁷⁷.

Marco Bersani, Co-founder of Circular Materials, a two-year old company, presented the work of the company, and the importance of sustainability and continued work with academic institutions to achieve these goals.

The purpose of Circular Materials is to recover critical and precious metals which are often lost in the production cycle. In fact, around 20% of metals extracted from mines to be used in products end up as waste in a landfill. Once they are in a landfill there is a high risk that they will leak into the environment and contaminate some water body. There is a massive economic and environmental cost associated with this process.

There is a strong business commitment as a service provider, but they also need to interact with academic institutions to gain:

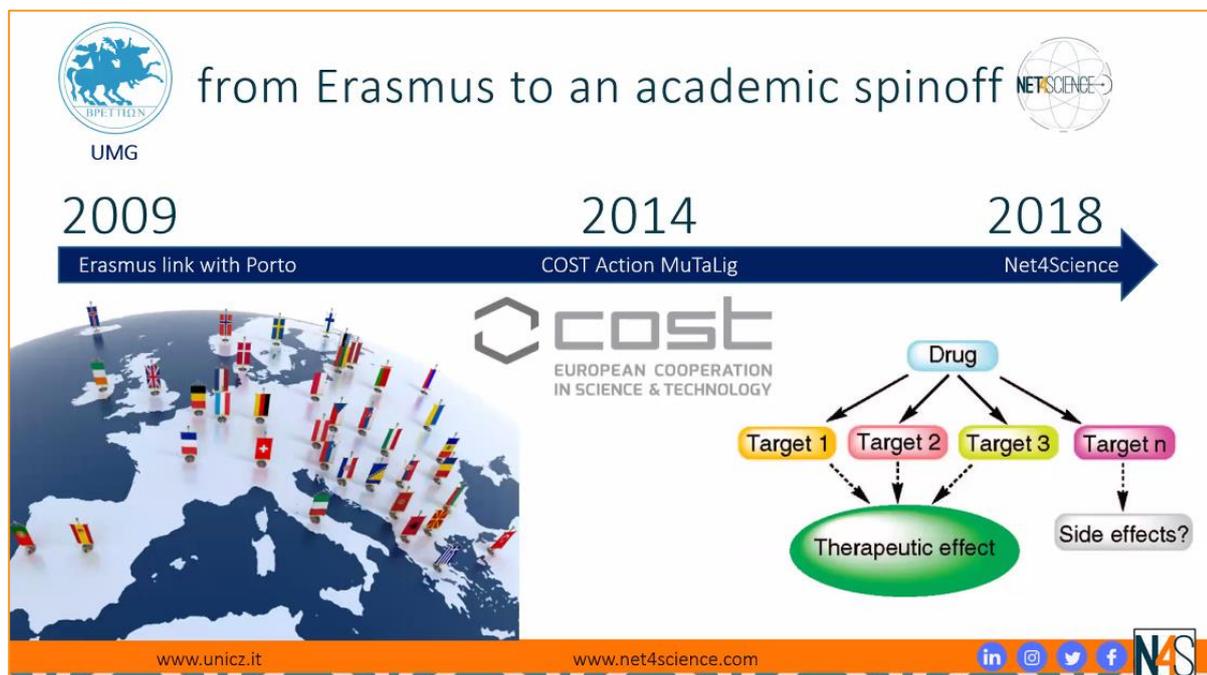
- Access to competence and tools.
- Access to talent; build talent in house.
- Insight into incumbent technologies.

Circular Materials works with PhD students and trains them up for the long term as the knowledge needed is highly specialised. The company also needs access to specialised equipment that can only be found in academic institutions and labs, which is why a strong partnership with universities is important.

Stefano Alcaro, academic entrepreneur at Net4Sciences, noted that Net4Sciences is a multipurpose drugs company that started in 2009 and is based on a network for scientific research activities, not just for the mobility of students. This led to its development as a cost action application in 2014, until finally it became an "academic spinoff" in 2018 (Figure 6).

⁷⁶ <https://ecoceo.eu>

⁷⁷ <https://www.youtube.com/watch?v=AIfxzslC1fc>

Figure 6: From Erasmus to an academic spinoff

Source: Speaker PowerPoint Presentation 2022

The motivation to create Net4Science was the idea of the possibility of finding one chemical compound to address different targets, as a way of speeding up the drug-repurposing process. It links research, agri-food nutraceutical and the training of new experts in the field. The network offers services to pharmabio-tech and agri-food/nutraceutical companies interested to speed up the drug discovery process or to clarify the mechanism of action of their bioactive compounds.

The team is made up of young researchers, and they have been trained in very specific sectors. Net4Science is particularly proud of the gender balanced nature of their team.

In the last year, Net4Science collaborated with CRISEA, in the field of agriculture in Calabria. There were mutual benefits for the 270 actors in scientific and training purposes. I showed students there what they can do in their home country and Europe in the agricultural business. Other activities include peer reviewed publications, international meetings, mobility of PhD students, a COVID project, as well as a dissemination event in collaboration with the Ministry of Education.

Lastly, participants heard from **Giuseppe Lanfranchi**, entrepreneur of the start-up food delivery service MyLillo and a PhD candidate at the University of Messina. He is the co-founder of MyLillo, a platform for delivery of food in Sicily aiming at reducing food waste and how this experience has influenced his PhD research.

MyLillo was launched in July 2019, and it operates in the city of Messina, the municipality of Milazzo and Barcellona Pozzo di Gotto. MyLillo represents a new model for food delivering which places the customer at the centre of the stage, creating an innovative customer experience. The company aims to establish trust with both customers and restaurants and to take care of the planet.

The company has delivered more than 300,000 products, has 80 riders, +200 restaurants, +20,000 customers, and +80,000 deliveries. Due to almost 50% of produce used in restaurants being wasted at the end of each day, MyLillo launched a special project to try and counter this. "Cascitta", a food box that can be purchased after 20.45h.

The next sustainable project that MyLillo is working on is to become completely electric by 2025, i.e., to deliver products using only electric vehicles, however this will be difficult to implement due to economic constraints.

This interest in green innovation resulted in Giuseppe undertaking a PhD in sustainable development funded by the National Operational Programme. A key area of his research is the sustainability vs. profitability link in a new business model that will encourage more green innovation in SMEs. He will interview top managers and employees from SMEs about best practices on this topic, as there is often a dissonance between adopting new practices that company values.

Internal policies have to reflect policy-maker decisions about green innovation; therefore, companies have to adopt new green values and multiply that effect as well. We must think green to be green.

Following on from the presentations, the moderator **Raffaele Trapasso** asked the panellists some specific questions linked to their work:

What kind of management innovations are needed to achieve sustainability and how can research be used to do this?

Marco Bersani: It depends. Research is needed to come up with ideas and solutions to provide new perspectives to management. We cannot always be pushing the same agenda. A recent phenomenon is that people are ready to pay more to become more sustainable. Greenwashing unfortunately is rife, companies have to look sustainable rather than actually be sustainable and this shows that we cannot force this change in management.

What is the special dimension/ecosystem feedback from RM@Schools?

Armida Torreggiani: Important to give value to the things our local areas can offer. Break borders of discipline, by using all the entrepreneurial skills when developing a project. The next generation will have to face problems that are very complex and need to grow up with a larger vision.

What is your experience of the traineeship impact and adopting entrepreneurial behaviour in an academic context?

Stefano Alcaro: As a coordinator of PhD course as well, he speaks from the experience of introducing a module this year related to education of students in the field of entrepreneurship. Most of them will not have a future in academia, but maybe they could be a very good entrepreneur. He himself is experiencing something new with the Net4Science as a professor rather than a businessman and he also needs to learn how to make it successful. Following an incubation process is part of the job of

the spinoff, and to help us to understand how to make a business. He believes we need to invest more in this.

3.5. Closing remarks

Pasquale D'Alessandro, closed the event thanking speakers and participants for sharing the projects and good practices during the two-day event.

The thematic workshops covered interesting topics that will be interesting for the next phase of the UBC. In addition to the Recovery and Resilience fund, the Cohesion fund will support industrial digital research, and development of skills, especially needed in the Mediterranean areas. On the human capital side, more resources to fight brain drain (emigration of young researchers) is needed. In general, investment promoted by cohesion policy, should continue to support and promote UBC based on more resilience and sustainability practices.

The research and innovation strategy supported by the next funding period intends to achieve targets for a climate neutral economy, supported by the Green Deal, and the transition programme, which will need to boost digital connectivity of SMEs, and businesses.

Sara Rossi closed the meeting by thanking the speakers and the technical team that made it possible to have a hybrid two-day Thematic UBForum in Italy.

To join the University-Business Cooperation (UBC) network, join the Microsoft Teams Group, stay updated and get involved in future activities of the UBC network, please contact the European Commission:

Mr Paul Tzimas (DG EAC, Unit C1, Innovation and EIT),
Paul.Tzimas@ec.europa.eu

4.0. Annex: UBForum Agenda

THEMATIC UNIVERSITY-BUSINESS FORUM AND NATIONAL OPERATIONAL PROGRAMME
"RESEARCH AND INNOVATION" 2014 - 2020 ANNUAL EVENT



UNIVERSITY-BUSINESS COLLABORATION IN A TIME OF RECOVERY AND RESILIENCE

Rome, February 22-23, 2022



FEBRUARY 22, 2022

9:30 OPENING: INSTITUTIONAL SPEECHES

Sara Rossi - Introduction

Maria Cristina Messa, Minister of University and Research

Nasser Kamel, Secretary General of the Union for the Mediterranean

Claudio Pettinari, Rector of University of Camerino

Board member of the Conference of Italian University Rectors

Themis Christophidou, Director General DG EAC, European Commission

10:30 PLENARY SESSION

**UNIVERSITY BUSINESS COOPERATION:
CHALLENGES AND OPPORTUNITIES FOR RECOVERY AND RESILIENCE**

Alessio Cavicchi - Introduction

**10:30-11:00 FOCUS ON THE ITALIAN RRP AND CONNECTIONS WITH NOP RESEARCH
AND INNOVATION 2014-2020:**

PRESENTATION GIVEN BY MINISTRY OF UNIVERSITY AND RESEARCH

Sara Rossi, Director of the "National Operational Programme on Research
and Innovation" Managing Authority

Antonio di Donato, Director of the "National Recovery and Resilience
Plan - Education and Research" Managing Authority

11:00-11:45 PRESENTATIONS GIVEN BY OTHER EU MEMBER STATES REPRESENTATIVES

Duša Marjetič, Head of Higher Education Division, Ministry of Education
Science and Sport, Slovenia

Nuno Gomes Ferreira, Advisor of the Minister of Science Technology
and Higher Education, Portugal

Spanish Government



FEBRUARY 22, 2022

11:45 - 12:15 THE EUROPEAN COMMISSION POINT OF VIEW

Pasquale D'Alessandro, DG Regional and Urban Policy

Luciano Conte, DG Employment, Social Affairs and Inclusion

Monika Weymann, DG Education, Youth, Sport and Culture

12:15 - 12:45 FOCUS ON MEDITERRANEAN

Itaf Ben Abdallah, Union for the Mediterranean - Senior Advisor
for Higher Education and Research

Angelo Riccaboni, PRIMA Foundation - Chair

12:45 CONCLUSIONS

Sara Rossi

14:30-18:00 THEMATIC SESSIONS

Each session will contain two moderated workshops: one from 14:30 - 16:00 and one from 16:30 - 18:00 with a break in between.



THEMATIC SESSION 1

14:30 -16:00 WORKSHOP 1.1 - FROM RESEARCH TO BUSINESS

This workshop aims at presenting best practices on the implementation of the "knowledge Triangle" (Higher Education, Research and Business Collaboration) from all over Europe. Among the experiences presented: the initiatives of the European Institute of Innovation and Technology, the story of one of the Marie Skłodowska-Curie Actions project manager who won the Prize for Women Innovators 2020, the experience of two projects funded by the Italian National Operational Programme.

Moderator **Gabriella Colucci**

Speakers **Didier Zimmermann**, Education & Innovation Director EIT Raw Materials
Maria Fatima Lucas, Co-founder and CEO of Zymvol
Gerarda Fattoruso, Università del Sannio, Phd project Funded by the National Operational Programme
Gianluigi Franci, Università di Salerno, Coordinator of projects funded by the National Operational Programme
Alessandro Sannino, Università del Salento, Coordinator of GELESIS, project funded by the National Operational Programme

16:30-18:00 WORKSHOP 1.2 - SUPPORTING INNOVATION IN TEACHING AND LEARNING

How important is supporting Innovation in Teaching and Learning and what is the role of university – business cooperation in developing innovative methods to teach and help students? The objective of this workshop is to present the experiences of HEIs and business representatives, experts and analysts from all over the EU.

Moderator **Rui Coutinho**, Executive Director of the Innovation Ecosystem, Nova School of Business and Economics (Lisbon)

Speakers **Klaus Sailer**, Professor in Entrepreneurship at Munich University of Applied Sciences and CEO of the Strascheg Center for Entrepreneurship (SCE)
Andrea Rosalinde Hofer, Policy Analyst and Project Leader, Labour Market Relevance and Outcomes Partnership Initiative, OECD
Vanessa Tierney, CEO Abodoo
Paola Dal Zovo, Santer Reply SpA, Funded by the National Operational Programme
Agostino Marengo, Professor at the University of Foggia and Founder of OSEL University Spin Off Company, Hosting institution of PhD students, funded by the National Operational Programme



THEMATIC SESSION 2

14:30-16:00 WORKSHOP 2.1 - SUPPORTING THE GREEN TRANSITION

According to the European Strategy for Universities (EC 2022): "the EU will only meet its ambitions on equipping more young people and lifelong learners with digital skills and skills for the green transition, or developing green solutions through technological and social innovation, if the higher education sector pulls its weight".

This panel of experts from HEIs, EIT and relevant NOP projects will present existing initiatives that support Green Transition via university-business cooperation.

Moderator **Luca Basile**

Speakers **Alessandro Leonardi**, Managing Director and co-founder of ETIFOR | Valuing Nature, a spin-off of Padova University, coordinator of the Erasmus + Knowledge Alliance "Ecostar"

Luise Heidenreich, Co-Head of Education and Learning at EIT Climate-KIC

Franco Coren, INOGS IPANEMA project

Funded by the National Operational Programme

Letizia Magaldi, Executive Vicepresident Magaldi

Foak STEM project - Funded by the National Operational Programme

16:30-18:00 WORKSHOP 2.2 - SUPPORTING THE DIGITAL TRANSITION

According to the European Commission, digital solutions that put people first have the potential to open up new opportunities for businesses, encourage the development of trustworthy technology, foster an open and democratic society, enable a vibrant and sustainable economy, help fight climate change and achieve the green transition.

This workshop will outline some initiatives and experiences carried out in different fields and supported by European Funds.

Moderator **Paola Inverardi**

Speakers **Marika Huber**, project manager of the Erasmus+ Knowledge Alliance "DIFME"

Katharina Engel, Senior Desk Officer

Digital Internationalisation & European - Higher Education Policy at German Academic Exchange Service (DAAD), European Digital Education Hub

Giovanni Zappatore, CEO BionIT Labs - Adam's Hand project - funded by the National Operational Programme

Pietro Ferraro, CNR - SIRIMAP project - funded by the National Operational Programme



FEBRUARY 22, 2022

THEMATIC SESSION 3

14:30-16:00 **WORKSHOP 3.1 - THE ROLE OF HIGHER EDUCATION INSTITUTIONS FOR SMART SPECIALISATION STRATEGIES AND REGIONAL DEVELOPMENT**

HEIs can be integrated into Smart Specialisation Strategy policy in order to spend European Structural and Investment Funds more effectively. This workshop will reflect on how to strengthen the role of HEIs within the 'quadruple helix' of innovation through a collaboration of government, academia, business and civil society.

Moderator **Alessio Cavicchi**

Speakers **John Edwards**, Secretary General of EURASHE and coordinator of the Erasmus+ Forward Looking Cooperation Project UASIMAP

Bárbara Coelho Gabriel, Deputy-Director for Internationalisation and Cooperation at Dept. Mechanical Engineering - University of Aveiro

Krzysztof Klincewicz, Warsaw University

Adolfo Morais, Basque Government Regional Higher Education Deputy Minister

Alessandro Zona, Professor of Structural Engineering at the University of Camerino, SAFE Project - project funded by the National Operational Programme

16:30-18:00 **WORKSHOP 3.2: INNOVATION IN AGRIBUSINESS**

Bringing together multiple actors such as farmers, researchers, advisers, businesses, environmental groups, consumer interest groups or other NGOs is crucial to advance innovation in the agricultural and forestry sectors. This workshop will address the role of multi-actor approaches to enhance digital transition in food supply chains, in sustainable food systems and in rural areas.

Moderator **Danilo Porro**

Speakers **Maarten van der Kamp**, Director of Education at EIT Food

Paola Pittia, University of Teramo, project coordinator of the Erasmus+ Knowledge alliance "AskFood"

Anastasia Ktenioudaki, researcher at the University College of Dublin

Gianluca Brunori, Professor of Food Policy, University of Pisa (DESIRA project – Horizon 2020)

Beniamino Gioli, National Research Center of Italy - E-CROPS - project funded by the National Operational Programme



FEBRUARY 23, 2022

DAY 2 - FEBRUARY 23, 2022

9:30 OPENING

Sara Rossi, Director of the "National Operational Programme on Research and Innovation" Managing Authority

Luca Perego, Head of Unit for Innovation and EIT at DG EAC, European Commission

Francesco Cupertino, Rector of Polytechnic of Bari - CRUI (Conference of Italian University Rectors) delegate for industrial relations

10:00-10:30 WRAP UP - PRESENTATION AND DISCUSSION OF CONCLUSIONS OF PARALLEL SESSIONS: PHD STUDENTS AS RAPORTEURS

10:30-12:00 PLENARY SESSION: UNIVERSITY-BUSINESS COLLABORATION IN THE MEDITERRANEAN

Moderator **Giuseppe Provenzano**, UFM Secretariat Project manager Higher Education and Research

Speakers **Omar Amawi**, Deputy Director PRIMA Foundation

Begoña Pérez Villarreal, Director CLC South - EIT Food

Damiano Petruzzella, Project manager CIHEAM

Jihen Boutiba, Director general BUSINESS MED

Silvia Marchionne, Project manager UNIMED

12:00-13:30 PITCH SESSION: SUSTAINABILITY IN ACTION

Moderator Raffaele Trapasso, OECD

Speakers **Marco Bersani** for Circular Materials

Armida Torreggiani for RM@Schools

Stefano Alcaro, Net4Science, Università Magna Grecia di Catanzaro

Start-ups engaged in sustainable development and innovation companies funded directly and indirectly – as a spillover of other funded initiatives – by the NOP R&I 2014-2020

13:30 CONCLUSIONS

Sara Rossi

