A Handbook for Academia, Industry and Policymakers

REINFORCING THE **INNOVATION - EMPLOYABILITY** NEXUS IN THE MEDITERRANEAN

Union for the Mediterranean
Union pour la Méditerranée
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Disclaimer

This publication collects cases studies of types and practices of Innovation, Employability and Career Development in the Mediterranean region based on existing and publicly available information and the engagement from regional stakeholders. The views and suggestions set out in this study do not necessarily reflect the official point of view of the organisations, actors and donors involved.

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REINFORCING THE **INNOVATION - EMPLOYABILITY** NEXUS IN THE MEDITERRANEAN

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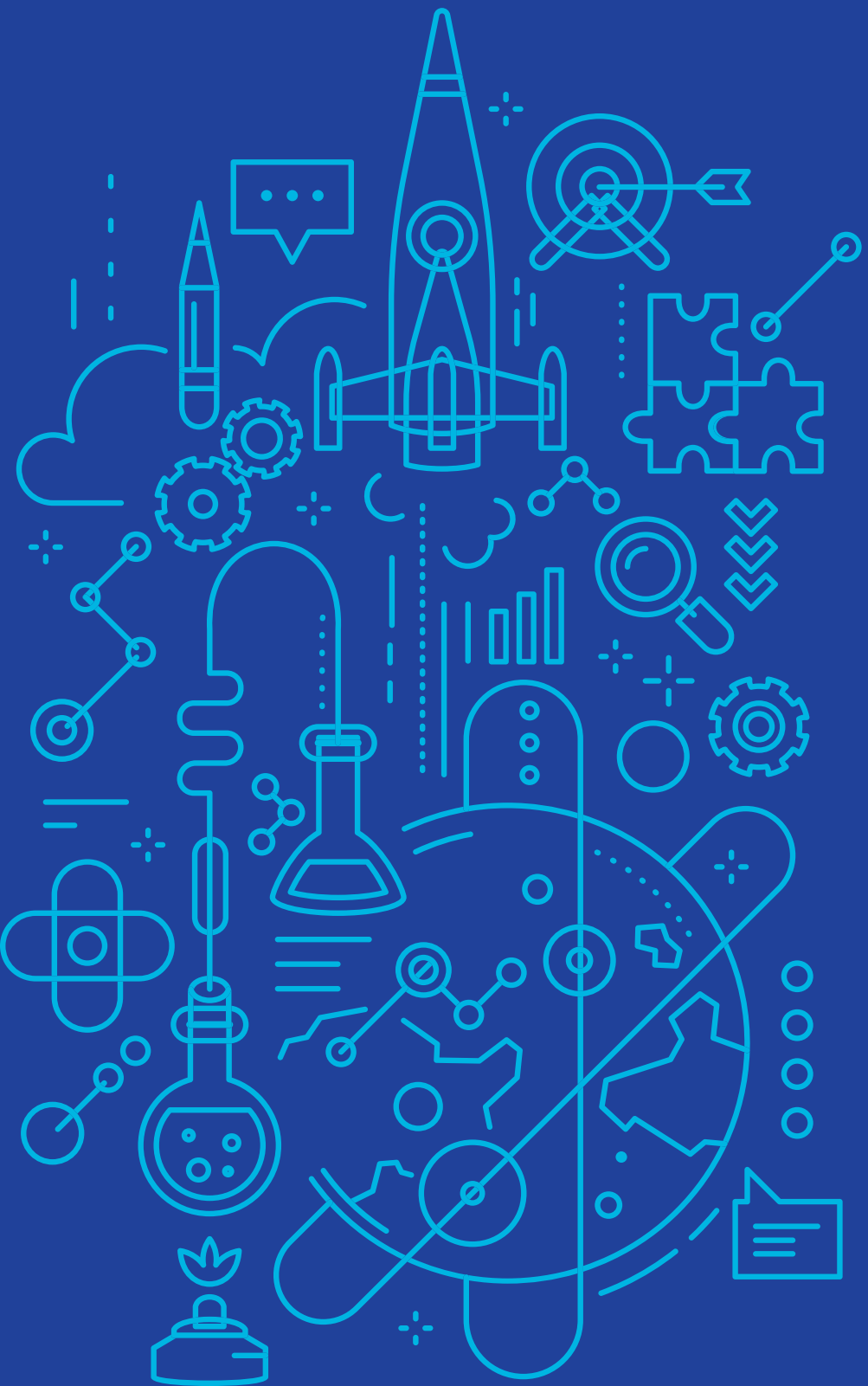


Abbreviations

	Symbol denoting glossary entry
AFEM	Association des femmes chefs d'enterprise du Maroc
BSO	Business Support Organisation
BUSINESSMED	Union of Mediterranean Confederations of Enterprises
Cifre	Conventions Industrielles de Formation par la Recherche
CIHEAM	Centre for Advanced Mediterranean Agronomic Studies
CNR	Consiglio Nazionale delle Ricerche - National Research Council (Italy)
Creact4Med	CReative Entrepreneurs ACTing FOR the future MEDiterranean
CRUI	Conferenza dei Rettori delle Università italiane - Italian Rectors' Conference
CV	Curriculum vitae
e.g.	Latin phrase exempli gratia, meaning "for example"
EACEA	Education, Audiovisual and Culture Executive Agency (European Union)
EBRD	European Bank for Reconstruction and Development
EBSOMED	Enhancing Business Support Organisations and Business Networks in the Southern Neighbourhood

EC	European Commission
EDI	Equity, divisity and inclusion
EJD	European Joint Doctorates
EMEA	Euro-Mediterranean Economics Association
EMJMD	Erasmus Mundus Joint Master's Degree
EMNES	Euro-Mediterranean Network for Economic Studies
EMUNI	Euro-Mediterranean University
ENP	European Neighbourhood Policy
EU	European Union
GARCIA	Combating Career Instability and Asymmetries
GDP	Gross Domestic Product
GNP	Gross National Product
H2020	Horizon 2020
HCST	National Higher Council for Science and Technology (Jordan)
HE	Higher Education
HEI	Higher Education Institution
HOMERe	High Opportunity in the Mediterranean for the Recruitment of Executives of Excellence
i.e.	Abbreviation for the Latin phrase id est, meaning "that is"
ICARDA	International Center for Agricultural Research in the Dry Areas
IFAD	International Fund for Agricultural Development
ILO	International Labour Organization
IP	Intellectual property
IPR	Intellectual property rights
ISM	Intersectoral mobility scheme
ISSF	Innovative Start-ups and SMEs Fund (Jordan)
JOVITAL	Jordan opportunity for virtual innovative teaching and learning
KA	Key Action
MED MSME	Micro, small and medium-sized enterprise in the Mediterranean
Med NC	Mediterranean New Chance
Med4Jobs	Mediterranean Initiative for Jobs
MENA	Middle East and North Africa
MInDE	Master of I Level in Digital Innovation & Entrepreneurship
MoDEE	Ministry for Digital Economy and Entrepreneurship (Jordan)
MOOC	Massive open online course
NEET	Young person not in education, employment, or training
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
OEP	Open Educational Practices
OER	Open Educational Resources
p.	Page
PRIMA	Partnership for Research and Innovation in the Mediterranean Area
R&D	Research and Development
RESCUE	Refugees Education Support in MENA Countries
SDG	Sustainable Development Goal
SDSN	United Nations Sustainable Development Solutions Network
SEMED	Start-up Europe Mediterranean
SIP	Swedish Strategic Innovation Programmes
SIVP	Stage d'initiation à la vie professionnelle
SMEs	Small and medium enterprises
SWG	Regional Rural Development Standing Working Group of South Eastern Europe
UEFM	Université Euro-Méditerranéenne de Fès
UfM	Union for the Mediterranean
ULISSE	Understanding, Learning and Improving Soft Skills for Employability
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIMED	Mediterranean Universities Union

Foreword

Nasser Kamel
Secretary General
Union for the Mediterranean

Universities and research centres cannot be underestimated as powerful drivers of growth. They act as nerve centres, playing home to the bold, bright and disruptive sparks of innovation our society thrives on. Fortunately, in the Mediterranean, we hold in abundance perhaps the single most important ingredient of any university or research centre: a young, highly educated population.

We must seek to exploit this natural resource to its fullest, allowing our young people to pursue their ambitions in higher education and beyond. The need for a quick and strong recovery in the face of the damage caused by the COVID-19 pandemic further highlights the case for investing as much as we can in research centres, where innovation is nurtured and encouraged, where ideas are made reality, and where even life-saving vaccines can be developed at record pace.

But there is more than one active agent in the process of seeing a healthy higher education and research sector flourish. The Euro-Mediterranean region, with its 42 Member states boasting more than thirty-three million students, knows this all too well and is unfortunately no stranger to a barrier to career development and employment that is all too common: the gap between academia and business.

The lack of communication between these two interdependent worlds, if left unchecked, can hamper employment and job creation. When young people, graduates and researchers especially, are unable to find decent job opportunities, be it in their countries or the wider region in general, they risk going into underemployment or not finding work at all. In this context, moving to another country offering more opportunities becomes a natural choice, therefore contributing to the brain drain.

A concerted effort to step-up dialogue on innovation and employability is therefore crucial to unlocking our region's true potential. Luckily, plenty of excellent best practices and initiatives already exist, and many committed stakeholders have been tackling the issue for decades. This accumulated knowledge underlines how paramount supporting Mediterranean youth is, especially young women.

The region's international institutions, universities and university networks, projects and programmes offer extensive experience on the key elements where work is needed, including internships, industrial doctorates and university-business dialogue. We have the knowhow to move forward.

At the Union for the Mediterranean, we aim to support all those stakeholders involved who wish to make their voice heard as we bring the worlds of academia and work closer together, by mapping and detailing examples and initiatives of best practice to be replicated, connected and grown.

With the involvement of all concerned stakeholders, be it from higher education institutions, companies, ministries, international organisations, intermediary institutions, or civil society associations, we can reinforce this essential nexus for growth between innovation and employability, contribute even further towards the sustainable development of our region through higher education and research.

Executive Summary

Even though there are substantial differences in political, social, and economic conditions across the Mediterranean region, it is safe to say that with 25% youth unemployment, the un- and underemployment of university graduates in the Mediterranean region has been a major challenge. In the Southern and Eastern Mediterranean, where 40% of the population is under the age of 25, youth unemployment has been among the highest in the world for more than two decades. One reason for this is the skills mismatch, according to 32% of enterprises. And, unlike in other regions, **unemployment is highest amongst those with tertiary education (as opposed to those without) reaching an average of 30% across the region.** Moreover, there is a strong gender dimension. While young women have made remarkable progress in educational attainment, their respective unemployment rates are almost double those of young men.

A wicked problem

In fact, the youth un- and underemployment in the region has all the characteristics of a so-called **'wicked problem' – it is socially complex, suffers from many interdependencies and multiple causes, has no single solution, and is perceived differently by different stakeholders.** Wicked problems can be best tackled by taking a collaborative approach, engaging all stakeholders to create a common vision and narrative, and develop innovative strategies. In this context, the Triple Helix of Innovation offers an optimal framework for strengthening collaborative relationships between academia, industry, and government by co-creating a connective tissue, or Triple Helix, that intertwines common interests, values, strategies, investments, and narratives. The three spheres become a new motor of innovation and thus, employability.

Renewed call for action

The efforts to address the youth unemployment challenge in the Mediterranean have been considerable. There is a wide variety of initiatives and best practices involving academia, policymakers, industry, and the third sector at the macro, meso and micro level. However, the numerous initiatives and activities to date have not been able to produce the desired positive impact. That is why it is important to **renew the call to action: policymakers, industry, academia and civil society need to redouble their efforts** to address the challenge by collaborating across the different sectors and going beyond the single course of action.

In the quest for increased **connectivity between academia, industry and government to power innovation and employability, higher education institutions and research centres are seen as key drivers of change,** ideally suited to 'connect the dots' because they are impartial, and driven by curiosity and long-term perspectives. In order to deliver on these expectations, universities and research institutes have to be highly responsive, adaptable, strategically directed, autonomously governed, and densely interlinked with regional partners as well as international networks. It is

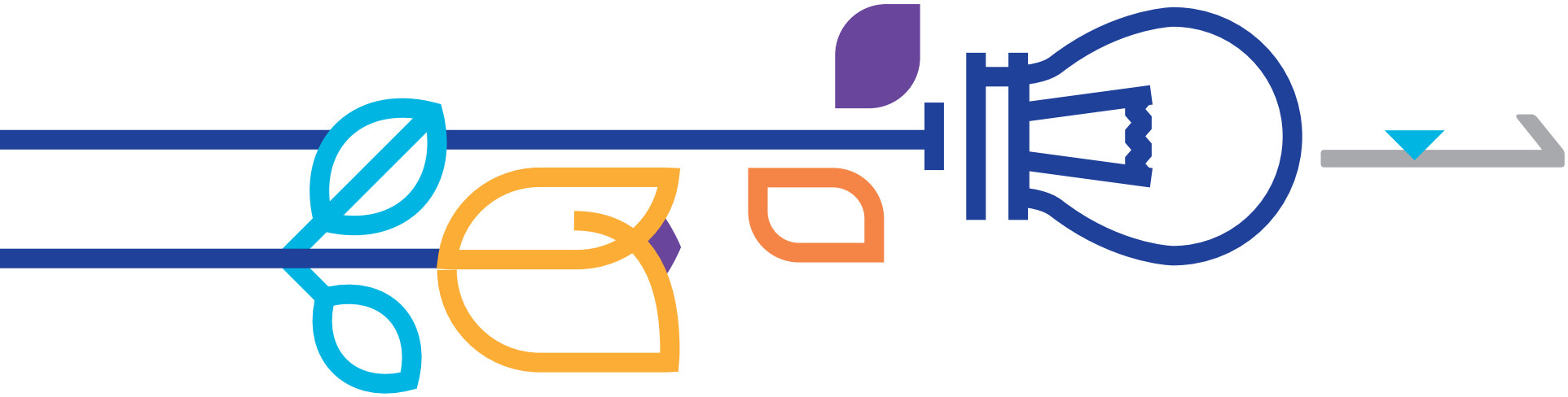
therefore key to reflect on how to support them best and through which tools. Industry can contribute through collaborative research, offering internship opportunities and participating in curriculum development. However, policymakers also have an important role to play in improving the regulatory environment and creating incentives for both academia and industry to facilitate collaborative processes, on the supply side through **producing employable graduates and on the demand side, through innovations and start-ups, which are a way to create new jobs.**

UfM initiative

The Union for the Mediterranean, as part of its activities on Higher Education and Research, has engaged in an initiative **'Reinforcing the innovation-employability nexus in the Mediterranean'** targeting universities, research centres, policymakers, industry, and intermediary institutions, to collaborate in addressing unemployment of highly qualified graduates. This Handbook is part of this initiative and the result of a consultatory process bringing together actors from all spheres to discuss, assess and share experiences and best practices around strengthening innovation and improving the employability of graduates. The publication analyses a **selection of best practices available to join or replicate, and possible ways forward in strengthening interconnections between academy, industry, and policymakers.** While not exhaustive, the mapping exercise aims to strengthen the dialogue for innovating the economy and employing youth, especially young women, and identifies paths that can contribute to reinforcing career opportunities in the region.

Themes of the Handbook

There is no single solutiona. Any reflection on reinforcing career opportunities for Mediterranean students and researchers needs to be taken with a partnership approach and openness to dialogue and innovation. This is how the themes of the Handbook emerged – through the data analysis of (a) **qualitative and quantitative input from 35 organisations around the Mediterranean** including universities, research institutions, innovation centres, ministries of education as well as representatives from the European Commission and the OECD; (b) the mapping of **146 programmes. Initiatives and best practices;** and a **literature review of 1,350 publications.** The steering committee chose to focus on a total of eleven themes ranging from Skills (Chapter 3), Teaching & Learning (Chapter 4), Collaborative Doctorates (Chapter 5), International Mobility (Chapter 6) and Internships (Chapter 7) to Career Services (Chapter 8), Knowledge Exchange (Chapter 9), Partnerships for Innovation (Chapter 10) and Digital Innovation (Chapter 11) to Capacity Development inside Higher Education Institutions (Chapter 12) and Equity, Diversity & Inclusion (Chapter 13).



INTRODUCTION/

The Union of the Mediterranean is an intergovernmental Euro-Mediterranean organisation with 42 members states comprising the 27 European Union member countries and 15 countries of Southern and Eastern Mediterranean.
Figure 1

UfM member countries

Syria suspended its UfM membership in 2011.
Libya has observer status.

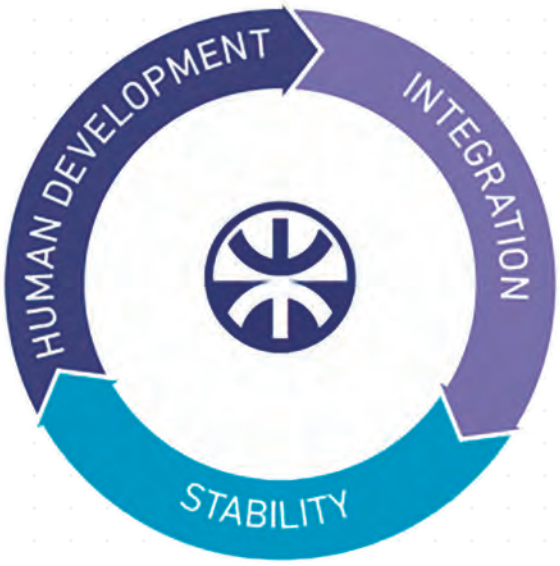
UfM non-member countries

About UfM

Launched in 2008, the Union for the Mediterranean (UfM) is an intergovernmental Euro-Mediterranean organisation that brings together the 27 countries of the EU and 15 countries of the Southern and Eastern Mediterranean. The UfM provides a forum to enhance regional cooperation, dialogue and the implementation of concrete projects and initiatives with tangible impact on its citizens, with an emphasis on young people and women as vectors of peace and stability.

As regional challenges call for regional solutions, UfM activities aim to address the main strategic objectives of the region – regional integration, development and stability – by concentrating efforts on two main pillars of action: fostering human development and promoting regional sustainable development. By joining forces with the regional and international community, and particularly with the UN System, the UfM is determined to address global challenges and achieve the Sustainable Development Goals (SDGs) in the Euro-Mediterranean region, through tangible and concrete activities and initiatives.

www.ufmsecretariat.org



The UfM focuses on fostering human development, stability, and integration in the Mediterranean

Fully exploiting the complementarities existing between all Mediterranean stakeholders is the best way for tackling the challenges our region faces, especially concerning youth unemployment.
We need to put under the spotlight the sharing of experiences and knowledge about teaching methods, adapting curricula, life-long learning, partnerships, quality assurance, qualification systems, financing schemes and educational governance.
This will allow students and researchers to learn relevant skills for rapidly changing labour markets, and to be prepared for their future careers.

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

Scope of the Handbook

This handbook targets decision makers in higher education institutions, research institutes, policymakers and the business sector as well as intermediary institutions (e.g. employer associations, innovation centres, clusters). It provides an overview of opportunities, tools, instruments, recommendations, and best-practice examples promoting the **employability** of highly trained higher education graduates and young researchers with a special focus on the employability-innovation nexus.

It raises awareness of initiatives already in place with discussion of lessons learned and concrete suggestions for how these can be adapted and implemented to generate future career prospects for their graduates and young researchers through **innovation** and employability aspects.

Higher Education Graduates

in the Southern and Eastern Mediterranean experience

higher unemployment

than those with basic education[1]

25% Youth unemployment

in the Mediterranean[1]

The handbook is part of UfM's activities in the area of Higher Education and Research contributing to the Global Development Agenda, particularly to the achievement of Sustainable Development Goals 4, 8, 9, and 17, by bringing together experts and practitioners from public authorities, social partners and civil society organisations, to discuss, assess and disseminate experience and good practices covering the priorities set forth in the side event on the employment of Mediterranean university graduates during the 4th UfM Ministerial Conference on Employment and Labour:

1. Supporting decent job creation and **entrepreneurship**
2. Mobilising public and private stakeholders to create partnerships and synergies
3. Building inclusive labour markets to integrate potentially vulnerable and disadvantaged groups
4. Investing in quality education systems and training, skills and employability in a changing world
5. Increasing regional stakeholders' visibility on existing policy instruments that can be implemented by university and research centres in order to increase employability of their students and researchers, while fostering innovation in the regions
6. Encouraging policymakers to invest into systematically collecting data about higher education graduates and their employability. Unfortunately, for several Southern and Eastern Mediterranean countries, there is little reliable recent data. Yet, data, and especially data of good quality, are essential for national governments and institutions to accurately plan, fund and evaluate development activities

The scope of the Handbook is to directly support achieving of Sustainable Development Goals 4, 8, 9, and 17

Young women
in the Southern and Eastern Mediterranean are
70-100%
more likely to be **unemployed** than **young men**[1]

32%
of enterprises
in the Southern Mediterranean consider
skill gaps
a major constraint for hiring[2]

A Wicked Problem: Unemployment of Highly Qualified Graduates

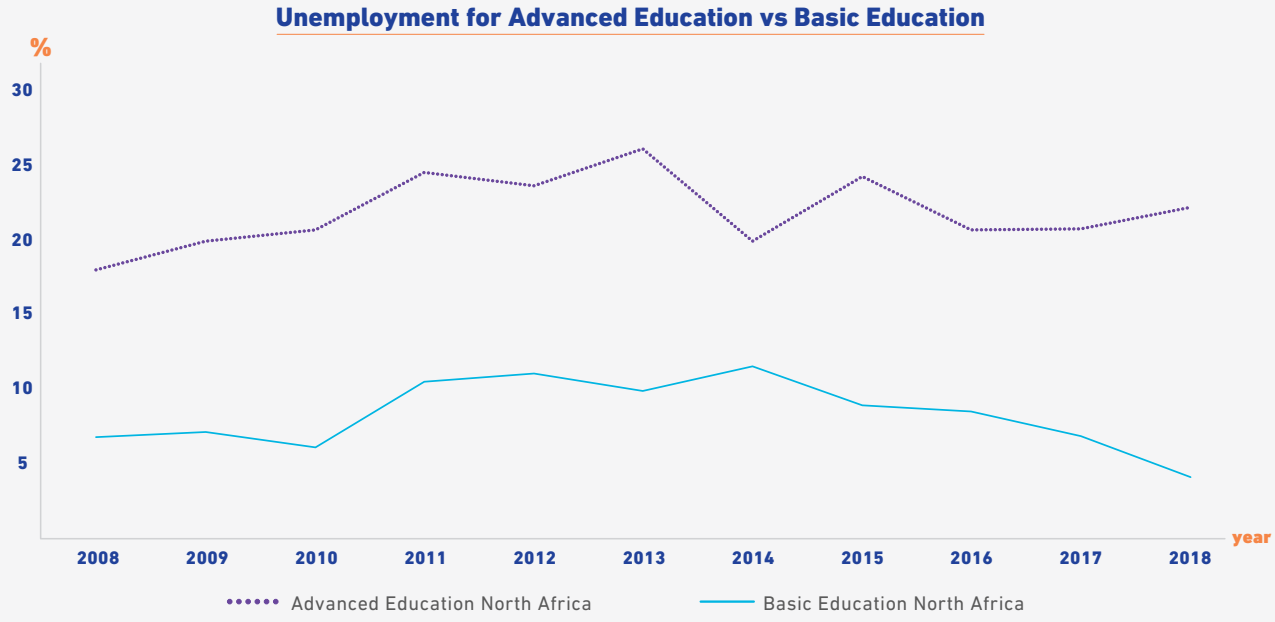
Even though there are substantial differences in political, social, and economic conditions across the Mediterranean region, it is safe to say that the un- and underemployment of university graduates has been a major challenge. Despite numerous initiatives, youth unemployment in the Southern and Eastern Mediterranean has been among the highest in the world for more than two decades. And unlike other regions, unemployment is highest amongst those with tertiary education reaching an average of 30% across the region. Moreover, there is a strong gender dimension. While young women have made remarkable progress in educational attainment, unemployment rates among young women in the region are almost double those of young men.

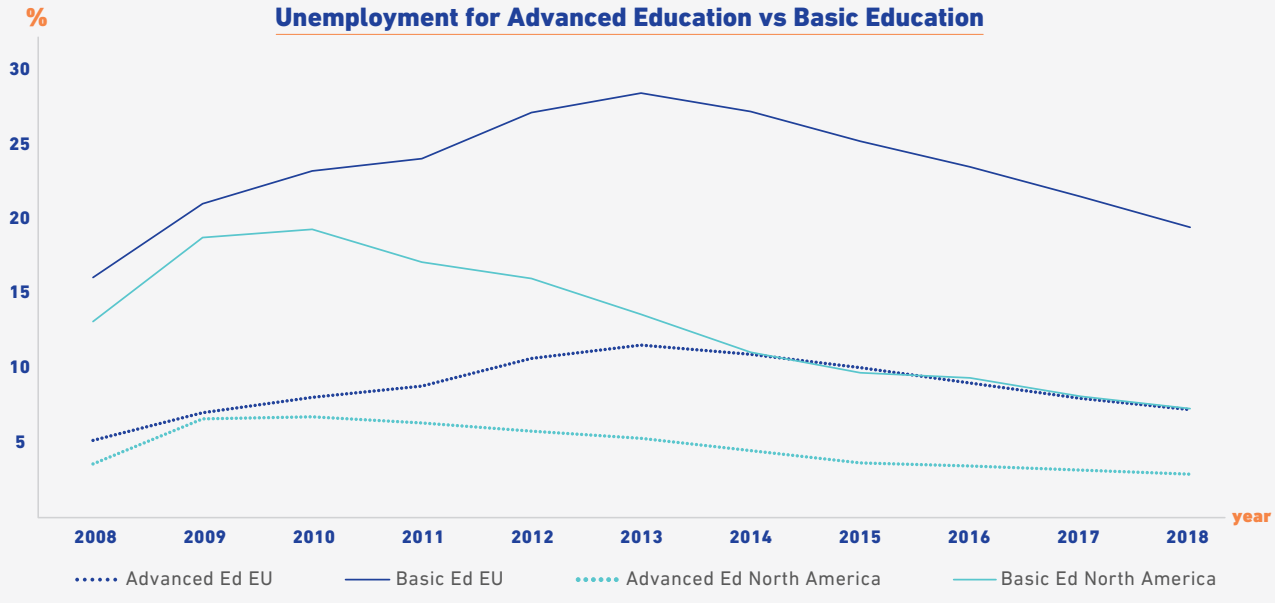
Despite numerous initiatives over the past twenty years, youth unemployment has been persistent in many areas of the region, including in the Southern and Eastern Mediterranean, where some rates are particularly high. This is especially pronounced when it comes to highly qualified university graduates and young researchers. Instead of higher levels of employment as in Europe and North America, individuals with advanced education in North Africa experience the opposite[1] as shown in Figure 2. In fact, the youth un- and **underemployment** [A] in the region has the characteristics of a so-called 'wicked problem'[3]. Wicked problems are socially complex, have many interdependencies and multiple causes that have no single solution, and are perceived by different stakeholders through contrasting views.

The numerous initiatives and activities to date have not been able to produce the desired positive impact. That is why it is important to **renew the call to action: policymakers, industry, academia and civil society need to collaborate and redouble their efforts to address the challenge, despite the previous lack of success in improving youth employment outcomes in the region.** Addressing the long-term structural impediments to regional job creation is an immense challenge charged with political, economic, and social considerations that limit the effectiveness of any single course of action. There is thus a need to address these impediments in industry, improve regulatory environments to unlock job creation potential, and incentivise academia to optimally prepare graduates for the job market and unlock innovation potential through increased collaboration with industry. To do this, it is essential to improve coordination among stakeholders, divide the problem into smaller pieces and focus on small wins that show concrete, small-scale, in-depth, and positive changes that can lead to transformative change.

Individuals with advanced education in North Africa experience higher levels of unemployment than those with basic education — this is the opposite of what Europe and North America see[1]

Figure 2





Source: World Development Indicators. The World Bank: Databank[1]

Gender dimension and "waithood"

Youth unemployment in the region will continue to rise if adequate solutions are not implemented, significantly impacting economic growth. It is also important to note that youth employment in the Southern and Eastern Mediterranean has a gender dimension. Although the number of young women attending tertiary education has increased significantly over the past five decades, this has not translated into a corresponding increase in participation in the workforce. Currently, 39% of the young women in the Southern and Eastern Mediterranean are unemployed (see Table 1). These high unemployment rates for young women are up to 90% higher than those among young men, compared to an average gender differential of 13% globally[1]. Furthermore, young graduates often must wait years before finding a job. This delayed transition into the professional world is increasingly difficult as the half-life of knowledge in today's society has been decreasing rapidly. It is estimated to be just five years[4] – for software engineers, this number is even less at 12–18 months. The delay young people experience in starting their professional life also negatively affects pathways to adulthood, including life-partnerships, homeownership, and participation in civil society. This postponement of adulthood has been coined 'waithood', reflecting the waste of potential and youthful energy that typically drives innovation.

THE GENDER GAP: RISING EDUCATIONAL ATTAINMENT, YET LOW LABOUR FORCE PARTICIPATION

Despite the reversal of the gender gap in education, labour force participation rates for women in the MENA region have remained very low, a phenomenon that has come to be known as the 'MENA paradox'. Participation in the labour force among well educated women in North Africa and the Eastern Mediterranean is constrained by adverse structural developments on the demand side such as lack of support for family leave and childcare by employers[18]. Reduced public sector employment opportunities has not been counterbalanced by an increase in jobs in the formal private sector, leading to a decrease in overall participation, and in particular, women's participation in the work force.

Unemployment rates in the Mediterranean Region compared with World and EU by sub-region and gender
Table 1

2019 Figures (World Bank ILO) [1]	Total Unemployment	Youth Unemployment	Youth-Female Unemployment	Youth-Male Unemployment
World	5%	15%	17%	15%
EU	7%	17%	17%	17%
Mediterranean Countries*	**11%**	**25%**	**31%**	**24%**
EU Mediterranean Countries	9%	21%	22%	20%
Southern and Eastern Mediterranean Countries	13%	30%	39%	27%

Source: World Development Indicators. The World Bank: Databank[1]

Demand-supply side bias in the macroeconomic context

Youth unemployment in the Mediterranean region is nearly 50%1 above the EU average and the Covid-19 crisis could potentially add to the existing challenges and leave long-lasting scars if not properly addressed. Policies and programmes addressing unemployment often focus on the supply side of the labour market, (i.e. skilled graduates)[5], however underlying reasons can be found both on the demand and the supply side[6].

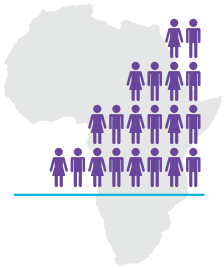
On the demand side, young graduates are limited by a sluggish economy and limited job opportunities in industry. That is why they often prefer to 'queue' for the increasingly scarce positions in the public sector as these positions provide more job security, benefits, and a relatively good salary. Formal private sector employment opportunities are rare since regional economies have yet to go through a process of structural transformation and create large scale formal private sector employment. Most of the region remains specialised in low added-value sectors and primary-commodity exports (e.g. agriculture, gas). Small and medium enterprises (SMEs) account for approximately 80% of all private sector employment in the region, representing about 40% of all jobs[7]. Promoting SME growth has therefore been identified as key for both economic growth and political stability[8]. Yet, access to financing continues to be one of the greatest challenges for the region's SMEs. Private-sector development therefore is another critical part of the solution. Access to finance, increasing IT connectivity, and reducing regulatory burdens for small businesses and support for entrepreneurs are significant enablers.

On the supply side, there have been many factors at play, two that are closely linked to higher education:

- The population increase in the region in the early 1990s and the 2000s, and the almost doubled higher education participation that has now reached 40%[1] across the Southern and Eastern Mediterranean. This trend has been driven by the view that human capital is essential for economic and social progress. However, the growth has also dramatically increased the number of job seekers competing for available jobs.
- Higher education institutions that struggle to prepare graduates with the employability skills expected by employers, in particular, by the private sector. This skills mismatch between university curricula and business requirements has been a constant issue on the policy agenda in recent years.

Demographic and social change in the Mediterranean region[1]

The population in North Africa **has doubled in** the past 20 years



40% **of the population** is under **the age of 25**

At 25%, the youth unemployment

70% more than the world average

In certain areas of the region, the labour market has significant **gender gaps**

The innovation-employability nexus

Investment in research, innovation and entrepreneurship has proven to play a significant role in economic and social development in both developed and developing countries. Academia has a pivotal role both on the supply side through producing employable graduates and the demand side, through innovations and start-ups. Innovation and entrepreneurship have been identified as another way to create jobs. However, it is important to distinguish between trade-based, no-capital, no-tech microenterprise projects (also called the 'poverty trap'[9]) and more sophisticated technology/innovation-based projects. The former are often incapable of sustainable, productive growth and can be rather counterproductive for the economy[10], whereas the latter offer far more to the economy and society in the medium to long term.

In the quest for increased connectivity between academia, industry and government to power innovation, the university has become a focal point orchestrating multi-actor innovation networks. Businesses and governments consider the research community and its members as ideally suited to 'connect the dots' because they are impartial, driven by curiosity and long-term perspectives, rather than by commercial interests and short-term goals[11]. In order to deliver on these expectations, universities and research institutes have to be highly responsive, adaptable, strategically directed, autonomously governed, and densely interlinked with regional partners as well as international networks.

INNOVATION

One of the most referenced definitions of innovation goes back to Joseph Schumpeter[13] which includes the introduction of a good or a significant improvement of an existing good, the introduction of new methods of production (process innovation), the creation of a new market, the conquest of a new supply source and the creation of a new type of organisation (i.e. administrative innovation). Innovations thus include a level of newness. Yet, innovation is not synonymous with invention as innovation includes both aspects of creation or discovery and diffusion[14]. Pragmatic definitions define innovation as a successful implementation of creative ideas or 'as a process that provides added value and a degree of novelty to the organisation and its suppliers and customers through the development of new procedures, solutions, products and services as well as new methods of commercialisation'[15]. It is safe to say that an innovation's starting point normally is an invention followed by exploitation. However, without successful commercialisation, the invention cannot become an innovation. It is estimated that more than 60% of economic growth derives from technological progress, which has led to technology advances being closely identified with innovations[16].

EMPLOYABILITY

The International Labour Organization defines employability as related to portable competencies and qualifications that enhance an individual's capacity to make use of the education and training opportunities available in order to secure and retain decent work, to progress within the enterprise and between jobs, and to cope with changing technology and labour market conditions[17].

Young women have made remarkable progress in educational attainment, yet industry and policymakers still need to support their transition to the work force.

Methodology

TRIPLE HELIX /

Triple Helix Model of Innovation
Building Academia-Industry-Government Networks for Innovation

This Handbook uses the Triple Helix Model of Innovation as a guiding framework. The Triple Helix has attracted considerable attention as an integral policy-making tool to enhance innovation and promote economic development in both advanced and developing economies. It advocates strengthening collaborative relationships between academia, industry, and government to enhance innovation. This recognises that only if these three spheres work together and share overlapping innovation and consensus spaces that allow for bilateral and trilateral relationships, can there be sustainable economic and social development on a systemic scale.

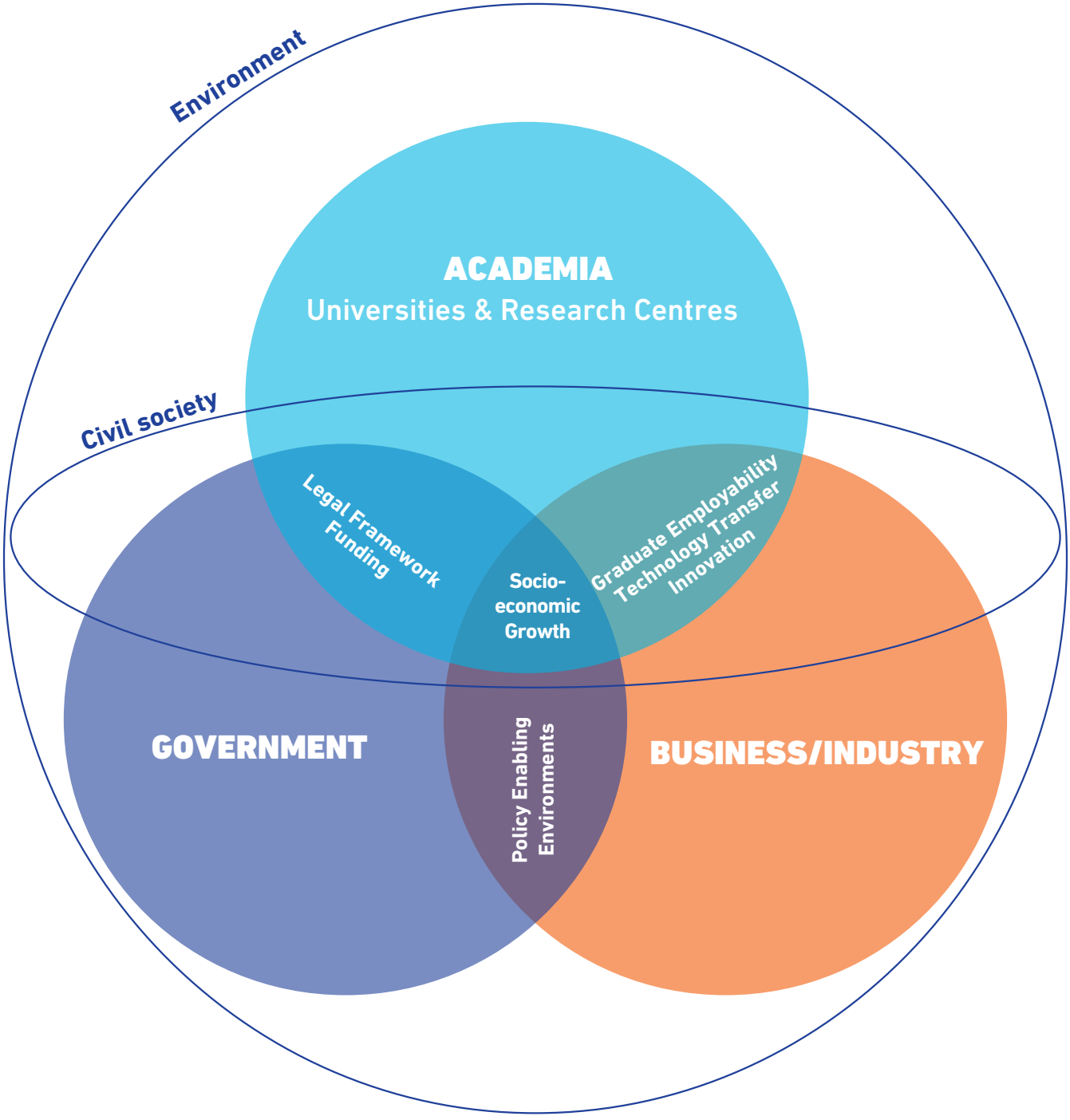
This handbook draws on the Triple Helix Model of Innovation[19-21] which represents a solid methodological tool and guiding framework that is helpful in making sense of data and structuring ideas and thoughts into a coherent and clear narrative. The further development of the model with the integration of civil society (quadruple helix[22]) and the effects of investment in education on sustainable development (quintuple helix[23]) have also been taken into consideration.

Choice of methods

The Triple Helix Model theorises that in a knowledge-based society, boundaries between different spheres are increasingly fading, giving rise to a system of overlapping actions: (a) universities and research centres are the source of new knowledge and technology; (b) industry operates as the centre of production; and (c) government provides an enabling environment (e.g. providing incentives, autonomy and stability). The interactions between the three spheres provide an innovative environment where knowledge flows dynamically in all directions. And each sphere, while retaining its primary role and identity, 'takes the role of the other'[24] – for example, universities support start-up creation in incubator and accelerator projects, thus entering into the industrial sphere.

Academia has traditionally been viewed as a support structure for innovation, providing trained persons, research results and knowledge to industry. One of the main differences with the traditional perspective is that the Triple Helix Model sees academia at an equivalent status. Thus, unlike previous institutional configurations in which universities had a secondary status or were subordinate to either industry or government, in the Triple Helix Model the university emerges as an influential actor and equal partner, as shown in Figure 3[25].

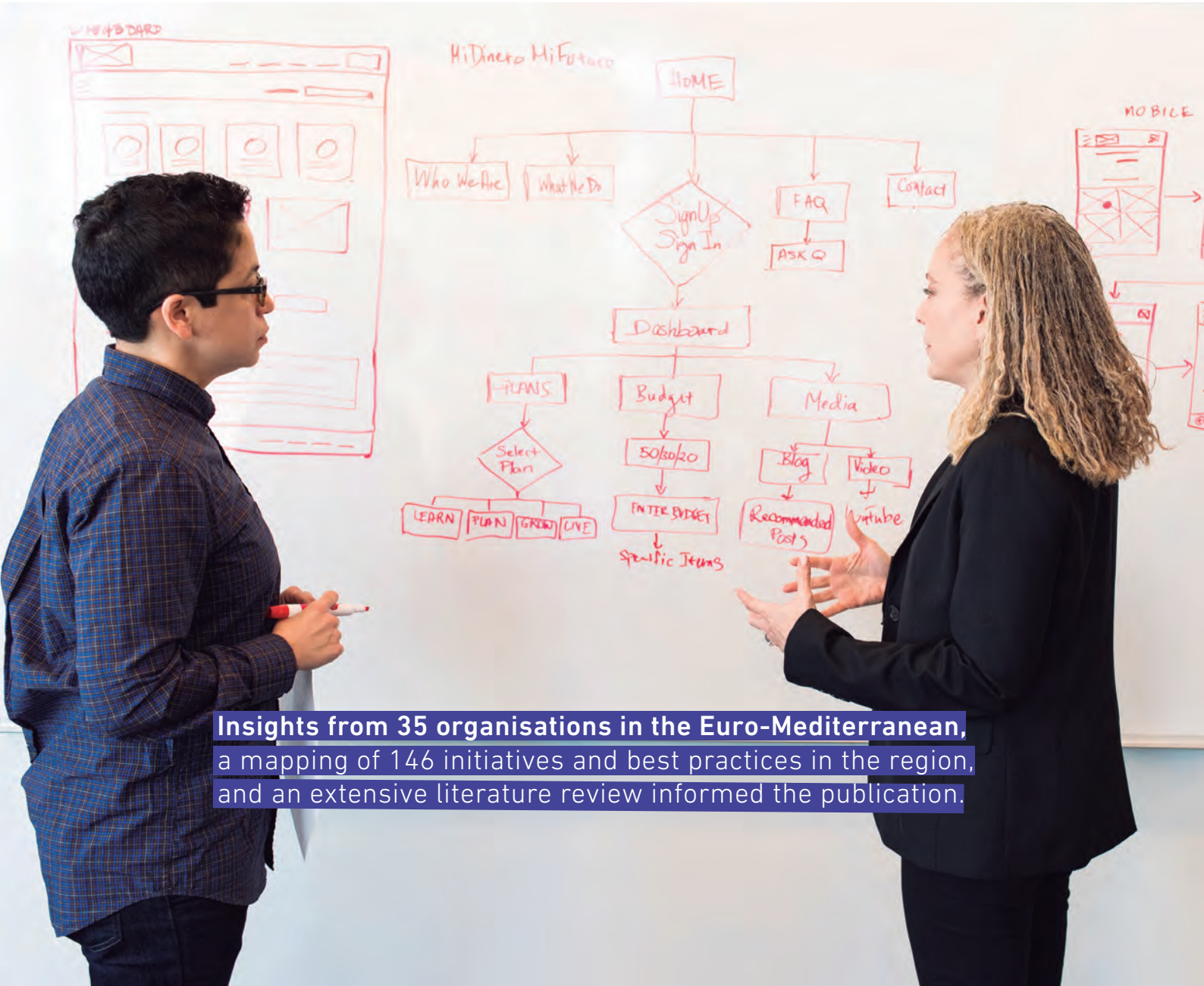
The Triple Helix of academia-industry-government relationships with the integration of civil society (quadruple helix) and the effects of investment in education on sustainable development (quintuple helix)
Figure 3



Source: adapted from Etzkowitz & Leydesdorff (1998 and 2000)[19]

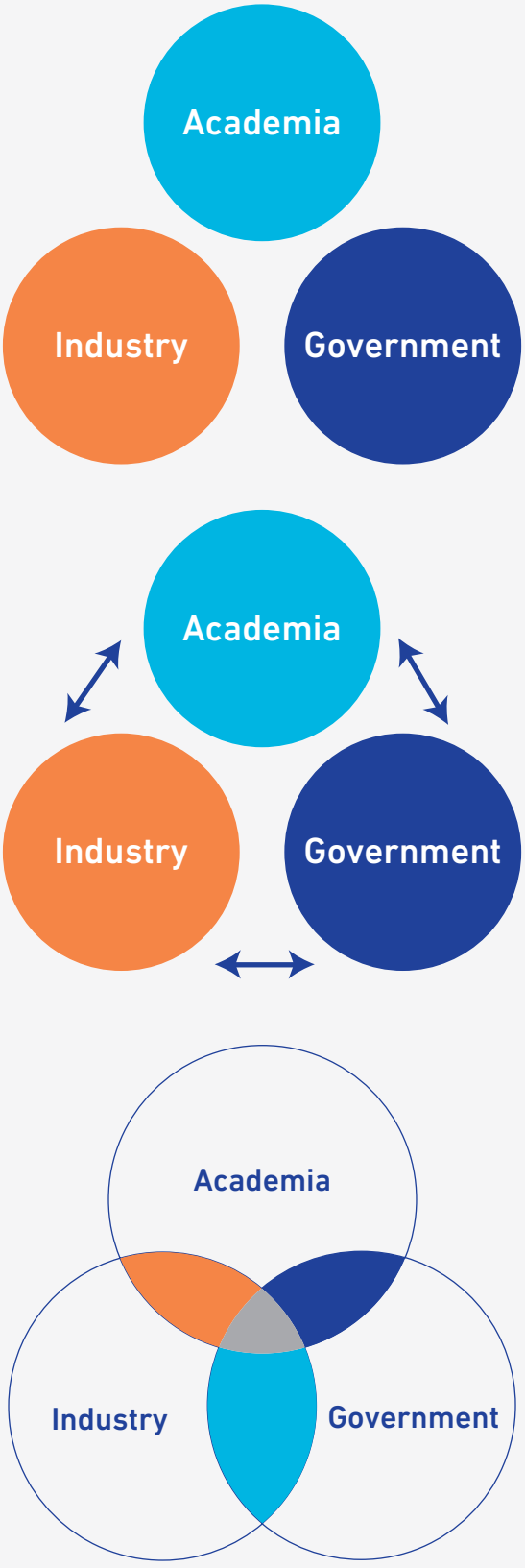
Meanwhile, governmental agencies at regional, national, and transnational levels, seek to facilitate university-industry collaboration and business creation through regulatory frameworks, services, infrastructures, and funding schemes. In all national and regional settings, policy attention to innovation processes is becoming a priority, even if national regulation may still hinder the proactive role of universities in innovation in some cases and financial formats may not always do justice to the new forms of interaction.

Working together, the three spheres become a new motor of innovation, with intertwining common interests, values, strategies, investments, and narratives. Thus, in the process of transforming their own roles, academia, industry, and governmental agencies develop a connective tissue, or Triple Helix as shown in Figure 4. It is in this process that the embeddedness of innovation in the respective ecosystem is crucial. This change has impacted the mission of universities and has contributed to the emergence of the so-called **'third mission'**, [A] blurring the boundaries of the traditional basic roles of university, industry and government (e.g. universities increasingly take part in commercial activity through patenting and licensing, moving beyond the production of basic research). Moving towards an interactive Triple Helix also leads to the emergence of intermediaries and the hybridisation across the overlapping spheres. Nevertheless, each entity retains a strong primacy in its original field of expertise: the university remains the main source of knowledge production, industry is the primary vehicle of commercialisation and the government retains its regulatory role.



Insights from 35 organisations in the Euro-Mediterranean, a mapping of 146 initiatives and best practices in the region, and an extensive literature review informed the publication.

In the transition towards an interactive Triple Helix Model, the three spheres will interact and collaborate increasingly which will lead to increased innovation activities
Figure 4



The Triple Helix transition

STATIST TRIPLE HELIX

Typically present in **Low-income countries**

The three institutional spheres (academia, industry and government) are clearly separate. Government plays the major role in steering academia and industry to encourage innovation. Generally, industry is regarded as the national champion, whilst academia's role is reduced to teaching and research. However, with this model, government or industry do not leverage the knowledge generation potential of universities or research centres as both teaching and research are too distant from industry needs and there is no incentive for academia to engage in research with industry.

LAISSEZ-FAIRE TRIPLE HELIX

Typically present in **Middle-income countries**

Academia, industry, and government operate apart from each other in three separate institutional spheres. Academia's task is to supply trained human capital (graduates) and basic research (knowledge, mainly in the form of publications). Industry identifies the research that is relevant (to compete in the market) without much interaction with academia. Government is limited to addressing problems that can be defined as market failures, with solutions that the private sector cannot or will not support.

INTERACTIVE TRIPLE HELIX

Typically present in **High-income countries**

This interactive Triple Helix is characterised by (1) a prominent role for academia in innovation; (2) a movement towards collaborative relationships among the three spheres in which innovation policy is an outcome of their interactions rather than a prescription from the government; and (3) strong bilateral and trilateral relationships between the three spheres through consensus spaces and hybrid organisation. A science park is an example of the type of organisation that could typically be found in the centre. Groups of business actors collaborate with the government and academia to achieve common long-term strategic goals. Universities become more entrepreneurial as they establish new relationships with industry and change their mission.

Source: Ranga and Etzkowitz (2013)[26]

Research aims and objectives

UfM launched this initiative to highlight best practices and available tools that can be put in place in order to reinforce career opportunities for students, graduates and researchers in the Mediterranean region. The publication targets universities, research centres, education ministries and complementary stakeholders, especially intermediary institutions and the private sector.

The publication will help UfM intensify its action on employment and labour as well as research and innovation, ensuring appropriate co-ordination with, and assistance to, the various stakeholders. It further supports UfM's objective to establish a Community of Practice, bringing together experts and practitioners from public authorities, social partners and civil society organisations, to discuss, assess and disseminate experience and good practices covering the priorities set forth by the Ministries centred around youth employment.

Overview of research design

This publication relies on extensive input from the UfM Steering Committee as to examples of initiatives and best practice in the region that have a positive impact on employability outcomes, key themes to consider and direct contributions describing the projects in which these key stakeholders are themselves involved. Additionally, an exploratory literature review was undertaken to document theory and evidenced-based innovations that could strengthen practices. The literature review also identified best practices from the Mediterranean region that have demonstrated positive employment outcomes or from other regions that could be adapted. A certain amount of statistical information was extracted from publicly available databases, primarily the World Bank Databank Development Indicators, UNESCO Institute for Statistics and the Global Innovation Index, to establish a clear vision of the current regional context.

Once this data was collected, it was analysed through the multiple lenses of the Triple Helix Framework to evaluate key themes and best practices through the diverse perspectives of academia, industry and the government. Case studies were elaborated to explore certain topics in-depth and UfM labelled projects were integrated as examples of regional practices that address the employability-innovation theme.

Data collection method

What was originally planned as an in-person one-day workshop to present the project plan and gather feedback on the research plan and methodological approach, was transformed into a series of remote meetings. As the outcome was uncertain, detailed preparations were undertaken to structure the remote meetings to accurately solicit the data needed and maximise the possible inputs from participants. Figure 5, shows an overview of sources and methods of collecting primary and secondary data.

DIGITAL STEERING COMMITTEE MEETINGS

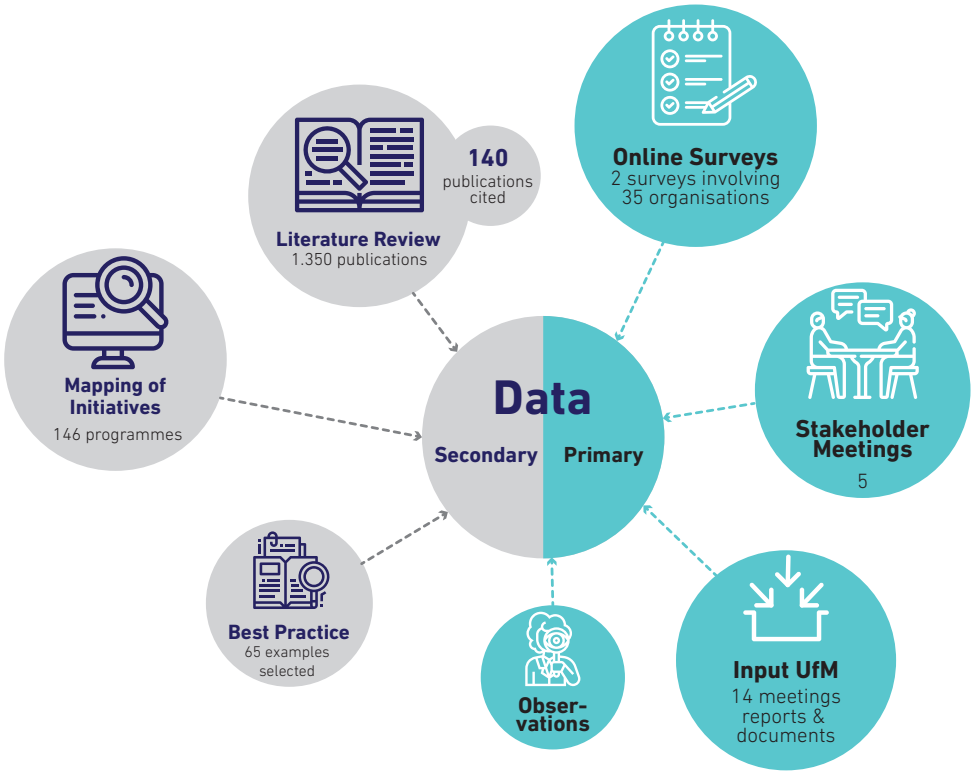
The UfM Project Coordinator issued an informal call for speakers to present their own initiatives to the Steering Committee, dividing the thematic focus into Employability for the first meeting on 5 May 2020, and Innovation for the second meeting on 19 May 2020. Preliminary findings from the desk review and results from the Questionnaire on Employability and Innovation were presented in the first meeting to the 45 participants (see sections below for details). The second meeting had 46 participants, some of whom also attended the first meeting. A list of participants and a link to the official minutes and presentations can be found at the end of this publication.

DESK RESEARCH

Using the lens of the Triple Helix framework, an exploratory literature review was undertaken to identify relevant theory and evidenced-based innovations, as well as best practices in the Mediterranean region or that had potential to be adapted to the regional context. Articles identified through traditional search strategies skewed heavily towards a European or North American context and therefore a manual and targeted approach was adopted to find examples in the region or extract relevant country-level details from regional studies beyond this project's scope, such as studies on the MENA region, which is the aggregation that most commonly includes countries from the

Methods of data collection

Figure 5



Southern and Eastern Mediterranean. A total of 1'350 publications were extracted in this manner and reviewed. These were narrowed by theme, perspective, and country or region; eventually 140 publications were cited in the final publication including several references to statistical information that informed the context, points for comparison and trends on key indicators. Input to the desk research included materials from UfM on previous meetings leading up to this project, reports on UfM labelled initiatives and case study research of specific examples on initiatives in the target region.

QUESTIONNAIRE ON EMPLOYABILITY AND INNOVATION

Prior to the first Steering Committee meeting, a semi-structured questionnaire was circulated via e-mail to the Steering Committee who completed it and also shared it with interested parties in their networks. This yielded responses from 41 individuals from 35 organisations including universities, research institutions, innovation centres, ministries of education as well as representatives from the European Commission and the OECD. This group collectively identified 89 initiatives and examples of best practice, in addition to insights on the relative importance of the Triple-Helix roles and key themes on the topics of employability and innovation.

MAPPING

A mapping of the initiatives identified in the questionnaire (89) and from the desk review (57) was developed, with a mini profile for each, identifying stakeholder perspective (the Triple Helix), as well as geographical, financial, descriptive and regulatory information. After conducting a full review of the mapping, 24 themes emerged, and the initiatives were coded according to these theme areas for further analysis and discussion with stakeholders.

QUESTIONNAIRE ON PUBLICATION THEMES

A second semi-structured questionnaire was circulated via e-mail to participants in the Digital Steering Committee meetings to share the emergent themes from the initiative mapping and ask for feedback on the relative importance of the themes for eventual inclusion in the publication, and general feedback on the process including availability for further consultation in creating the publication.

BI-LATERAL AND TEAM MEETINGS

A total of 19 meetings were held with UfM to discuss research outcomes, obstacles, findings and development of the publication, including five meetings with Steering Committee members who contributed directly to the publication. A recurring obstacle was finding information about specific countries and sub-regions in the Mediterranean that was not aggregated to the point of losing granular meaning. Countries in the Mediterranean region have significantly different social and economic influences and a great deal of analysis available combines information across the region, often including countries outside of the scope of this research. Ultimately, the specific statistical data was disaggregated by country and re-aggregated into the sub-regions of interest, and in the case of regional analyses, only parts of the literature pertaining to countries within the scope were referenced.

Analysis: connecting methods to research objectives

With the data gathered and categorised by theme, the analysis zeroed in on the thematic areas selected by the Steering Committee. Literature and initiatives for each theme were analysed using the Triple Helix Framework and a synthesis of this analysis appears in each chapter with specific reference to the initiatives that pertain to that thematic area.

Limitations

The issue of employability and innovation in the Mediterranean region is complex and UfM's aim with this publication is to provide a tool to bring together academia, industry and governments to work together in addressing it. This is an ambitious goal, and this publication was developed over approximately four months during the global pandemic of 2020 which limited the ability to explore the regional contexts more in-depth. The study would also have benefited from more input from industry. The data available on some initiatives in the Southern Mediterranean is highly fragmented and certain information was not easily available. With more time, these areas could have been more completely represented through additional input from local and regional actors.

The regional context is a critical factor in understanding the influences on employability and innovation and the study's focus on the sphere of higher education reflects significant differences in institutional strategies. Certain countries have less statistical data readily available and, as a result, less consistently recorded data on key indicators for employability and innovation. This limited the presentation of the contextual setting and the diversity of the region overall, especially when the indicators do not fully capture the many positive attributes the region offers through its rich culture and commitment to learning. Although the region boasts initiatives that positively contribute to addressing the issue of employability, concrete evidenced-based outcomes are still hard to find. Hence, this publication has limited information on initiatives presented and has not benefitted from coordinated central information. The resulting manual process undoubtedly overlooked valuable work in the focus areas.

A possible lesson learned from this limitation is that successes of positive employability or innovation initiatives should be communicated not only within the owner institution but also outside country borders, to the sub-region and larger regions. Communication is crucial to raising awareness of potential solutions and fostering future partnerships.

Join the dynamic network of 130 higher education institutions

UNIMED: the Mediterranean Universities Union

UNIMED, the Mediterranean Universities Union brings together 130 Universities from 23 countries from around the Mediterranean basin. Its mission is to develop research and education in the Euro-Mediterranean area to promote scientific, cultural, social and economic cooperation in different scientific fields across the region. UNIMED is like a University Without Walls and promotes capacity development through internationality and mobility, plans fund-raising activities, supports quality assurance in education, including organising events and training.

Through its many initiatives carried out over two decades, UNIMED has become a point of reference for international university cooperation. In response to the challenges facing the Mediterranean region, in particular the southern Mediterranean countries, the **UNIMED SubNetwork on Employability** (part of the RESUME project) was established with a focus on women's entrepreneurship and university incubators. The SubNetwork aims to strengthen economic and social cohesion by promoting cross-border, transnational and inter-regional cooperation and sustainable local development including:

- **Conducting studies, analysis and research**
- Gathering and **sharing information** throughout the Mediterranean region
- **Encouraging dialogue and mutual exchange** of information to create new networks, partnerships and developing joint projects to spread employment opportunities
- **Organizing international events** (workshops, seminars and conferences, summer schools and intensive courses for PhD students) to improve the flow of knowledge and exchange of experiences between researchers and faculties;
- **Promoting exchange** of students and professors at master's and doctoral level, through the creation of programs and joint supervision of courses and through the creation of a series of seminars

Participation to the SubNetwork is open to UNIMED associated universities and RESUME partners. The RESUME partners have collected about 300 good practices on young graduate employability. Link to RESUME good practices: https://www.resumeproject.eu/bonnes-pratiques/

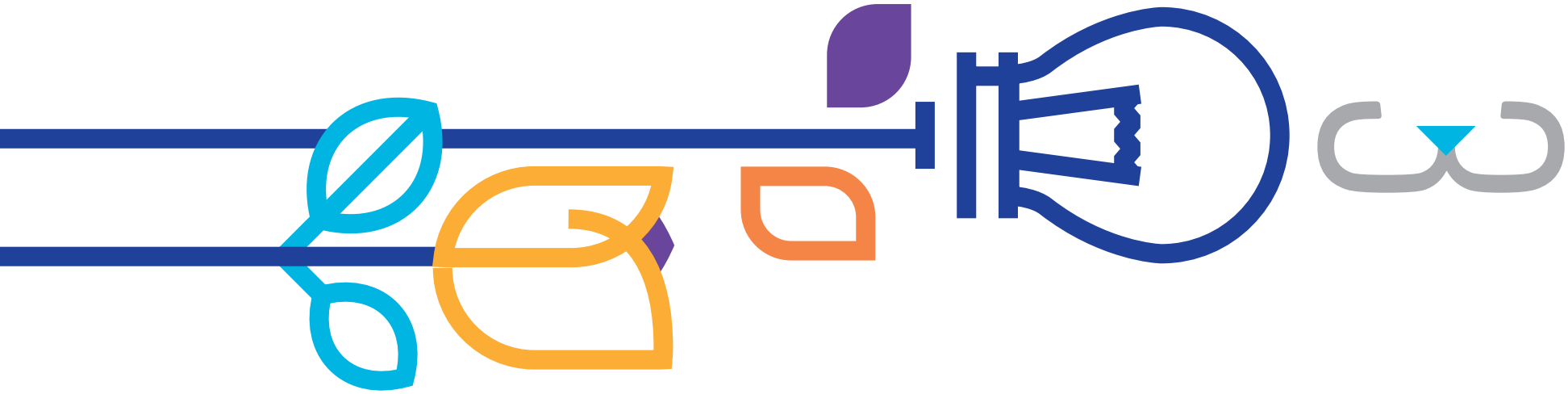
Best practice: Centre MINE at the Lebanese University (Lebanon)

Centre MINE was created by UNIMED's RESUME project in 2019 and is easily transferable to other regional contexts. It is a Centre for Careers, Innovation and Entrepreneurship at the Lebanese University that addresses the shift towards a new concept of employment that is more demanding. Graduates are considered as skill providers not just job seekers, and the concept of 'innovation with the aim of entrepreneurship' or 'entrepreneurship with the aim of innovation' shapes the development of humanity and makes economic and social development interdependent. The Lebanese University seeks to be a major player in the role that HEIs in Lebanon play to stimulate innovation and entrepreneurship among students and citizens. The Centre is now working with all Faculties and 81'000 students. Its main goals are:

- Bridging the gap between the university, productive institutions and the business world
- Improving student employability and professional integration
- Developing innovation and creativity capacity at the university
- Advancing the entrepreneurship culture at the university
- Creating and activating the Lebanese University's Unit for Behavioural Advice and Guidance
- Aiming to create a business incubator for innovative projects

To achieve its goals, Centre MINE endeavours to hold training courses, scientific, cultural, research and other meetings and activities, and is concluding agreements and partnerships with stakeholders locally and internationally.

www.uni-med.net



SKILLS/

Skills for Employment

Higher education institutions have been under pressure to reduce the 'skills gap' often cited as a major factor in the high unemployment figures in the Mediterranean region[27]. Evidence shows that in the Southern Mediterranean region, academia has delivered by producing the highest educated generational group ever[1]. Yet, this impressive increase in educational attainment has not translated into a corresponding increase in income opportunities and therefore unemployment persists. The underlying reasons are nuanced, including diverse social factors involved in pursuing an academic credential and the distinct economic environment in countries where the public sector is the main employer. Gaining employability skills is still important, however the overall issue of employability is a collective concern, and the Triple Helix of academia, industry and government are all responsible.

Background and context

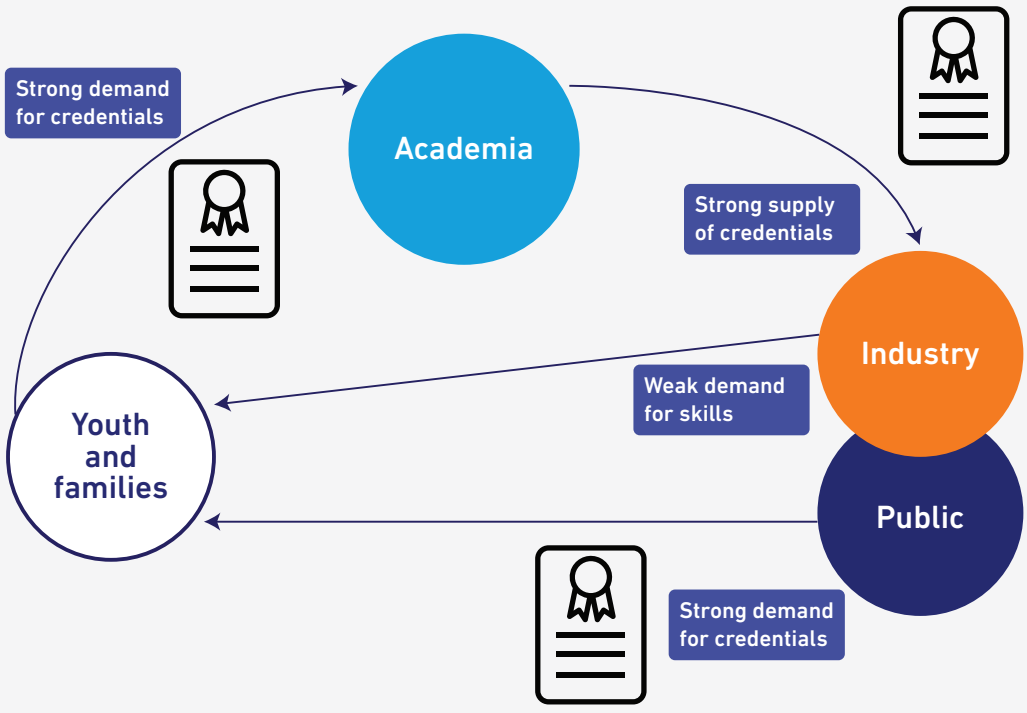
The 'skills gap' refers to the difference between skills employers want and the skills possessed by their current employees or job seekers. Employers often look to Higher Education Institutions (HEIs) as those responsible for addressing the skills gap by preparing graduates for the work force equipped with the skills they need. However, the topic is nuanced. Countries in the Southern Mediterranean region have invested heavily in developing and promoting education systems and have succeeded in greatly increasing enrolment, reaching gender parity, and overall achieving the highest level of youth education ever[28]. Algeria and Tunisia boast the highest percentages of women graduates in the fields of science, technology, engineering, and math in the world at 55% and 58%[29].

Algeria and Tunisia have the highest percentage of women STEM graduates in the world[29]

It is difficult for an HEI to see a skills gap when both the number of graduates and unemployment have increased because the supply side has produced graduates and the demand side needs workers. This calls into question employability — a subject that is increasingly discussed throughout the world. As technology changes rapidly, how can an HEI keep up with the changing skills requirements? It is also true that unfilled jobs may not be skilled jobs. There is no simple answer. However, both academia and industry agree that if the skills gap could be closed, it would help the economy, which brings it to a policy level. As described on page 18, youth un- and **underemployment** in the region has the characteristics of a wicked problem. It is a collective concern, and the **Triple Helix** of academia, industry and government are all responsible. Only if these stakeholders work together in a coordinated and systematic way can it be resolved.

Among the factors at play are the reasons behind an individual's decision attend university and employers' decisions about what skills they need. In short, these are the levers of supply and demand of skills. On the supply side, an academic degree bestows a graduate with certain skills which signal productivity and potential. HEIs in the Southern Mediterranean region have historically produced graduates primarily for the public sector, which demanded degreed candidates more than requiring specific skills[28]. The link between the degree and the skills it should carry was weakened by this emphasis on the credential and as a result, the demand by youths for a degree in any discipline overtook their demand for specific professional skills. As Assaad, Krafft and Salehi-Isfahani state in their 2018 study in Jordan and Egypt on labour market outcomes as related to the type of higher education, this 'credentialism' influenced the structure of educational systems in the region and, even as the proportion of public sector employment has decreased favouring the private sector and industry, educational outcomes remain disconnected from specific skills[27]. Reducing the reliance on public sector employment has been difficult since private industry jobs are still relatively few and demand for highly skilled graduates is therefore weak, leaving the region in a 'credentialist equilibrium' as illustrated in Figure 6[28].

The Credentialist Equilibrium
Figure 6



Source: adapted from Assaad, Krafft, and Salehi-Isfahani 2018[28]

All major international organisations dealing with employment and education, such as the International Labour Organization (ILO), the Organisation for Economic Co-operation and Development (OECD), the World Bank, and United Nations Educational, Scientific and Cultural Organization (UNESCO), have established employment and education departments to develop relevant strategies to cope with the rapidly changing trends in the job market, to anticipate the needs of emerging professions and future skills, and to find solutions to the 'skills gap'. There are different types of skills and within each, different levels of accomplishment. According to the ILO, skills are 'the ability to carry out the tasks and duties of a given job', and skill specialisation refers to the service or good generated and what was used to produce it, such as disciplinary knowledge, instruments and materials[30].

Beyond the specialised skills required to technically fulfil job requirements, there are two categories of skills that apply across the board to all types of jobs: digital skills and soft skills. These also are the most cited by companies as lacking in their new hires and areas where they experience the skills gap in their organisations[31]. Digital skills provide a foundation of knowledge that can help keep up as required skill-sets change. Soft skills refer to a mind-set that facilitates continuous learning. Both these skills build upon and strengthen basic and specific skills gained through education, giving the possessor the capacity to be productive even in a fast-changing environment.

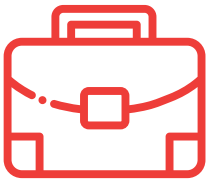
Digital skills

Skills are at the forefront of digital innovation. There is a growing polarisation of labour-market opportunities between high- and low-skilled jobs, increasing the mismatch between skills provided and job requirements. Technology- driven skill sets are emerging, focused around user experience and user interface. At the same time, the market will also need skills sets developed around human factors. The requirements of the workforce are changing, and the capabilities and competencies required for the future are changing.

The transformational era currently underway — the so-called 4th Industrial Revolution referring to the convergence of digital, biological, and physical innovations — has seen the emergence of disruptive innovations: blockchain, artificial intelligence, wide spread digitalisation accelerated by the constant growing number of people and devices connected to internet, 5G, and other technologies. Across all sectors in all professions, digital skills have generated new types of work, promoted efficiency, and underpin innovation[31].

Globalisation and demographic changes were already having a profound impact on everyday life, culture, educational systems, societies, businesses and on the very sensitive ever-changing job market. The COVID-19 pandemic and subsequent lockdown has dramatically accelerated the emphasis on digital skills, requiring everyone from the youngest pupils to mid- to late-career professionals to have enough digital knowledge to manage their own home-office or school equipment. It has also ushered in the exploration of new operating models that have come about through work-from-home environments that will have an impact on everything from recruitment and talent acquisition to re-shaping job markets and higher education systems.

As more people have been forced to work or study from home, an unusual experiment has unfolded in an alternative productivity that may outlast the pandemic and change the way of working and studying to a more blended approach. This change will further increase the importance of digital skills.



With the **exponential growth** in information, professionals face a knowledge half-life dilemma[34]

Soft skills

Soft skills refer to non-technical skills that support an individual in staying relevant through continuous learning. There are different names for these skills, ranging from 'professional skills', 'key competencies', 'transferable skills', 'essential skills', 'life skills', or, as the ILO calls them, 'core work skills' or 'core skills for employability' as shown in Table 2. The importance of these skills for employability is recognised by various educational reforms in the region, such as in Tunisia where the HE system has undergone a re-structuring and a pillar of the new structure is dedicated to the employability of young graduates, including equipping them with soft skills.

The ILO groups and describes soft skills as follows[32]:

Soft skills, also known as 'core work skills'

Table 2

Learning to Learn	Communication	Teamwork	Problem-solving
• Being willing to learn	• Reading competently	• Managing oneself at work	• Thinking creatively
• Using learning techniques to acquire and apply new knowledge and skills	• Reading, understanding and using materials, including graphs, charts and displays	• Working in teams or groups	• Solving problems independently
• Working safely	• Understanding and speaking the language in which the business is conducted	• Interacting with co-workers	• Testing assumptions
• Pursuing independent learning	• Writing effectively in the languages in which the business is conducted	• Respecting the thoughts and opinions of others in the group	• Identifying problems
• Taking responsibility for own learning	• Writing to the needs of an audience	• Working within the culture of the group	• Taking the context of data and circumstances into account
• Thinking abstractly	• Listening and communicating effectively	• Understanding and contributing to the organisation's goals	• Identifying and suggesting new ideas to get the job done (initiative)
• Organising, processing and holding information	• Listening to understand and learn using numeracy effectively	• Planning and making decisions with others and supporting the outcomes	• Collecting, analysing and organising information (planning and organisation)
• Interpreting and communicating information	• Articulating own ideas and vision	• Taking accountability for actions	• Planning and managing time, money and other resources to achieve goals
• Conducting systematic inquiry, following through to find answers		• Building partnerships and coordinating a variety of experiences	
• Using time effectively and efficiently without sacrificing quality		• Working towards group consensus in decision-making	
• Selecting the best approach for tasks		• Valuing others' input	
• Beginning, following through and completing tasks		• Accepting feedback	
• Being adaptable		• Resolving conflicts	
		• Coaching, mentoring and giving feedback	
		• Leading effectively	
		• Mobilising a group for high performance	

Source: ILO[32]

As technology-driven skill sets emerge, focused around user experiences and user interfaces, employers will need people with a combination of digital and soft skills: a digital mindset that can visualise what technology can deliver and knowledge of human factors that can deliver services alongside the technology, creating a better service to customers. Capabilities and competencies required for the future are changing. Everything is changing, from the kind of jobs available, to the way of working, and even the type of education needed to acquire and keep up with these skills.

It is becoming clear that there will be a significant disruption in how we perceive work and that the response cannot come from HEIs alone. It needs to come from a robust and functional collaboration between academia, industry and governments, and requires different policy approaches[33]. Looking closely at the links between these three players to re-consider the traditionally separate roles is essential.

Academia

HEIs have been seen as primary knowledge producers, a source of vocational identity and are important contributors to society and nations. They are also centres for lifelong learning and hubs for discovery and innovation, building new knowledge and changing understanding of the world through fundamental science that leads to new treatments and products, or sources of the evidence on which policy decisions should be made. Anticipating skill requirements when technology is changing rapidly and offering new study programmes to match these requirements creates pressure on HEIs. The post-Covid-19 perspective has accelerated this discourse. How can HEIs facilitate innovation and effectively

contribute to entrepreneurial-driven economic growth while at the same time dealing with the skills mismatch?

Since both digital skills and soft skills are overarching skills, that is, they are not confined to a discipline and apply across all fields, universities can address them in programmes that are also interdisciplinary. Closer ties between HEIs and industry to establish flows of information about needs in specific sectors is an approach taken by the 'Higher Education on Food Security and Rural Development' project, labelled by the UfM and run through the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) education and training courses for professionals. This project directly addresses food security and rural development and provides scholarships to Southern and Eastern Mediterranean students. Details about CIHEAM can be found at the end of this chapter. Many universities provide soft skills through extra-curricular workshops conducted by **Career Services** (see Chapter 8: Career Services). They can also be brought into each classroom by each professor so that, in the case of digital skills, the class uses technology through learning tools, and in the case of soft skills, assignments require teamwork and uncertainty to strengthen student skills in these areas.

To be **employed** is to be at risk, to be employable is to be **secure**[33]

Interacting with industry and policymakers in co-creating curriculum that develops real expertise in skills for employability requires data and communication between the stakeholders. The process of gathering this data can itself be a mode of strengthening the collaborative approach, involving students and academic staff. Establishing a thread from traditional study programmes through continuing education and life-long learning can also help involve the working world and the community in the academic setting. With an updated incentive structure, **faculty** can be encouraged to engage with industry though subject experts and getting involved with **internships,** which traditionally have been left up to the student.

Communicating their efforts to address skills development to the academic community and society will reinforce these efforts. This will in turn help create input and connections for further opportunities for collaboration.

Industry

Hiring and retaining skilled employees has a direct effect on a company's productivity and competitiveness. It is in their interest to see that existing employees continue to learn and stay relevant and that entering graduates are supported with an orientation of the working environment and expectations. In the Mediterranean region, the European Bank for Reconstruction and Development (EBRD) is a good example of working with stakeholders to support skilling up employees through education programmes. Details about EBRD can be found at the end of Chapter 9: Knowledge Exchange. Reaching out to universities to formalise these kinds of programmes through an accreditation mechanism would benefit all parties: the employer by providing strong content for skill development, employees by gaining a recognised credential for their studies, the partner university by establishing a contact for feedback on skill needs, and opening an avenue for future interactions, such as area experts speaking at the university.

Companies can also provide internship opportunities that can bring current skills into their organisations through young students and provide the students with work experience. Working with policymakers to facilitate this process would relieve the pressure on academia (both students and academic staff) to manage this process unilaterally. Optimally, industry can get involved with curriculum development or participate in HEI advisory boards (see Chapter 4: Teaching and Learning).

Companies and governments have a moral obligation to educate workers better than they do now[35]

Policymakers

There are fundamental issues about the right to education and education as a public good that are difficult to address at a national level when considering potential global consequences[33]. These are long-term discussions and must be addressed at a regional and even global level. In the meantime, the interest of governments is to ensure that skill shortages and skills mismatch do not inhibit growth and that individuals are equipped with the skills to adapt to future change and avoid the risk of job loss. To achieve these goals, they need reliable and relevant data, which can be produced through HEIs. Policies that encourage partnerships between industry and academia and support initiatives that improve the frameworks for innovation through entrepreneurship and intrapreneurship can lay a strong foundation upon which the subject of skills can be addressed collectively. The Start-up Act programme in Tunisia is an excellent example of policymakers providing concrete advantages and incentives to entrepreneurs, investors and students and recent graduates to address the need for a change in mindset towards taking initiative to innovate, whether for a start-up or within a job in an organisation.

Examples and best practices

UEFM: UNIVERSITÉ EURO-MÉDITERRANÉENNE DE FÈS

Theme: **University**
Funding: **High Honorary Presidency Morocco**
Programme & partner countries: **Morocco**
Start: **2013**
More information: **www.ueuromed.org/pro/fr/**

UEMF is a public utility and non-profit foundation labeled by the Union for the Mediterranean (UfM) with the support of its 43 countries members. The UEMF delivers diplomas recognised by the Moroccan State and several of its courses are dual diplomas with the best Euro-Mediterranean universities.

BLUESKILLS

Theme: **Skills development**
Funding: **Italian Ministry for Education, University and Research**
Programme & partner countries: **Algeria, Italy, Malta, Mauritania, Morocco, Libya, Portugal, Spain, France, Tunisia**
Duration: **2019-2023**
More information: **https://ufmsecretariat.org/project/blueskills-blue-jobs/**

The 'Blue Jobs and Responsible Growth in the Mediterranean throughout Enhancing Skills and Developing Capacities' project promotes opportunities for 'Blue' marine and maritime careers by developing skills, exchanging knowledge and valorising research for more sustainable Mediterranean Sea. Its aim is to develop new curricula and increase employability in the marine and maritime sectors.

CREACT4MED: CREATIVE ENTREPRENEURS ACTING FOR THE FUTURE MEDITERRANEAN

Theme: **Entrepreunership and social inclusion**
Funding: **EMEA, EU**
Programme & partner countries: **Euro -Mediterranean**
Start: **2013**
More information: **https://euromed-economists.org/creact4med/**

Organisation to enhance the role of culture and creativity as a vector for employment and resilience in eight South Neighbourhood Countries through untapping the potential of the cultural and creative industry (CCI) to create economic value, enhance growth, create decent jobs and foster social inclusion. In doing do, a special emphasis is dedicated to youth and women. In order to accomplish this objective, CREACT4MED seeks to:

- Strengthen the role of CCI in public policy and strategic planning in eight SNCs
- Support new initiatives with a high potential for creating value (economic, social and cultural) and new CCI job opportunities, and promoting entrepreneurship as a mean of self-realisation
- Improve operational and financial sustainability, replication strategies, exposure and interconnectivity of local CCI initiatives/projects
- Map CCI ecosystem in eight SNCs in order to increase knowledge on the CCI ecosystem and its potential to create economic, social and cultural values in target countries
- Design and implement the South MED Creative Youth and Women Training and Mentoring Academy in order to build capacities of (future) young and female entrepreneurs active in CCI in target countries
- Design and implement the South MED Creative Youth and Women Programme in order to financially support (sub-grants) 24 creative entrepreneurs/projects and 8 business incubators in the region
- Raise awareness and build community to ensure increased sustainability and interconnectivity of CCI projects/business initiatives, entrepreneurs, NGOs, start-ups, MSMEs (MED CCI HUB)

EMEA: EURO-MEDITERRANEAN ECONOMICS ASSOCIATION

Theme: **Research network**
Funding: **EU (H2020), Euro-Mediterranean Economists Association (EMEA), UfM**
Programme & partner countries: **Euro -Mediterranean**
Start: **2013**
More information: **https://euromed-economists.org/**

The Euro-Mediterranean Economists Association strives to explore and understand the socio-economic and political challenges facing economies in transition such as the Mediterranean and Africa amidst the global geopolitical uncertainties, economic and financial crises and protracted conflicts.

How to promote employability and digitalisation

CIHEAM: International Center for Advanced Mediterranean Agronomic Studies

Rural areas, agri-food sectors, fishing and coastal marine development are rightly or wrongly considered as tedious, unprofitable and socially undervalued sectors and as such **struggle to attract and retain qualified people.** Most graduates and young researchers hope to work at a ministry, a university or to go abroad. Yet, these opportunities are quite limited. What will become of graduates who do not find such employment and **how can new and digital technologies support these graduates in their job search or in creating their own jobs?** It is clear that the worlds of research or administration are cut off from the realities on the ground. They do not speak the same language as the farmer, the breeder or the fisherman. Working in silos does not allow for the development of innovation and job creation dynamics. Once again, the **issue of the mobilisation of technologies arises.**

The issue of digitalisation highlights the rural-urban divide and the unequal access to technological resources. There is a digital gap between the northern and southern shores but above all, there is a gap between cities and rural areas. See CIHEAM publication Rural Innovation and Digital Revolution in Agriculture available at:
https://www.ciheam.org/watchletters/wl-38/

CIHEAM is an intergovernmental organisation devoted to training, research and cooperation for rural development, agriculture and fisheries in the Mediterranean. They are active at **both ends of the employment chain –** training students and creating jobs through local development projects in the agro-food value chains. CIHEAM adopts an institutional approach towards employment, collaborating and engaging in discourse across countries and regions.

When considering innovation (technological and social) or digitalisation, CIHEAM focuses on the **land and sea professions as an avenue for sustainable local development,** especially in marginalised areas. These professions are highly diverse, and many mobilise advanced technologies. CIHEAM considers the farmer as a connected entrepreneur.

An important challenge is to develop new models of increasingly proactive learning and learning through practice, which promote the development of an entrepreneurial culture. CIHEAM supports the development of design skills and innovative solutions for businesses, increased collaboration with businesses (such as open innovation and design thinking) during training, and self-entrepreneurship (start-ups).

CIHEAM offers a wide range of capacity building activities through its connected Institutes in France, Greece, Italy and Spain. These initiatives demonstrate that the potential of digital technologies to create jobs depends on the **quality and effectiveness of the training** provided but also on the **existence of an enabling ecosystem for innovation** and multi-stakeholder dialogue. Unique or isolated initiatives lose their value in the absence of an environment that facilitates their interoperability and connection. CIHEAM plays a political role in this field as it strives to build an enabling environment that brings actors together in favour of smart rural cities and agriculture 3.0.

www.ciheam.org

TEACHING & LEARNING

Teaching and Learning: Integrating innovation and Employability in the Curriculum

Life has never been more uncertain for university graduates. Faced with a highly complex and ambiguous environment, they need to be well equipped to overcome challenges, embrace continuous change, turn ideas into actions and be lifelong learners. This requires universities to shift towards more active methods of teaching and learning that engage students to release their creativity and potential for innovation. Providing young people with the tools to enable them to realistically consider creating a social enterprise or a business start-up – entrepreneurial capacity – will also result in making graduates more employable and able to use innovative ideas and creative thinking to improve existing processes – intrapreneurial capacity. However, this requires academia to adapt their curricula, their pedagogy and even their physical spaces and move towards what is known as entrepreneurial teaching and learning.

Background and context

Higher education institutions (HEIs) and research institutes play a critical role not only in training students to contribute to the economy, but also in implementing the United Nation's Sustainable Development Goals (SDGs), which requires addressing a wide range of social, economic and environmental challenges, involving complex interlinkages, uncertainty and conflicts of values[36]. Providing learners with skills to think through complexity, learn through dialogue and communication, engage in deep reflection, develop worldview and value sensitivity is ambitious. Adding that learners also need to assess when activities support or detract from achieving the SDGs, generate and disseminate knowledge, drive innovation, and work together with business, government and civil society to promote economic and social development, becomes a tall order. Academia is expected to train students not only for today's, but for tomorrow's challenges. In order to reach its full potential and deliver on these expectations, academia should adapt its organisational approaches, and fully integrate research activities, teaching methods and external engagement practices. In terms of teaching and learning, higher education should also adapt its programmes and curricula in cooperation with industry, move from a teacher- to a student-centred pedagogy and rethink learning spaces.

It is also important to acknowledge that teaching for innovation is more than preparation on how to run a business. It is about how to develop the entrepreneurial attitudes, skills, and knowledge which, in short, should enable a student to 'turn ideas into action'. This requires HEIs to take into consideration a number of points[37]:

- Competences linked to entrepreneurship require active methods of engaging students to release their creativity and innovation
- Entrepreneurial competency and skills can be acquired or built only through hands-on, real life learning experiences
- Innovation and entrepreneurship are transversal themes that can be integrated as a red thread through the entire curriculum, be taught as a standalone subject or even be an extracurricular activity – or a combination of all three
- The teaching of entrepreneurship should focus on both intrapreneurs and entrepreneurs, in light of the fact that many students will use entrepreneurial skills within companies or public institutions
- Curriculum, learning outcomes, assessment methods and quality assurance procedures must be related to entrepreneurship and should be designed to support lecturers
- Cooperation and partnerships with other lecturers in the HEI, with industry and other stakeholders is key

INTRAPRENEURSHIP

Intrapreneurship, defined as organisational venture creation and strategic renewal brought about by employees, has become crucial for organisations to survive and maintain their competitive advantage. Research has demonstrated that intrapreneurship positively relates to profits and returns on sales and has been argued to increase organisational effectiveness and public value creation.

Curriculum development

Although the study of HE curricula has attracted more interest in recent years, it is still not a well-established field as for instance are university governance or research. The rules governing the development of University degree programmes are – with some exceptions – mostly procedural, providing structural guidelines such as hourly volumes and course validation. Faculty has a great deal of autonomy in defining content. Therefore, even if the overall framework varies depending on the institution, discipline, country or period considered, HE curricula tend to be defined at a teaching staff and institutional level[38].

Due to the role assigned to HEIs in producing, certifying, and transmitting knowledge, they are at the centre of legitimising professional groups (e.g. engineers, lawyers or medical doctors). Moreover, in a context where access to higher education has expanded considerably, universities have become a pivotal place in preparing young people for their role in industry. Consequently, the ability to provide input to the curriculum has become a key concern for both the private and the public sector as well as for policymakers. Moreover, due to the decreasing half-life of knowledge there is growing acknowledgement that the curriculum should be closely informed by research and industry. One example is integrating the Sustainable Development Goals into HEI curricula, a theme with which many Universities are struggling[36]. An organisation that has embraced this approach is CIHEAM by promoting cooperation between universities and the agriculture and fishing industries in the Mediterranean region, developing tailored curricula that address food security, sustainable agriculture and rural development, and climate change mitigation. Details about CIHEAM can be found at the end of Chapter 3: Skills. Curriculum development and review offers an excellent opportunity to forge relationships between academics and the professional world, making the HEI a hub, at the interface between science, the labour market, economy, and the state.

Pedagogy: from teacher-centred to student-centred learning

Our changing world demands creative thinkers and collaborative problem solvers. Although approaches to classroom instruction have evolved considerably over the past 50 years, spurred by the development of several learning principles and methods of instruction, far too often, one-way lectures remain the most typical way of

Student-centred learning and teaching is an overarching approach to learning and teaching that is founded on the concept of student agency

Figure 7

teaching, stifling student growth and discovery in favour of getting through the curriculum or preparing for exams. Learning opportunities and teaching methods need to evolve to close the so-called skills gap (see Chapter 3: Skills) and match the changing needs of students and employers. This required change does not only involve new curricula, but also the shift to a student-centred pedagogy away from the teacher-centred learning and teaching that considers students as passive recipients of information, without considering the need for them to construct their own knowledge and thus actively participate in the educational process[39]. A student-centred learning and teaching approach, on the other hand, is an overarching approach that focuses on student agency and involves[40]:

- The reliance on active rather than passive learning
- An emphasis on deep learning and understanding
- Increased responsibility and accountability on the part of the student
- An increased sense of autonomy in the learner
- An interdependence between teacher and learner
- Mutual respect within the learner-teacher relationship
- A reflexive approach to the teaching and learning process on the part of both the teacher and the learner

Student-centred teaching involves creating dynamic relationships between teachers, students, and a shared body of knowledge to promote student learning and personal growth, as shown in Figure 7. From this perspective, instructors are intellectual coaches who create teams of students who collaborate with each other and with their teacher to master bodies of information. Lecturers assume the traditional role of facilitating students' acquisition of key course concepts but do so while enhancing students' personal development and attitudes toward learning. They accomplish these goals by

establishing a shared vision for a course, providing modelling and mastery experiences, challenging and encouraging students, personalising attention and feedback, creating experiential lessons that transcend the boundaries of the classroom, and promoting ample opportunities for reflection, thus maximising students' intellectual and personal growth.

Role of industry

Many benefits have been linked to student-centred learning. It is generally considered to improve teaching and student learning42. It fosters transversal skills, critical thinking, and active citizenship, and is thus considered to better prepare graduates for the current and future labour market and society. Student-centred learning has recently been connected to achieving the SDGs[43].

There are different ways of involving industry in curriculum development and review processes (see Table 3, for examples). Recognising the value of external input into the curriculum, the initiative BitPal establishes competence centres with academics and professionals to qualify students in IT fields while giving them practical skills so that graduates can immediately contribute to the Information and Communication Technology sector in Palestine. Employers not only have a strong interest in contributing to the relevance and quality of curricula, but they also have a strong incentive to contribute more fully to strengthening training and education for sustainable development. Employers' input and involvement in curriculum review has several advantages:

- Employers have a good grasp of where the field is moving and what skills graduates need, especially when it comes to the specific skills desired by industry in the region
- Often, lecturers have not been deeply involved with industry, thus the involvement of industry representatives in curriculum development and review supports HE staff to have a clear understanding of what the labour market requires
- Involving industry in curriculum development is a starting point for developing deeper relationships

Ways of engaging employers in curriculum development/review

Table 3

ACTIVITY	DESCRIPTION	STAKEHOLDER TIME
Survey	Share survey with a targeted number of employers. Leverage the survey to receive input on required skills and knowledge for a specific job profile. A survey is fast but will not replace rich qualitative data from a face-to-face discussion.	Low
Share workplace problems for classroom activities	Work with employers to create real-life workplace problems that can be adapted for a classroom activity. Classroom activities are greatly enriched when they represent realistic workplace problems.	Medium
Participate in a focus group or meeting to discuss necessary skills *(high level)*	Invite business representatives to a focus group or meeting discussion to review competencies covered in a curriculum. Ask them for feedback to ensure that key skills and industry trends are addressed.	High
Participate in a full curriculum development/review process *(in-depth)*	Ask technical specialists to work with curriculum developers to identify the skills, knowledge, and behaviours required for occupations.	Very high
Programme advisory board	A more long-term approach is to integrate industry representatives in the programme advisory board.	Medium

Role of government

Both youth unemployment and sustainable development have been identified as key challenges in the Mediterranean. Many governments, businesses, NGOs, and civil society organisations have adopted the 2030 Agenda for Sustainable Development and developed action plans to implement it. When it comes to incentivising and guiding academia to adapt their curricula and move towards more student-centred teaching and learning, national governments have an important role to play. They can adapt incentives and support structures within their education systems through tools such as quality assessment standards, public programmes at national and regional levels that support new approaches in teaching and learning and knowledge exchange. This is not a small undertaking and cooperation through facilitating organisations such as CIHEAM that brings universities together around specific SDGs can make achieving these objectives possible. Details about CIHEAM can be found at the end of Chapter 3: Skills.

Key publications

Gover, A., Loukkola, T., & Peterbauer, H. (2019). *Student-centred learning: approaches to quality assurance.* Brussels: European University Association. Retrieved from https://www.eua.eu/downloads/publications/student-centred learning_approaches to quality assurance report.pdf

Hénard, F., & Roseveare, D. (2012). *Fostering Quality Teaching in Higher Education: Policies and Practices.* Paris. Retrieved from https://www.oecd.org/education/imhe/QT policies and practices.pdf

NESET. (2020). *Mapping and analysis of student-centred learning and teaching practices: usable knowledge to support more inclusive, high-quality higher education Analytical report.* (M. Klemenčič, M. Pupinis, & G. Kirdulyté, Eds.). Brussels: Directorate-General for Education, Youth, Sport and Culture Directorate. https://doi.org/10.2766/67668

Todorovski, B., Nordal, E., & Isoski, T. (2015). *Overview on Student-Centred Learning in Higher Education in Europe.* Retrieved from http://www.ehea.info/media.ehea.info/file/Student_centred_learning/63/2/Overview-on-Student-Centred-Learning-in-Higher-Education-in-Europe_679632.pdf

Examples and best practices

VISION

Theme: **Teaching and Training**
Funding: **Erasmus+, KA2 – Capacity-building in the Field of Higher Education**
Lead: **Euro-Mediterranean University (EMUNI)**
Programme & partner countries: **Euro-Mediterranean**
Timeframe: **2020-2021**
More information: **www.vision-project.org**

Successful entrepreneurs and innovators are skilled at understanding the next wave of trends. But how can teachers and trainers stay current and address the dynamic opportunities of creativity, innovation and entrepreneurship teaching and training? The VISION partners are engaging with 120 global stakeholders and experts across higher education, business, policy and society to pave the way for the future of teaching and training for creativity, innovation and entrepreneurship. The four important issues for creativity, innovation, and entrepreneurship educators are:

- Social impact and relevance
- Industry 4.0 And the future of work
- Digital transformation
- Readiness to tackle emergent topics and methods

BITPAL

Theme: **Curriculum Development**
Funding: **Erasmus+, KA2 – Capacity-building in the Field of Higher Education**
Lead: **Faculty of Information Studies in Novo mesto (Slovenia)**
Programme & partner countries: **Palestine, Germany, Italy, Slovenia**
Start: **2017**
More information: **http://exrelation.iugaza.edu.ps/en/Academic-Partnership-Programmes/List-of-Ongoing-Projects**

The target of BIT-PAL is to develop the curricula of IT programmes in Palestinian academic sector for adopting new innovative teaching methodologies developed during the project. This will help IT students to become more reliable and productive and will improve their ability for learning-to-learn. Consequently, IT students will be able to start their own businesses and open several opportunities for them in an early stage before the graduation and in their careers after graduation. The specific objectives are:

- Defining the needs and priorities of local IT sector by assessing job-relevant skills and employment requirements
- Building the capacity of the IT academic staff who will be able to design and use the new curricula developed in the project
- Developing career-oriented curricula for computer engineering, computer science, and vocational training in IT specialisations in terms of defined needs and priorities
- Establishing a framework for a network of technical competencies in IT teaching methodologies and technologies based on the partnership between academic, professional, and official parties
- Producing professional training resources, to enhance lifelong training in topics related to IT sector

MIGRANTS: MASTER'S DEGREE IN MIGRATION STUDIES: GOVERNANCE, POLICIES AND CULTURES

Theme: **Curriculum Development**
Funding: **Erasmus+, KA2 – Capacity-building in the Field of Higher Education**
Lead: **University of Palermo, Italy**
Programme & partner countries: **Tunisia, Italy, Spain, UK**
Timeframe: **2020-2022**
More information: **www.migrantsproject.eu**

MIGRANTS intends to reinforce the institution capacity of Tunisia Higher Education System. Given its geo-political situation, Tunisiat can play, in the specific context of Migrations, an important role for itself and for the surrounding countries, including, of course, the EU member states. The main objective is to improve the quality of Tunisian higher education and enhance its relevance for the labour market and society to support its capacities in local, international cooperation and global partnerships for safe, orderly and regular migration. Specific objectives are:

- Develop a new Joint Master's Degree in 'Migration Studies: Governance, Policies and Cultures' between the three Partner Universities
- Improve Partner Universities teaching staff's capabilities by a comprehensive programme of training, job shadowing, coaching and mentoring activities, and support in acquiring scientific qualification in Migration Studies
- Disseminate and exploit the results of the project, step by step, in order to guarantee its impact and sustainability
- Realise an orientation plan for students in entrance, in itinere, and in exit for placement

An overview of student-centred instructional methods

Figure 8

Brainstorming

Brainstorming encourages students to focus on a topic and contribute to the free flow of ideas

Case study

Case studies are useful to learn about real-world complex issues, apply critical thinking, and explore scenarios.

Competition

Students can engage in competitions, locally, nationally, or internationally. This allows them to engage with others outside of their own higher education institutions.

Concept Map

Concept maps consist of nodes labelled with a concept name and links drawn between the nodes. They can look like webs or chains and are an optimal group activity for organising or categorising information.

Cooperative

Cooperative learning is the process of breaking a classroom of students into small groups so they can discover a new concept together and help each other learn.

Media

Students work on an issue and create an educational video describing their process from context and methodology, through the data collection to findings. This can be public service video.

Debate

Debating involves students expressing their opinions from two competing perspectives with the goal of contradicting each other's arguments.

Discussion

Discussion is an efficient way to generate dynamic engagement even in large classes. Students can take roles as moderators and it can help create excitement in classrooms

Do now

A Do now is a brief starter or warm-up activity at the beginning of a lecture ranging from responding to prompts to asking questions in form of writing, discussion, a quiz, or a game. It is an excellent technique for classroom management, setting the tone for the day with a purposeful start.

Field trip

A field trip, such as a visit to a company or site, can provide students with stimulating experiences to broaden their perspectives and develop an experiential connection to ideas, concepts, and subject matter taught in the classroom.

Game

Games for educational purposes induce learning by simulating real-world situations without unwanted constraints and risks. They encourage dynamic participation and reduce resistance to innovative ideas and concepts.

Guest speaker

A guest speaker offers a fresh perspective and exposes students to teachings drawn from real-life experiences. Students get to link classroom teaching with the guest lecture, which in turn helps them better retain what is taught.

Guided conversation

Conversations in which the instructor provides prompting questions or thoughts prior to or during the conversation stimulates and distributes active participation in class discussion.

Index cards

There are many ways to use an index card (e.g. for gaining feedback) to foster engagement and cohesion within the classroom. This activity works well in a face-to-face scenario. It can be transferred to online spaces through polls in live-teaching sessions.

Jigsaw

Students work in small, interdependent groups with individuals given the responsibility for becoming 'expert' in one aspect of a topic that they then teach to their peers to accomplish a group goal.

Lab

Lab are ideal settings for teaching and learning (e.g. in science). They provide students with opportunities to think about, experiment, discuss, and solve real problems.

Lecture

Lectures are oral presentations given by an instructor who delivers information. Lectures are typically characterised by a unidirectional flow of information from instructor to students.

Pair and share

Students take approx. a minute to think through a response to a question demanding analysis, evaluation, or synthesis before turning to the partner for discussion and subsequently sharing with the class.

Panel discussion

A panel discussion is designed to improve skills of research, logical organisation of ideas as well as the ability to present these thoughts clearly and effectively. The panel is also a way to get different voices heard (incl. during the Q&A).

Poster

Students create a poster presenting context, significance, method, findings, and conclusion of a project.

Presentations

Presenting individually or as a group contributes to strengthen oral communication skills, gives students an opportunity to 'teach', diversifies the voices in the classroom and is a method of evaluating students.

Project

A project simulates what a learner could do at the workplace. It could also be a service project where students create real positive change for a partner client.

Quick write

A brief written response to a question or probe that requires students to rapidly explain or comment on an assigned topic. It can be used at the beginning, middle, or end of the class.

Role play

In role plays, students take on specific roles (preferably with which they are not familiar) and act them out to learn course content or understand complex or ambiguous concepts.

Simulation

Computer simulations are growing. Use technology to stimulate a real event. Practice without fear of failure.

Social Media

Students use social media to effectively share a message and get feedback.

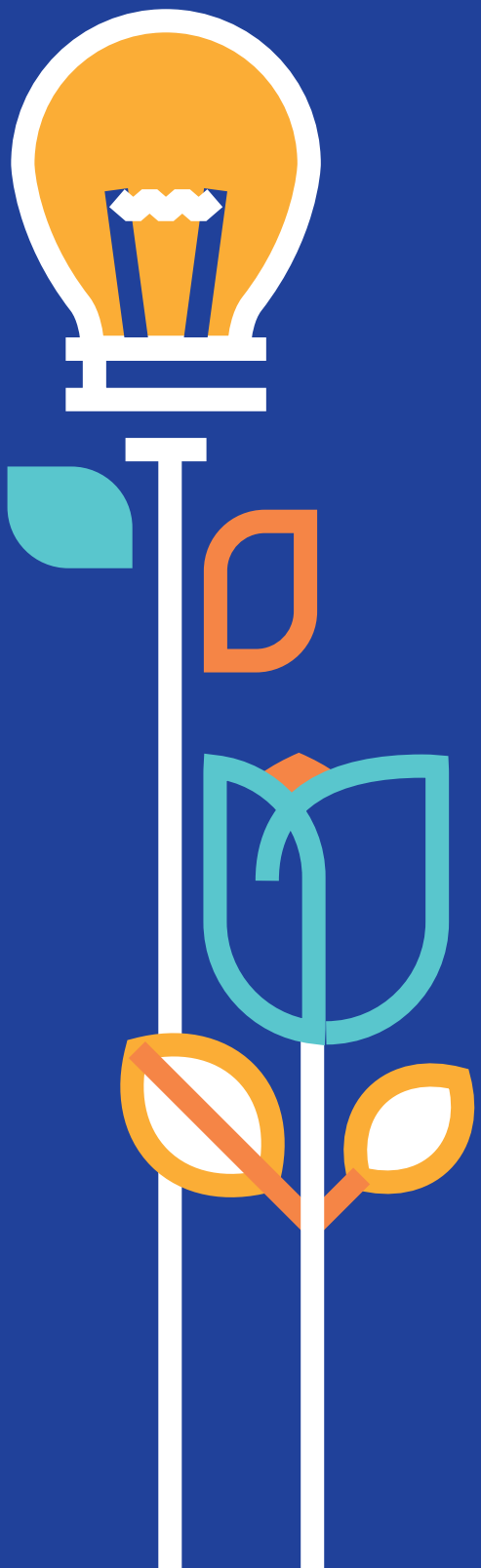
Speed dating

Speed dating is a series of brief one-on-one discussions and is associated with higher levels of student engagement. Students are given a topic to discuss. Each student sits facing another student for 3-5 min before they move on to their next partner.

Workshop

A workshop is interactive experience where the instructor or a student first shares information and then, to drive the point home, organises an engaging activity that empowers the participants to apply the skills, learn from each other's experience and receive feedback.

5



FOCUS

COLLABORATIVE DOCTORATES

Collaborative Doctoral Programmes

Doctoral training has evolved over past two decades to emphasise close cooperation with industry. These new forms of doctorates come in many different shapes and sizes, Industrial PhDs being the most common. The aim of these programmes is to integrate both professional and academic knowledge, allowing doctoral students to make an original contribution to both theory and practice in their field, while also developing their professional skills. However, as to their diffusion, collaborative doctorates are still mostly limited to EU countries.

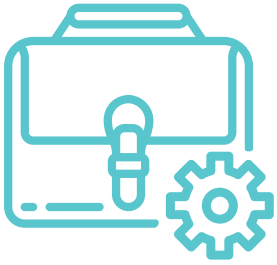
Background and context

With the emerging knowledge economy and increasing pressure on academia to make contributions to innovation systems[44], doctoral education has moved into the focus of policy and strategy discourse at the institutional, national, and transnational levels. Yet, as many as 40% of PhD graduates worldwide do not pursue a career in research[45]. This has led to the development of hybrid doctoral degrees that combine academic research with elements of practice through close cooperation with industry (private, public and **third sector** A). These new types of so-called collaborative doctorates come in many shapes and sizes with varying concepts and terminology. They differ across countries, and in Europe, there is no European-level regulation governing them[46]. Common examples include industrial PhDs or doctorates, collaborative doctorates, practice-based doctorates, company-based doctorates, work-based doctorate and professional or professional-practice doctorates. They all draw on the notion of 'doctorateness', which implies that candidates specialise in a disciplinary field and gain skills in applying scientific research methods with the aim of contributing to knowledge. The growing number of models and changing terminology demonstrates that the field of doctoral education is currently undergoing a paradigm shift.

Provisions and approaches

The rising popularity of innovative, collaborative doctoral programmes is due, in part, to the growing demand for research-related skills and hybrid skills as industry increasingly combines theory and practice to solve problems and innovate[47]. Research skills bring rigour to industrial processes and with hybrid skills, the researcher has the capacity to manage the organisational process and the **soft skills** to communicate and collaborate effectively with both the university and the company. An example of integrating research skills into industrial processes is the BlueSkills initiative which provides multi-lateral scholarships for PhD students that are hosted by a project partner creating a productive exchange between academia and industry. Collaborative PhD programmes are an essential component of these new business patterns because they combine work experience, learning, research, and planning activities by generating high added value and enabling constant innovation in production processes and in the way of delivering services.

The 'skills for employability' agenda has recently increased its focus to include employability of PhD graduates to ensure that they can succeed both in industry and academia. As a result, gaining transferable skills (e.g. leadership, teamwork, communication and networking) is getting more attention. However, while the concept of transferable skills is well established in countries with a strong tradition of industry-academic cooperation, it is not yet a reality in many countries. For more information (see Chapter 3: Skills).



Only 56% of PhDs around the world want to stay in academia[55]

Terminology around industrial doctorates varies greatly

Collaborative Doctorates Explained

COLLABORATIVE DOCTORAL TRAINING

Generic term to cover doctoral degrees that involve research projects in collaboration or partnership with non-higher education organisations or business. These occur across all disciplines.

INDUSTRIAL PHDS/DOCTORATES

Differ not only from traditional PhDs, but also from professional doctorates (widespread in the United Kingdom and Australia) and from professional practice doctorates in the United States. The notion of 'industrial' should be given the widest possible interpretation as the term 'industry' is used broadly to include all fields of workplace and public engagement, from industry to business, government, NGOs, charities and cultural institutions.

PROFESSIONAL DOCTORATES

Directed at mid-career senior professionals. They aim to make a contribution to practice, and are organisation-specific and generally 'in-service', mostly undertaken by people who have already entered the labour market.

PROFESSIONAL PRACTICE DOCTORATES

Have become increasingly widespread in the United States, differ from professional doctorates in that they are generally 'pre-service' – increasingly required by professional associations and agencies to enter professional practice. They are geared towards a specific profession and, unlike professional doctorates in the UK or Australia, they are not considered equivalent to PhDs.

TRADITIONAL PHDS/DOCTORATES

Generally prepare graduates to pursue a career in academia. They are discipline-specific, and they aim to make a contribution to knowledge.

INTERSECTORAL MOBILITY SCHEMES

The physical mobility of researchers from one sector (academia in particular) to another (industry in the first place, but other sectors of employment as well).

Collaborative doctorates and typologies of partnerships

There are many different types of partnership arrangements for doctoral intersectoral mobility, such as the physical mobility of researchers from one sector (academia in particular) to another (industry in the first place, but other sectors of employment as well). Most collaborative schemes prioritise spending a relevant amount of time in industry, thus strengthening the research-to-practice and research-to-policy (and vice-versa) dimension. These types of collaborative PhD programmes first emerged in the 1980s and have gained considerable traction in the last 10 years. Later developments also include a strong focus on entrepreneurship and launching start-ups. A recent example is Conception X, a UK-based deep tech venture programme and platform that transforms PhDs into 'venture scientists', helping them commercialise their research, create start-ups, and collaborate with industry. Overall, the different partnership schemes can be grouped into three main categories: (a) government-

Interplay between the different elements of the Triple Helix

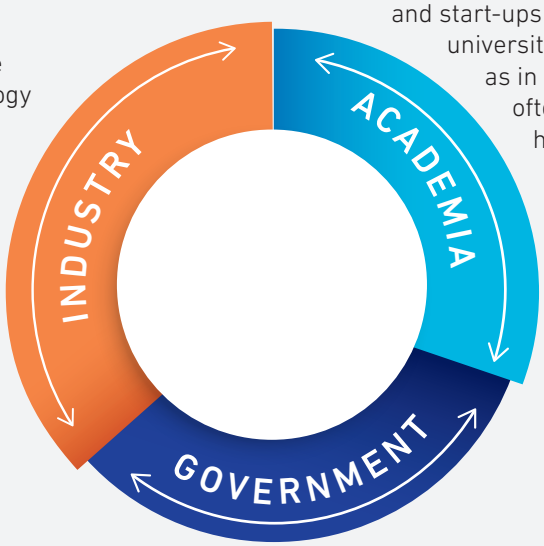
Figure 9

Industry

- Enhances visibility and reputation by being associated with research excellence schemes
- Improves long-term competitiveness and innovation through knowledge transfer and the experience needed in a global, interconnected world
- Supports competitiveness and innovation through knowledge transfer with universities and research institutions
- Identifies highly talented industrial researchers, especially in sectors where there are skills shortages
- Provides access to cutting-edge scientific equipment and technology
- Provides funding through research funds, corporate income tax deductions and social security allowances

Academia

- Boosts innovation in the region/country fulfilling the **'third mission'**
- Intensifies the science-to-practice and science-to-policy (and vice-versa) knowledge transfer
- Stimulates growth of network and reinforcement of relationships with industry
- Increases employability of PhD graduates
- Promotes technology-transfer through spin-offs and start-ups creation, mainly from universities to innovative clusters such as in science parks and incubators, often located in proximity to higher education and publicly finance research infrastructure.



Government

- Increases PhD employability since graduates of industrial doctorates enter the work force at a higher income level, more quickly and in greater numbers than those with conventional doctorates
- Stimulates innovation in the private and public sector through focused and application-oriented research
- Improves knowledge exchange between public sector and research institutions.
- Strengthens applied research capacity which feeds into policymaking in government (science-to-policy).

industry-academia partnerships; (b) industry-academia partnerships; and (c) government-academia partnerships. Examples of these three doctoral intersectoral mobility arrangements:

(A) GOVERNMENT-INDUSTRY-ACADEMIA PARTNERSHIP:

The French CIFRE programme (which includes Moroccan partners) was established in 1981 and aims to strengthen exchange between academic research organisations (universities or research centres) and companies, associations, or governmental entities. The focus is on creating the right conditions for industry to attract highly qualified PhD and post-doctoral researchers by offering them employment, career advancement and the possibility to be immersed in industry.

(B) INDUSTRY-ACADEMIA PARTNERSHIP:

The Italian PhD ITalents project is managed by the Conference of Italian University Rectors (CRUI) in partnership with Confindustria (Italian organisation representing the country's main industries). The project seeks to facilitate cooperation between universities and private sector companies, by supporting industry placements of PhD students in innovative projects.

(C) GOVERNMENT-ACADEMIA PARTNERSHIP:

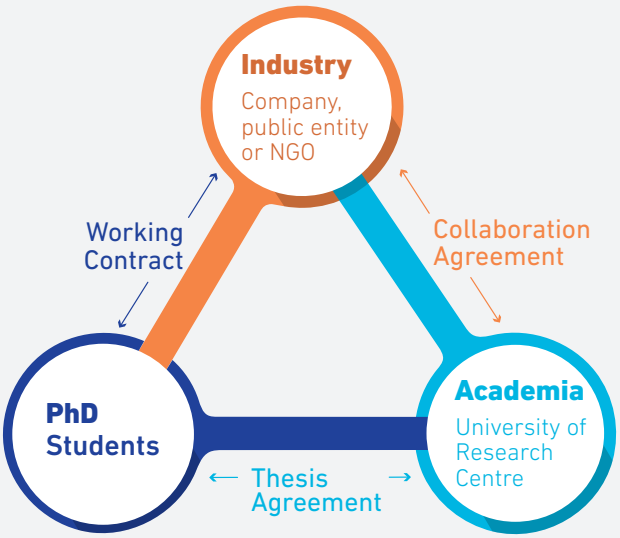
The Catalan Industrial Doctorates represent a partnership initiative between the Government of Catalonia and the Catalan University. The initiative aims to strengthen the competitiveness of Catalan industry through the retention of regional cadres and the attraction of international talent.

Benefits of collaborative doctorates

Doctoral education has great potential as a link between academia and society. Long-term collaborations with the industry sector have shown that industrial PhDs can contribute to the innovation ecosystem by developing human resources and sharing knowledge between universities and non-academic partners. Several studies (bibliography references47–53) recognise the positive impact of industrial doctorates for all stakeholders involved, even if benefits vary depending on the group. For universities and research institutes, key benefits include the insight into industry, the development of in-depth relationships and a better understanding of the labour market. From an industry point of view, participating in collaborative doctoral schemes provides benefits such as improving the organisation's long-term innovation and competitiveness, identifying highly talented industrial researchers and enhanced reputation. The European University Association (EUA) recommends that models for collaborative doctorates should be extended to the public sector for careers in public service54. As to doctoral students, carrying out their PhD research outside of academia is an effective means of gaining exposure to industrial research, acquiring transferable skills, and enhancing their employability.

Example of a collaborative PhD scheme

Figure 10



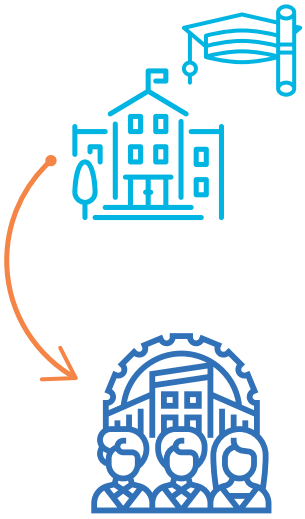
The key element of the industrial doctorate is the research project (object of the doctoral thesis) conducted with a company, public institution or third sector organisation in collaboration with a university or research centre. Therefore, industrial doctorates act as a bridge for knowledge transfer and encourage closer ties between academia and the practice world.

KEY success factors for Collaborative Doctorate

There is interplay between the different elements of the Triple Helix[19], government (policy level), business and academia (institutional level) and their respective logic[56,57] (i.e. cultural principles such as values, beliefs, and normative expectations). These can act as push factors or obstacles to the diffusion and function of collaborative doctoral programmes. For them to be successful and thus sustainable, all three sectors must align.

Policy level

- Policy supports academia in striving for excellence. Business competes to work with the best universities and research centres
- National policy framework incentivises academia and business through funding mechanisms and tax advantages
- Funding and regulatory environment are stable and allow for long-term strategic partnerships to thrive
- Academia benefits from sufficient autonomy to easily form partnerships and operate effectively.
- Robust national support structures are in place at national level
- Awareness of existence of collaborative doctoral programmes



Institutional level

- Industry-university partnerships are a strategic priority for their respective leadership
- Goals and benefits of partnering are clear to the whole organisation
- Organisational incentives in place for those managing the partnerships.
- For academia that means designing incentives and resources to encourage a cultural shift without penalising researchers
- People involved can cross boundaries and act as 'interpreters' bridging the cultural differences between academia and the business world
- Research university is seen as a source of competence and a problem-solver for society
- Overarching framework agreement for Intellectual Property that allows for flexibility required by business
- Indicators are developed to measure progress and evaluate regularly
- Partnering allows industry to do something it cannot easily do by itself
- Time split evenly between academic institution and business organisation
- Businesses offer employment contract to doctoral candidate

Despite the growing popularity of collaborative doctorates, certain barriers remain, especially when it comes to academic career review, accreditation, or intellectual property because research data might be confidential and PhD candidates might therefore be unable to publish and gain citations. As a result, young researchers who are yet unsure if their path is going to lead into academia or industry, might be reluctant to jeopardise their academic track record by engaging with collaborative doctorates. It still seems easier to transition from academia into the private sector than the other way around.

Key publications

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Edmondson, G., Valigra, L., Kenward, M., Hudson, R. L., & Belfield, H. (2012). *Making Industry-University Partnerships Work: Lessons from successful collaborations.* Business Innovation Board AISBL. Brussels. Retrieved from www.sciencebusiness.net/innovationboard

European Commission. (2018). S*tudy on Fostering Industrial Talents in Research at European Level, Final Report.* European Commission. https://doi.org/10.2777/947908

European University Association. (2016). *Doctoral Education - Taking Salzburg Forward Implementation: Implmentation and New Challenges.* Brussels. Retrieved from https://eua-cde.org/downloads/publications/2016_euacde_doctoral-salzburg-implementation-new-challenges.pdf

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Sabic, N., & Kemmerling, A. (2011). *Comparative analysis of doctoral education in Political Science and Related Fields, (November), 4–5.* Retrieved from http://pds.ceu.edu/sites/pds.ceu.hu/files/attachment/article/312/doctoral20education20in20political20science.pdf

Sarrico, C., McQueen, A., Sarrico Gabriele Marconi Ana Godonoga Victoria Galán-Muros, C., Davey Andrea Detmer Latorre Andrea-Rosalinde Hofer, T., Frølich, N., & Caspersen, J. (2017). *State of Higher Education 2015-16: OECD Higher Education Programme (IMHE).* (C. Sarrico, A. McQueen, & S. Samuelson, Eds.). Paris: OECD Organisation for Economic Co-operation and Development. Retrieved from www.oecd.org/edu/imhe

Sense, A. J. (2016). *Work-based research degrees: systematic cultivation through a University–industry network space.* Studies in Higher Education, 41(6), 933–954. https://doi.org/10.1080/03075079.2014.966665

Tavares, O., Soares, D., Sin, C., & Soares, D. (2020). *Industry–university collaboration in industrial doctorates: A trouble-free marriage? Industry and Higher Education, 2, 6–11.* https://doi.org/10.1177/0950422219900155

Tiraboschi, M. (2019). *The Employer's Perspective of Practice-Based Doctorates: A Paradigm Change.* Work Based Learning E-Journal, 8(1), 167–187.

Tiraboschi, M. (2017). *Research Work in the Industry 4.0 Era: The Italian Case.* E-Journal of International and Comparative Labour Studies, 6 (2)(2), 13–60. Retrieved from http://ejcls.adapt.it/index.php/ejcls_adapt/article/view/189

Tiraboschi, M. (2015). *Introduction: Innovative industrial doctorates: Issues and prospects.* International Journal of Technology and Globalisation, 8(1), i–v.

Examples and best practices

Collaborative doctoral training shows a fragmented picture[47]. Countries with a longstanding tradition of industry-academic collaboration, such as the UK, Belgium, the Scandinavian countries and France, have a greater prevalence of doctoral intersectoral mobility schemes than countries where industrial PhDs are more recent[58]. The growth of these alliances also reflects the evolution of corporate research and development away from basic research toward research that is closer to companies' immediate needs. As a result, a gap has emerged in industry's ability to peer into the future, and industry increasingly turns to universities to understand what is going on at the frontiers of research[59]. A selection of industrial PhD programmes in Europe are listed below.

Transnational intersectoral mobility (ISM) schemes are important for gaining access to, and participating in, established international research and innovation communities, especially in smaller countries. Smaller countries and countries with less well-developed research and innovation systems emphasise that researchers take part in intersectoral mobility schemes to gain a better overview of global developments in R&I, in particular scientific and research disciplines[58].

CATALAN INDUSTRIAL DOCTORATES

Funding: **Government of Catalonia Region**
Programme & partner countries: **Spain**
Start: **2015**
More information: **www.uoc.edu/portal/en/escola-doctorat/beques/pla-doctorats-industrials/index.html**

The aim of the programme is to contribute to the competitiveness and internationalisation of Catalonia's industrial sector while retaining talent and enabling doctoral students to carry out research and innovation linked to any area of knowledge in the private or public sectors through experimental development or industrial research projects. The Catalan Industrial Doctorate is based in two well-known and consolidated structures in the EU: Cifre – Conventions Industrielles de Formation par la Recherche in France and the Industrial PhD Programme from Denmark **(see https://innovationsfonden.dk/en/programmes/industrial-researcher)**. The programme has interesting features that can be useful in developing guidelines and suggestions for improvement in other schemes and is transferable, in the following ways: the training provided to researchers; the financial support provided to universities, companies and researchers; the support provided to researchers for international mobility.

CIFRE: CONVENTIONS INDUSTRIELLES DE FORMATION PAR LA RECHERCHE

Funding: **French Ministry of Research**
Programme & partner countries: **France, Morocco**
More information: **www.anrt.asso.fr/fr/cifre-7843 or https://www.enseignementsup-recherche.gouv.fr/cid22130/les-cifre.html**

The focus of Cifre, which is coordinated by the French Ministry of Research and includes Moroccan partners, is on creating the right conditions for companies to work with PhD candidates and researchers. The scheme allows PhD students to carry out their research within industry. Intersectoral mobility between academia and business is a priority for the ministry and therefore it supports industry's R&D efforts by making it easier for them to recruit PhD researchers through a research grant supplemented by a tax subsidy scheme. Both large companies and medium- and small-sized companies can benefit from financial aid to recruit a young doctoral student.

EIT: DIGITAL INDUSTRIAL PHD

Programme & partner countries: **EU**
Start: **2008**
More information: **https://doctoralschool.eitdigital.eu/ie-education/**

The ambition of EIT Digital is to educate a new generation of leaders in Digital technologies to respond to the evolving needs of the European economy. The EIT Digital Doctoral School on ICT Innovation innovates with a new kind of doctoral programme based on expertise in key digital areas together with a strong background in Innovation and Entrepreneurship. It creates a unique experience combining research, innovation, entrepreneurship, industry involvement and pan-European mobility. The I&E Education starts early, training doctoral candidates hands-on in two phases, the Business Competence phase followed by a Business Development Experience.

The growing demand for research-related and hybrid skills from industry has led to rising popularity of collaborative doctoral programmes that combine theory and practice.

EID: EUROPEAN INDUSTRIAL DOCTORATES

Funding: **EU**
Programme & partner countries: **EU**
Start: **2012**
More information: **https://ec.europa.eu/assets/eac/msca/documents/documentation/publications/finalbrochure_eid_en.pdf**

EIDs provide funding for universities to join this collaborative network to train highly skilled researchers and stimulate entrepreneurship, creativity, and innovation in Europe. They achieve this by involving the non-academic sector in doctoral training so that skills better match private and public sector needs. Non-academic organisations have an equal role to academia in terms of supervision arrangements and managing researchers' time. Doctoral students spend 50% of their time in the non-academic sector and are supervised jointly by the academic and non-academic organisations.

EJD: EUROPEAN JOINT DOCTORATES

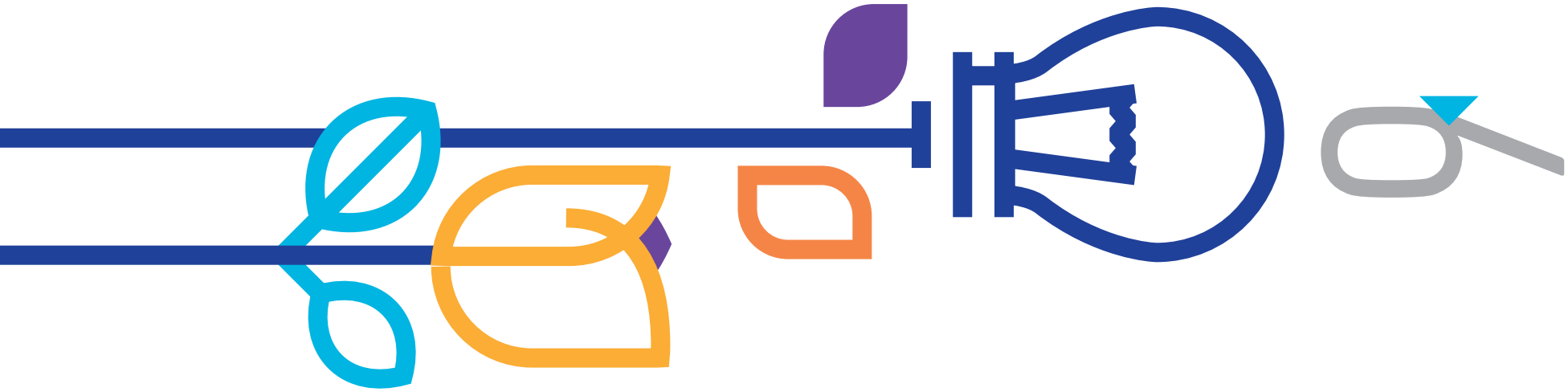
Funding: **EU**
Programme & partner countries: **EU**
Start: **2012**
More information: **https://ec.europa.eu/research/mariecurieactions/actions/research-networks_en**

The objective of the EJDs is to promote intersectoral and multidisciplinary cooperation through joint, double or multiple doctoral degrees. An EJD must be composed of at least three full partners (beneficiaries) from EU Members States or Associated Countries with authority to award doctoral degrees. At least two of the institutions awarding degrees must be established in an EU Member State or Associated Country and the the countries where the degree-awarding institutions are located must recognise the degrees. Joint supervision of the doctoral candidates is mandatory. A joint governance structure with common admission, selection, supervision and assessment procedures must be established.

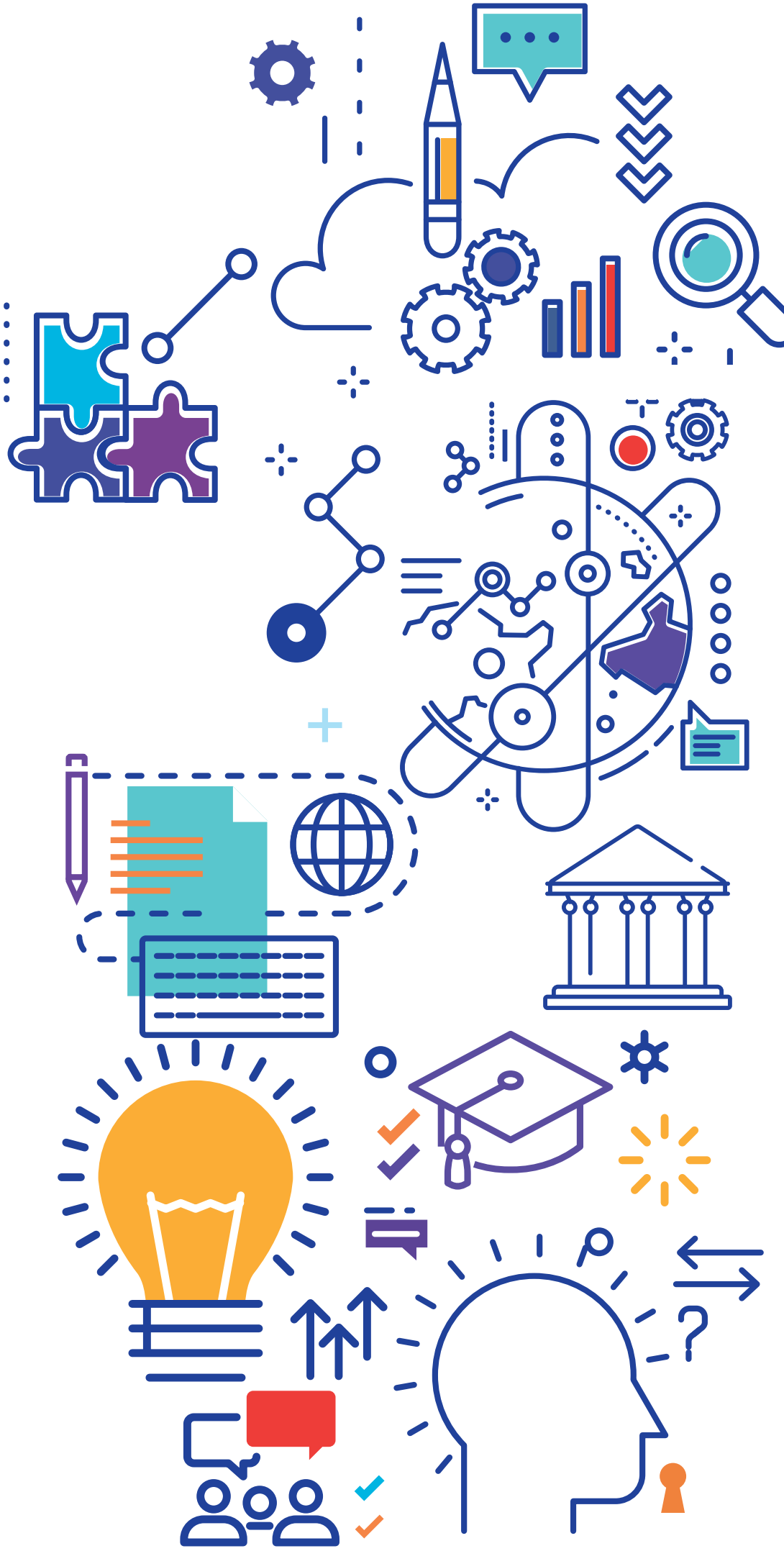
PHD ITALENTS

Funding: **Ministry of Education, Confindustria**
Programme & partner countries: **Italy**
Start: **2015**
More information: **https://www.phd-italents.it/**

PhD Italents is a project managed by CRUI (Conferenza dei Rettori delle Università italiane), on behalf of the Ministry of Education, in partnership with Confindustria, the most important employer organisation in Italy. The project aims to facilitate connections between universities and the private sector by supporting PhD students to work in companies and carry out innovative research projects. The employment contract of PhD students are co-financed for three years by the project (80% the first year, 60% the second year, 50% the third year). The private sector is required to make a co-financing contribution to meet the funding gap of 20% in year 1, 40% in year 2 and 50% in year 3. Each company participating receives EUR 30,000 - 35,000, with variations reflecting the fact that the scheme supports a diversified programme. Confindustria co-funds up to EUR 30,000 annually.



INTERNATIONAL MOBILITY



International Mobility

Internationalisation is one of the most important factors in determining quality of education and is therefore a priority strategy for academia. A key driver in increasing the level of internationalisation is academic mobility, an area that has grown significantly in numbers and diversified through approaches such as intersectoral mobility – the movement of staff, researchers and faculty as well as students. Innovations in mobility extend to programmes and institutions that use technology, including online courses and blended learning, which expands access to international opportunities to a broader group. Mediterranean countries have historically had lower participation rates in mobility, however in recent years, their participation rates are increasing faster than their Northern European neighbours.

Background and context

Higher education institutional strategies increasingly focus on internationalisation as it is a key component of global university rankings which have a direct impact on their ability to attract students, researchers and **faculty.** Traditionally, student mobility and research partnerships have been the main contributors to a university's level of internationalisation, however mobility is expanding into to innovative forms of international activity, providing inclusive approaches and strengthening cross-institutional partnerships. This is particularly relevant for universities in Southern and Eastern Mediterranean countries as these new forms can address barriers faced by universities in adopting internationalisation activities.

Terminology around mobility can be confusing as it includes movement of non-students as well as students, and the definitions overlap somewhat. Academic mobility refers to students and academic staff in higher education moving to another institution inside or outside of their own country to study, research, or teach for a limited time. '**Intersectoral mobility**' refers to the movement of students and academic staff between the academic, industry, public and **third sectors** (see Chapter 5: Collaborative Doctorates).

The OECD defines student mobility as comprised of several types of movement: individuals who pursue a foreign degree are called 'degree-mobile students' to distinguish them from 'credit-mobile students' on short exchange or study-abroad trips[60]. Credit-mobile students are considered either 'free-movers' who travel on their own initiative or 'programme students' who participate in an exchange programme such as **Erasmus**[60].

Academic mobility includes institutionalised student mobility programmes – those that rely on a university-level partnership – as well as staff mobility. Staff mobility is a relatively new practice and involves the movement of academic and administrative personnel in a structured exchange, supported by university or regional funding. The institutional support for academic mobility has enabled it to expand greatly from traditional movement that relied on individual projects and the wherewithal of faculty to manage the logistics. Importantly, this expanded form of academic mobility has provided greater access to international experience for students and staff, which is considered an important factor in a university's quality of education.

International student mobility has risen 165% since 2000 with 5.6 million international students worldwide in 2019 according to UNESCO. Fewer students from Mediterranean countries study abroad than their Northern European neighbours, yet mobility figures have increased more than three-fold in the Southern and Eastern Mediterranean from 2015 to 2019 at 40% compared to a relatively static 12% increase in Europe during the same period[61]. More than half of these students are from Syria, Morocco and Egypt, as seen in Figure 11, p. 68. Syria consistently has the largest number of students leaving their home country to study abroad in the region (UNESCO has data from 2015-2019), which could reflect the initiatives available to support mobility such as RESCUE (see Examples and Best Practices at the end of this chapter). Over the years, student mobility in the Southern Mediterranean has not only increased but the destinations have become more diverse. It is important to note that the international mobility experience enables participants to acquire another culture. In the case of mobility for an academic **internship,** this goes beyond the acquisition of the corporate culture. Multiculturality is a major asset for students in their search for employment but also for a better understanding of the Mediterranean reality.

Recently, the UfM Secretariat has launched a study aiming to provide a clear picture of the resources and opportunities available in the Euro-Mediterranean region regarding academic mobility and the portability of academic qualifications across borders. The study makes tangible and feasible recommendations to policymakers and relevant stakeholders. The results of the study, which has been entrusted to UNIMED, the Mediterranean Universities Union, should be available during the first quarter of 2021. Details about UNIMED can be found at the end of Chapter 2: Methodology: Triple Helix.

INTERSECTORAL MOBILITY

The physical mobility of researchers from one sector (academia in particular) to another (industry in the first place, but other sectors of employment as well).

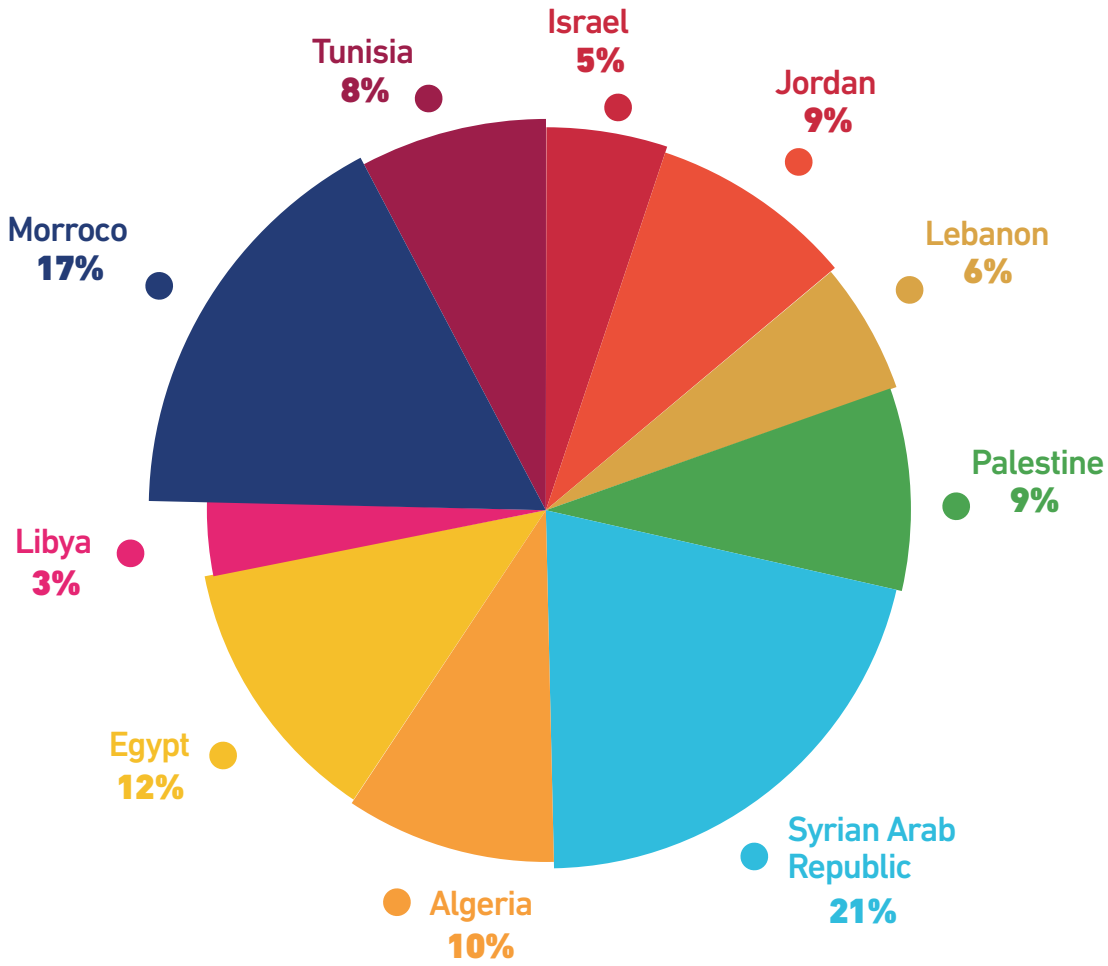
INTERNATIONAL MOBILE STUDENT

"An internationally mobile student is an individual who has physically crossed an international border between two countries with the objective to participate in educational activities in a destination country, where the destination country is different from his or her country of origin." (UNESCO, 2015)

> "Through the UfM regional cooperation framework, we have created Euro-Mediterranean Universities to educate a new generation of young people with a unique Euro-Mediterranean vision. With over 30 million people enrolled as students in the region, we also need to jointly work towards facilitating cross-border academic mobility opportunities to generate enough momentum to establishing a shared Euro-Mediterranean mindset and identity among our students"[66]
>
> **– UfM Secretary General Nasser Kamel**

Students leaving to study abroad by country of origin

Figure 11



Source: UNESCO National Monitoring 2019[61]

Provisions and approaches

Considering that most external movement has been directed towards universities in the English-speaking world, recent immigration restrictions in the UK and the US has provided space for re-thinking and redistributing student mobility62. Conveniently, the increase in English language programmes in many countries has opened doors for students to participate in international mobility that may be closer to home, using English as a common base, an additional language known by many. The global pandemic has pushed things even further, opening discourse on virtual mobility, where students enrol at an institution (or even a single course) from their home without the (sometimes difficult) process of getting an immigration visa or finding accommodation. This has the potential of equalising the field such that students who previously may not have been able to afford to study abroad can now participate in programmes without incurring extra costs on top of their current living expenses.

The Southern Mediterranean region has been a focus for the European Commission through its European Neighbourhood Policy which is committed to modernising higher education systems and increasing support for teaching and learning mobility for students, teachers, university staff and young people from Southern Mediterranean countries. Their primary cooperation tools are:

- The Erasmus+ programme in the fields of higher education and youth
- The Marie Skłodowska Curie Actions to support the mobility of researchers
- The European Training Foundation to facilitate the reform of vocational education and training systems

Erasmus is the best-known student mobility programme in Europe, which provides scholarships for students to complete a full study programme at the master's level. In 2014, Erasmus+ was launched to extend mobility options to students for shorter term stays, within parameters defined by bilateral agreements between universities. This facilitated and diversified mobility options for students, giving them the opportunity to have an international experience while still completing a degree programme at their home university. Students could also obtain double degrees and study at two or more different universities.

Cooperation with the Southern Mediterranean has been a focus for Erasmus+, underscored by the fact that 20% of its entire international credit mobility budget is dedicated to partnerships in the region[63].

Countries with the highest rate of participation in Erasmus Mundus Joint Master's Degrees (EMJMDs) programmes were Morocco, Tunisia and Israel. Top participating institutions were Ben-Gurion University of the Negev (Israel), Sfax University (Tunisia) and Université Cadi Ayyad (Morocco)[67]

Mobility has advantages for academic, businesses and policymakers. Below are descriptions of benefits that span these three perspectives.

'International tertiary mobility has major implications for the flow and exchange of ideas and knowledge'[65]

Academia

Student mobility programmes can create links between universities which strengthen existing partnerships and potentially expand relationships, moving beyond traditional research partnerships which are limited to the individual faculty who initiate and manage them. Instead, academic mobility is an institutional project and, with the recent trend of offering mobility options for university staff, the relationships between universities are deepened with interactions across the organisation, that often include leadership. A noteworthy example of mobility

programmes in the Southern Mediterranean region is the UfM labelled project, High Opportunity in the Mediterranean for the Recruitment of Executives of Excellence (HOMERe). Details about HOMERe can be found at the end of Chapter 7: Internships.

Industry

In 2019, there were close to 700'000 students from the Mediterranean region studying abroad, nearly half of which were from Southern and Eastern Mediterranean countries[61]. Students who participate in international mobility are considered to be more and better prepared to enter the global world. Professional prospects and employability in their country of origin and target country are improved in many ways including64:

- 23% less unemployment
- More than double the chance for promotion
- 44% greater chance of securing a managerial position
- Greater entrepreneurship: 1 in 10 students set up their own company and 4 out of 10 consider it
- 70% more of the skills demanded by companies

Policymakers

Policymakers are also interested in international students because they can become highly skilled contributors to a nation's international economy in the future. In recent years, the European Commission has invested considerable resources in establishing discourse on higher education policy with countries and regions outside of the EU. As part of the framework of a strengthened European Neighbourhood Policy (ENP) from the 2011 Communication and of the 2016 ENP review, the European Commission is committed to increasing the support for teaching and learning mobility for students, teachers, university staff and young people from Southern Mediterranean countries.

Policy dialogue should pave the way for increased cooperation and mobility between the EU and partner countries or regions. Country and regional reports show how the Erasmus+ programme is funding mobility and cooperation between Europe and other parts of the world.

> "International experience is always an added value for companies and is therefore of great help when finding work Someone who already has academic or work experience abroad and is proficient in a second language can earn up to 35% more than someone without this kind of experience or who has a basic level of English."[64]
>
> **— former European Commissioner for Education, Androulla Vassiliou**

Intercultural awareness and understanding gained through mobility can be a major asset for students in their search for employment.

Examples and best practices

DIRE-MED: DIALOGUE INTERCULTUREL, RESEAUX ET MOBILITÉ EN MEDITERRANÉE

Theme: **Mobility, capacity building, internationalisation**
Funding: **EC, Erasmus+ KA2**
Programme & partner countries: **Algeria, Morocco, Tunisia, France, Italy, Spain**
Duration: **2016-2019**
More information: **https://www.uni-med.net/progetti/dire-med-dialogue-interculturel-reseaux-et-mobilite-en-mediterranee/**

By fostering university cooperation, DIRE-MED seeks to establish a long-lasting relationship of mutual trust, understanding and intercultural awareness among Mediterranean countries promoting the mobility and exchange of people and in longer term, a major economic and cultural integration of the region.

Objectives:

- Creating a framework of cooperation to facilitate the exchange of students, academic and non-academic staff of HEIs in the Mediterranean Basin
- Articulating university-enterprise cooperation by promoting intercultural dialogue and by strengthening international and the entrepreneurial spirit in the region to boost the labour market
- Providing capacity building for International Relations staff of HEIs to set up "International Opportunities Offices" that will act as internationalisation hubs within their institution and their region
- Influencing institutional and political policies to consolidate, improve and develop new programs

COMMO: COOPERATION IN THE MEDITERRANEAN THROUGH MOBILITY OF STUDENTS AND STAFF

Theme: **Mobility, internationalisation**
Funding: **EC, Erasmus+ KA1**
Programme & partner countries: **Albania, Italy, Montenegro, Tunisia**
Start: **2015**
More information: **http://www.commo.it/?lang=en**

COMMO is a consortium of national partners coordinated by UNIMED and other organisations that support mobility for students, and administrative and academic staff. The project increases the capacity and skills of all the partners in international cooperation and management fields through transfer of new knowledge and enriched cultural awareness due to the experiences of exchange and mobility (both incoming and outgoing).

Objectives:

- Foster international and institutional networking, towards long-term collaborations
- Contribute to improving the international dimension of education and training
- Support students in acquiring skills and abilities (such as learning new languages) in order to develop their academic profile and ensure new job opportunities
- Pursue a deeper understanding of Mediterranean cultures through active participation in the social life of the country, developing a Euro-Mediterranean identity
- Facilitate and simplify the administrative, bureaucratic and organizational management of mobility activities both in the preparatory and operational phases of mobility

PROFAS B+

Theme: **PhD Degree mobility**
Funding: **Campus France & French agency for the promotion of higher education, reception and international mobility**
Programme & partner countries: **Algeria, France**
Start: **2014**
More information: **https://www.campusfrance.org/fr/le-programme-algero-francais-de-bourses-profas-b**

The PROFAS B + programme offers not only scholarships but also services provided by Algeria and France, in particular via the operator Campus France. These services aim to support and facilitate the mobility of scholarship holders in France.

ERASMUS+ BRIDGES TO ESTABLISH EVS PARTNERSHIPS

Theme: **Innovation & IT non-formal education**
Funding: **Erasmus+**
Programme & partner countries: **EU & Southern Mediterranean**
Start: **2017-2019**
More information: **https://ec.europa.eu/programmes/erasmus-plus/resources/erasmus-volunteering-activities-info-kit_en**

This project aims to improve the knowledge and skills of youth workers in the field of European Voluntary Services (EVS) https://ec.europa.eu/programmes/erasmus- and the development of competences for supporting and facilitating the intercultural learning process through non-formal education and the use IT methods, in partnership between organisations from EU and Southern Mediterranean countries.

ERASMUS+ JEAN MONNET ACTIVITIES

Theme: **Innovation, knowledge-sharing, and communication**
Funding: **Erasmus+**
Programme & partner countries: **International**
Start: **2014**
More information: **https://ec.europa.eu/programmes/erasmus-plus/opportunities/jean-monnet-projects_en**

This project aims to develop EU studies worldwide.For over 25 years they have been supporting Modules, Chairs, and Centres of Excellence to promote excellence in teaching and research on the European integration process at higher education level. The programme also supports policy debate with the academic world and a number of associations in the domain of EU studies.

ERASMUS+ TPTI: TECHNIQUES, HERITAGE, TERRITORIES OF INDUSTRY

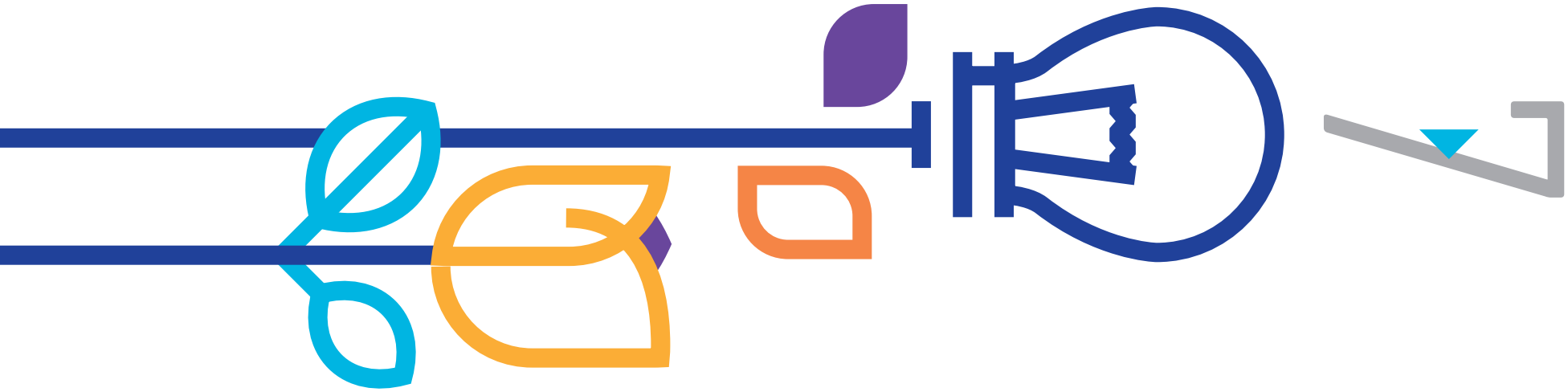
Theme: **Technical training**
Funding: **Erasmus+**
Programme & partner countries: **International**
Start: **2017-2022**
More information: **https://www.tpti.eu/en/**

This project gives training in industrial heritage, the expert assessment of historical technical environments, the institutionalisation of technical knowledge, and the management of technical landscapes.

ICM: INTERNATIONAL CREDIT MOBILITY

Theme: **Mobility**
Funding: **Erasmus+**
Programme & partner countries: **International**
Start: **2017-2019**
More information: **https://ec.europa.eu/programmes/eramus-plus/resources/documents/eramus-international-credit-mobility_en**

Staff members gained experience in teaching and training in new environments, new skills in the areas of intercultural communication and cultural diversity. The project enhanced the relevance of human capital development by exposing students and staff to innovative learning approaches, increase the quality of graduates at all levels, contributing to their professional development through observation of new and innovative practices, gained skills to impact on the internationalisation of the curricula and recognition of international mobility through professional development.



INTERNSHIPS /

Internships

Young people increasingly rely on 'non-standard' forms of employment to break into a labour market that often paradoxically demands prior experience even for entry level positions. Internships are a low risk solution for both graduates and employers to facilitate the transition from student to professional[68]. Integrating internships into study programmes offer clear benefits for students, employers and higher education institutions. Therefore, the interchange around organising internships, including logistics, duration, location, content, and the quality of the specialised practice are increasingly relevant aspects of the relationship between academia and employers[69].

Background and context

The International Labour Organization (ILO) defines an **internship** as 'a limited period of work experience which is neither part of a regular employment relationship nor a formal apprenticeship', that can be distinguished as[68]:

- Internships which are linked to a course of academic study
- Work experience undertaken as part of an active labour Market programme
- Open market internships, that is, work experience in firms or organisations which do not fall under either of the previous criteria

These types of internships are offered in many different work settings, which, although not an academic environment, still provide important skills, such as industry related knowledge, teamwork and soft skills. The internship is akin to training with specific learning objectives and evaluation – it must have a clear benefit for the intern. As such, the employer does not rely on the intern as a substitute for a regular employee and the intern is not entitled to a job at the end of the internship. In many cases, interns are unpaid. Students often take an internship in the summer during their course of study or right after graduation for six months to a year.

INTERNSHIP

A limited period of work experience which is neither part of a regular employment relationship nor a formal apprenticeship.

Increasingly, internships are becoming part of the curriculum. Multiple studies have shown that students who undertake an internship during their course of study are more likely to find work within six months after graduating from university[68]. The internship also contributes to addressing issues frequently raised by hiring managers as a barrier to employment. For instance, in the Mediterranean region, students – even those with an excellent academic record – lack knowledge of the working world and have few transversal skills such as soft skills, team spirit, autonomy and flexibility. According to the Euro Mediterranean international internship matching programme HOMERe (High Opportunity in the Mediterranean for the Recruitment of Executives of Excellence), this skills gap is part of the reason that youth unemployment is high in the region.

This tendency of employers to seek candidates with prior experience creates a barrier to entry for youth in the job market and exacerbates youth unemployment. Establishing internship programmes can help reduce youth unemployment by providing the opportunity to gain work experience and skills to transition from higher education to the workforce.

Universities can address the skills gap by consulting employers and aligning academic curricula to current labour market demands. However, this is a longer-term solution. A more immediate way to skill up students in specific areas required by hiring managers could be through internship programmes.

Provisions and approaches

In higher education, there are two main approaches to academic internships: education systems where the internship is recommended but not mandatory, and education systems which require graduates to participate in an internship during their studies[69]. Countries with mandatory internships may have support systems and networks with employers to assist students in attaining the internship, however, ultimately, it is the students' responsibility.

NON-STANDARD FORMS OF EMPLOYMENT[73]

The International Labour Organization (ILO) defines this as an umbrella term for different employment arrangements that deviate from standard employment. They include temporary employment, part-time and on-call work, temporary agency work, and other multiparty employment relationships, as well as disguised employment and dependent self-employment. Non-standard employment features prominently in crowdwork and the gig economy.

For students in the Southern Mediterranean region, there can be significant barriers to participating in an internship. In the case of a university not requiring an internship as part of a study programme, there may be little institutional support or partnerships with industry to assist students in finding and structuring an opportunity. For motivated students hoping to go abroad, the complicated visa requirements, logistics of finding accommodation and expense can make it a difficult prospect.

At the forefront of best practices in the region is the HOMERe project which aims to engage students and recent graduates with the Mediterranean business world through international internships in companies. The project is open to the following countries currently: Algeria, Egypt, Spain, France, Greece, Italy, Lebanon, Morocco and Tunisia. Details about HOMERe can be found at the end of this chapter. An example of a project that could be adapted to another university, is the LEO-Net Network and EU Placement service at the University of Pavia. This project focussed on finding suitable enterprises that offered quality internships facilitated by UNIMED's Mediterranean Network for Employability.

Relevant arguments in favour of internships from the academic, businesses and policymakers perspectives are described below[69].

Academia

There are many advantages for higher education institutions to promote internships, even making them mandatory in study programmes. In general benefits are related to quality education which can be distinguished between benefits for the institution and benefits for students (which, in turn, benefit the institution):

SOFT SKILLS

Soft skills, also known as non-cognitive skills, core work skills or core skills for employability are patterns of thought, feelings and behaviours that are socially determined and can be developed throughout the lifetime to produce value. Soft skills can comprise personality traits, motivations and attitudes and are vitally important for the employability and adaptability[32].

Internships provide students with:

- The chance to learn practically, through action, experience and collaboration thereby gaining an authentic (not abstract or simulated!) experience of translating the theoretical learning experience into the real action field
- A baseline practical work experience before actual employment, which is extremely useful in finding a job, gaining skills and eventually helping job performance
- A better chance of finding employment – part time and possibly full time – during studies, immediately following graduation, or shortening the period between graduation and employment

Internships provide higher education institutions with:

- Improved hiring rates of graduates which improves a university's global ranking
- Important feedback from students and employers on how to gauge the employability of their students so they can adapt, reconsider, update curricula to meet market demands
- The possibility of liaising with alumni who could offer internships through their work
- The opportunity to incorporate internship experience into the academic curriculum and thus build knowledge transfer into course content
- The chance to institutionalise relationships with employers, gaining exposure to innovation through learning opportunities and establishing partnerships

Industry

Internships provides businesses with direct benefits including:

- Access to knowledge that students transfer from their university studies
- Fulfilment of corporate social responsibility goals
- Modelling the skills of graduates to align with their actual needs, and developing this with a university partner to ensure future employees are adequately prepared for the work force
- Streamlining the selection process by observing potential hires during the internship as a training process

Cost savings for businesses – internships reduce **recruitment and hiring cost,** onboarding and training costs

- Access to knowledge that students transfer from their university studies
- Fulfilment of corporate social responsibility goals
- Modelling the skills of graduates to align with their actual needs, and developing this with a university partner to ensure future employees are adequately prepared for the work force
- Streamlining the selection process by observing potential hires during the internship as a training process

Policymakers

Policymakers also have an interest in supporting internships which bring together higher education institutions and businesses in their region. Benefits for policymakers include:

- Generating benefits for the local, regional, national and international community, which will make better use of human resources
- Creating real partnership between students, graduates, employers, university, community so that they work together to streamline the labour market and improve the local social fabric for all participants — students, universities and business

Examples and best practices

INNOVATION FACTORY

Theme: **Matching industry with investors**
Funding: **Berytech**
Programme & partner countries: **Lebanon**
More information: **https://berytech.org/programs/innovation-factory/program/**

Intensive Bootcamp-A 3-day entrepreneurship bootcamp with seasoned experts, Showcasing & Matchmaking-One showcasing and matchmaking event with investors and industry experts, Incubation-Access to incubation support for 1 selected project and a support grant prize a programme allowing you to develop your research or technology innovation in any sector into a practical and commercially-viable product or application.

TALENTUM TELEFÓNICA

Theme: **Training and internships**
Programme & partner countries: **Spain**
More information: **https://talentumtelefonica.com/**

Training and future work with programmes for disabled. Extensive programme that involves internships of young graduates and establishment of Talentum Labs comprised by graduates working mainly in digitalisation challenges in multidisciplinary teams.

ERASMUS+ WORK PLACEMENTS

Theme: **Work placement & internships**
Funding: **EU & EACEA**
Programme & partner countries: **International**
More information: **https://ec.europa.eu/programmes/erasmus-plus/opportunities/traineeships-students_en**

Supports traineeships (e.g. work placements, internships) abroad for students currently enrolled in higher education institutions in programme countries at bachelor and master level as well as for doctoral candidates. These opportunities are also open to recent graduates.

IBERDROLA

Theme: **Clean energy internships**
Funding: **EU & EACEA**
Programme & partner countries: **International**
More information: **https://www.iberdrola.com/home**

Clean energy International Internship Programme through undertaking a master's course in the areas of engineering, smart grid, renewable energies, sustainability, environmental studies, ICT, Big Data, cyber security. The programme connects nearly 200'000 students, professors and interns that are trained and work on the future of energy studies.

Boost your business in the Mediterranean: Get talented interns from the region by joining HOMERe!

HOMERe - High Opportunity in the Mediterranean for the Recruitment of Executives of Excellence

As HEIs encourage more and more students to participate in internships, the support structures needed to facilitate the connections and logistics is increasingly important. HOMERe is a UfM labelled initiative that supports enterprises interested in developing their business and expanding into new markets in the Mediterranean by helping them recruit highly qualified interns. At the end of the internship and following their return to the home country, companies could hire the interns – after their graduation – in their country of origin.

Conscious of both societal and economic challenges, enterprises involved in HOMERe work to attain better employability for youth in the Mediterranean. These companies are interested in the economic development of the Mediterranean region and through HOMERe, they can anticipate and identify the required competencies that youth should have in order to get a job. This anticipatory approach can also give direct insights from industry to align HEI curriculum with market demands.

HOMERe Process

1 Company sends an expression of interest to HOMERe

2 HOMERe sends the company an application form

3 The application is reviewed and distributed throughout:
- Academic network – an essential source to provide recommended candidates for the positions
- HOMERe Website
- Social media, especially Twitter

4 Communication of the position considers:
- Relevant specialisation
- Selected countries

5 CVs are received and vetted through the academic network

6 A short list of candidates ranked from top to least relevant is sent to the hiring company

7 As per the company's feedback, nominated candidates are subject to an 'evaluation and assessment' from a professional community gathering of:
- Local academic contact
- Member of the local HOMERe consortium
- Company hiring the candidate

8 Once a candidate is selected, next steps involve:
- Visa issuance (letter of invitation should be prepared)
- Intervention from the local university to facilitate

9 Intern's arrival in the country: candidate should get in contact with the embassy of the home country for coordination

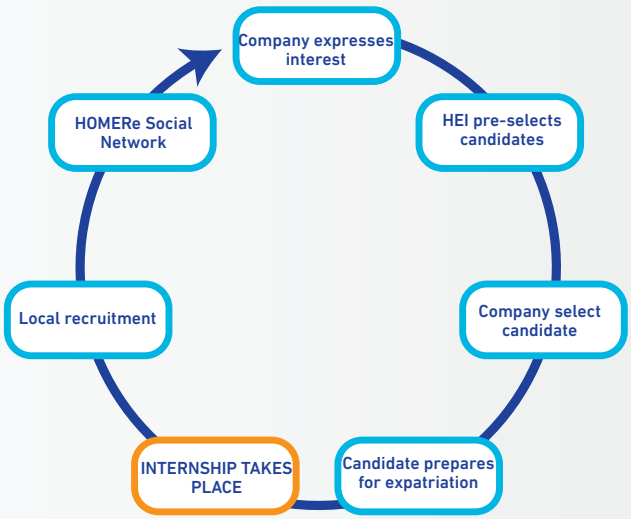
10 Intern's welcome to the company by a representative and meeting with the relevant academic partner in the hosting country

11 Company communicates clearly and precisely the assigned project and nominates a local mentor or coach from among their employees

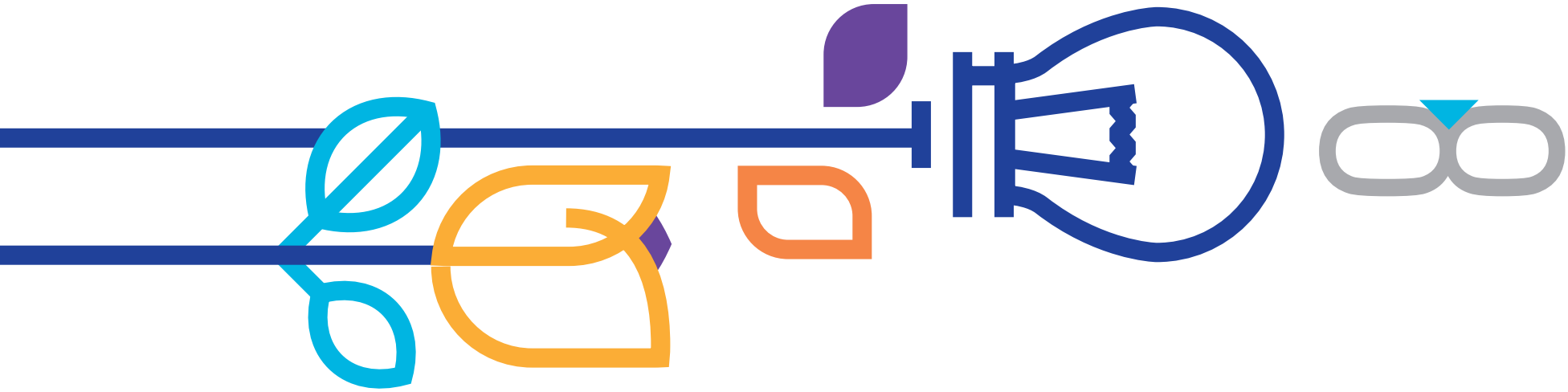
12 Intern will be regularly accompanied by an external mentor to help integrate and gain a better understanding of the community and culture

13 At the end of the internship, the Intern presents a project to the company and to the local university upon return

14 Intern is supported by the home university to find a job in country at the end of the internship.



www.homere-med.com



CAREER SERVICES

Career Services

The Mediterranean region, with particular reference to the Southern shore, has experienced a combination of economic, political, socio-cultural and educational factors which have had an impact on the development of career guidance services. Slow economic growth and political considerations coupled with gender roles and elitism embedded in social norms and education systems need to be considered when empowering Career Services[74]. A general model of Career Services may not fit perfectly, however elements of successful models can be adapted to support employability in the region. Due to their objective of optimising graduate transition into the labour force, Career Services are closely linked to industry and can play a key role in realising government policy towards improved employability.

Background and context

Career Services has been a standard part of many university's structures throughout the world since the 1980s[75]. As higher education has developed and economies have grown, the need for connecting graduates with business through job placement also grew and Career Services has become an important part of university services, taking over the role of counselling students in transitioning to the work force. With the global economy and competition for talent, Career Services have similarly evolved into professional networking, connecting students with employers looking for specific skills. After the recent economic downturn, there has been increased pressure on Career Services to address employability, which has led to cooperation with business partners and governments to build a service that works for students and can be measured by employability[75].

The more recent evolution in the Southern Mediterranean now sees Career Services well established in most higher education structures offering a range of support to increase graduate employability. The terminology varies – 'career service(s)', 'career counselling', 'career centres', 'career development', 'career coaching' are some of the names used for these services that support higher education institutions (HEIs) through assisting students (and alumni or others) in developing, evaluating, and implementing career, education, and employment decisions and plans[76].

Career Services contribute significantly to a university's efforts to address employability.

Due to the complex nature of the situation in the Mediterranean region, the approaches that can be appropriately adapted are multi-faceted, highlighting areas where co-operation between HEIs, business and policymakers can together facilitate real progress in employability in the region.

Self-esteem and self-efficacy during university impacts employability[81]

Provisions and approaches

Recent trends in Career Services show that centres are increasingly adopting standard frameworks in their organisational structures and establishing links to common platforms with other institutions[77] since the focus of most work is external with respect to the HEI and can therefore benefit from shared resources and information. These standard Career Services structures provide guidance for adopting an operational style and can promote interaction across universities to share information, connections and provide additional pathways for students and businesses in the Southern Mediterranean region.

Access to youth enrolled in university means that Career Services can act as an intermediary in supporting government policies by educating students on skills required in the labour market and degrees that are in demand. Most youth in the region choose to study humanities rather than science, technology or research which contributes to the gap between the supply and demand for skilled labour since science and technology offers greater employability options for graduates[2].

A concern about liberal arts education is that it can be 'out of touch' and does not immediately relate to a specific job. However, the liberal arts curriculum can strengthen soft skills that bring about successful transitions to the labour force. This needs to be emphasised by professors during class activities and can be integrated with further skills and trainings in science and technology study programmes

Increased accountability is prevalent in Career Services today. Most students believe that their university has a responsibility to help them find employment and university leadership have elevated Career Services to a higher level of influence and support coordination and partnerships outside the institution[78]. Many HEIs globally set employment targets and expect Career Services leadership to demonstrate success through measured results in terms of graduate employability rates. Transparency and measured outcomes can help an HEI gain support and resources from governments.

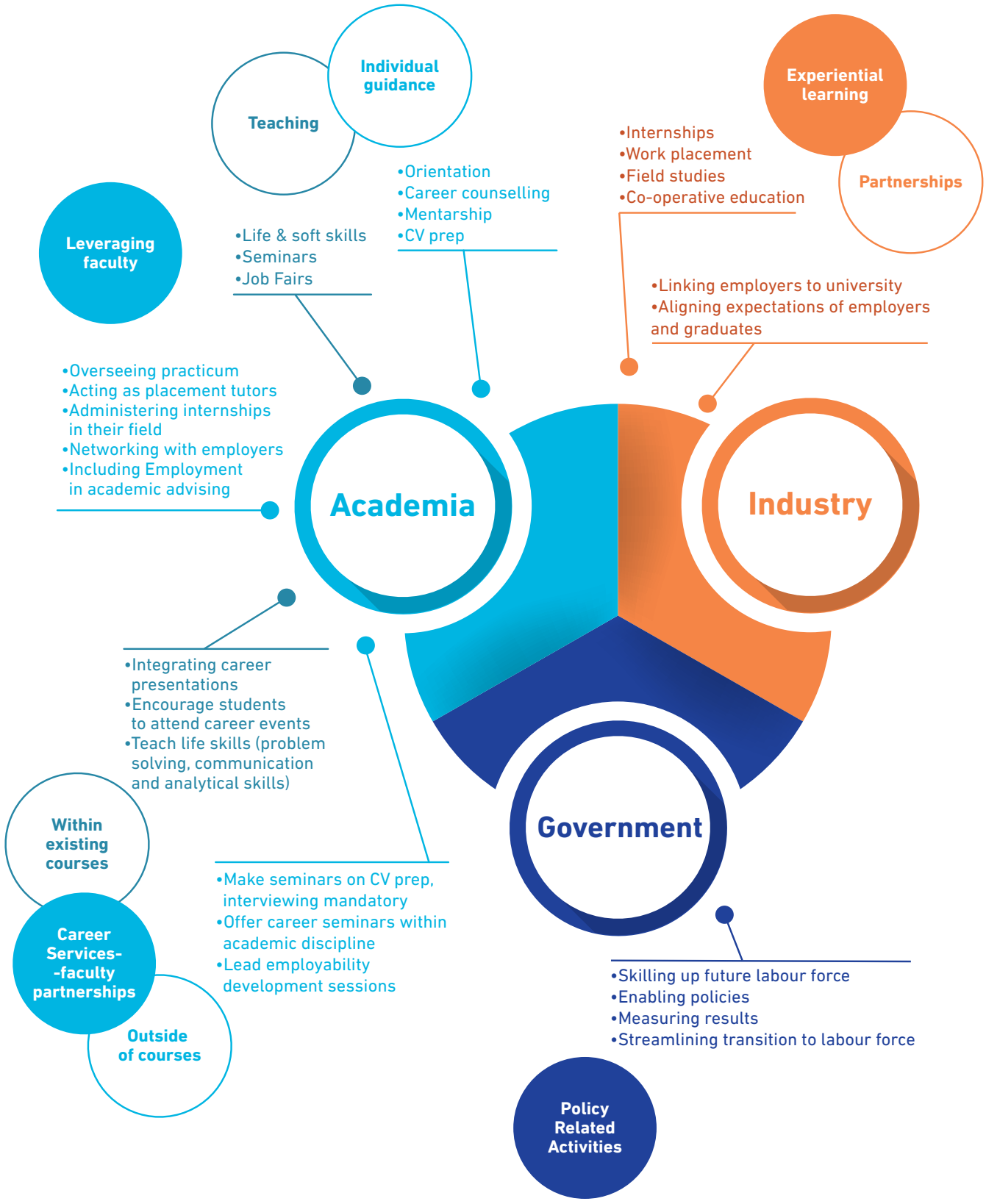
To achieve success, it is essential that Career Services have institutional support. Career Services is moving towards connecting communities across industry, region and culture. Targets must be transparent and evolve in reaction to the marketplace. The complexity of the world of work requires an interactive approach with external influencers in industry and government. In many areas in the Mediterranean region, the role of the government is even more important due to the high level of public employment compared to industry.

Benefits of career services

Universities educate students to help them get a job. Career Services are a key part of this process, smoothing the transition from academia to industry. An example of a national approach to career support is the Career and Competency Certification Centre (4C) in Tunisia which aims to improve the employability of students through counselling, support, training and openness programmes on the socio-economic environment. -economic. The '4C' centre is a structure present in multiple university campuses and constitutes the link between academia and socio-economic actors. Arguably, Career Services, like education or health care, are a public service that contributes to the public good, which puts them in a unique position to bring together stakeholders in academia, industry and government. Figure 12, p. 86 illustrates a selection of Career Services activities that span these three perspectives.

Career Services activities in the Triple Helix

Figure 12



Academia

An HEIs community of people (professors, students, alumni and industry) are its key resources. Career Services play a significant role in marshalling this transversal network professionally and efficiently, creating internal partnerships across faculty departments to implement training that students need to transition to work. This can place Career Services as the face of the university towards local industry and, in the case of public institutions, governments. This unusual position can drive Career Services outside the core university management structure since so much of the work is done externally. However, Career Services has the reputation of the university in their hands through students who become alumni, community members, employees and eventually employers as well as partnerships with industry and connections with other institutions and platforms. To some extent, students make decisions about enrolment, partners make hiring decisions and governments funding decisions, based on the success of the university which is strongly tied to their employability rates. Therefore, a student focus serves not only to help students but to achieve a good reputation for the entire institution.

85% of companies

use internships to hire their staff[80]

EXPERIENTIAL LEARNING

Experiential learning is learning by doing and can be undertaken through internship, field study, practicum, work placement, cooperative learning, apprenticeship, research, fellowship, clinical experience, simulations, service learning, study abroad, and volunteering.

Industry

For a business, Career Services provides a direct connection to job seekers and can streamline the hiring process. The risks involved in assuming a new employee can be mitigated through experiential learning options, which gives the company the opportunity to 'try before they buy' working side by side with a prospective graduate to see first-hand how they perform by involving them in an internship, field study or other cooperative education. Establishing a relationship with Career Services can facilitate creating research partnerships with Academia and support 'employer branding' which is the employer's reputation in terms of the working environment.

A potential problem with a student-responsibility approach can be that some students do not know how to ask for support because they do not have a trust-based relationship with professors or other university staff. This can be ameliorated by integrating career relevant information into the curriculum: connecting coursework with professions, providing examples of applications, discussing how business uses what students learn in class.

Policymakers

Policymakers expect Career Services to improve the efficiency of the education systems and the labour market, to see that as many graduates as possible are employed as soon as possible. They also look to Career Services for community needs in terms of access to learning, skilling up and lifelong learning or continuing education[79]. Policymakers can justify allocating resources to HEIs that develop career self-management skills and career information, and that provide career guidance based on individual needs and circumstances. To support their allocation decisions, policymakers can require transparency through regular review and performance analysis of career management programmes, development of employability and links between students and future employers. The activity of measuring indicators can be incorporated into a larger quality process for the university. For example, Career Services can contribute to social equity goals (inclusion) and support labour market objectives (mobility and flexibility)[79].

Tools and resources

What can career services offer?

From facilitating internships to providing guidance in how to choose a career to specific advice on creating a curriculum vitae (CV), interviews and networking, Career Services are a valuable resource for students as well as industry and academic partners. Increasingly, remote and distance skills are required even before entering the work force, as interviews and even internships have moved to digital formats that can eliminate the barriers caused by geographical distance. A selection of activities and services can be seen in Figure 13.

Selected Career Services activities and services

Figure 13

Career Services KEY success factors

- HEI Staff (including professors) involvement in employability support
- Reflective practice (Student responsibility) and the place of information, advice and guidance
- Experiential and workplace learning
- Extra-curricular activities for developing employability
- A dedicated 'employer engagement' resource is recommended (involve industry in curriculum development)

Examples and best practices

CVTIP: CENTRE FOR PROFESSIONAL DEVELOPMENT, TRANSFER AND INTEGRATION

Programme & partner countries: **Morocco**
Start: **2014**
More information: **https://ueuromed.org/en/structure-innovation/centre-professional-development-transfer-and-integration-cvtip**

Service within the Euro-Mediterranean University of Fes dedicated to supporting students and research professors in the protection of intellectual property and the valorisation of their research work and inventions. It works to promote them, with a view to concluding partnerships with the socio-economic sector. It also contributes to the placement of students in internship positions, and to the professional integration of the UEMF laureates.

COIP: THE PROFESSIONAL ORIENTATION AND INTEGRATION UNIT

Programme & partner countries: **Morocco**
Start: **1976**
More information: **https://www.heurejoyeuse.ma/fr/benevolat/coip/**

Project with the Association L'Heure Joyeuse to promote the employability and entrepreneurship of young people from disadvantaged neighbourhoods and facilitate their integration into the world of employment.

CIHEAM: INTERNATIONAL CENTER FOR ADVANCED MEDITERRANEAN AGRONOMIC STUDIES

Programme & partner countries: **Morocco**
Start: **2019**
More information: **http://mip.iamb.it/?p=1194**

Offers skill building and projects, such as 'Strengthening knowledge management for greater development effectiveness in the Near East, North Africa, Central Asia and Europe' with the International Fund for Agricultural Development (IFAD): CIHEAM BARI, in collaboration with International Center for Agricultural Research in the Dry Areas (ICARDA) organised the 'Writeshop to develop capacity building and innovation plans' in Rabat, Morocco.

TUNED: TUNISIAN NETWORK FOR EMPLOYABILITY AND DEVELOPMENT OF GRADUATES' SKILLS

Programme & partner countries: **Tunisia**
Start: **2016**
More information: **https://www.uni-med.net/progetti/tuned/**

Modernising and developing the Higher Education sector within society, strengthening the relations between university and enterprises and improve quality. The project uses a graduate database to create an integrated demand supply matching model.

4C: CAREER AND COMPETENCY CERTIFICATION CENTRE

Programme & partner countries: **Tunisia**
Start: **2014**
More information: **https://www.4c.tn/**

A national project in Tunisia which aims to improve the employability of students through counselling, support, training and openness programmes on the socio-economic environment. The '4C' centre is a structure present in university establishments and constitutes the link between the university and socio-economic actors.

ANCT: ASSOCIATION NOUVELLE CHANCE TUNISIE

Programme & partner countries: **Tunisia**
Start: **2012**
More information: **https://arab.org/fr/annuaire/association-nouvelle-chance-tunisie/**

Member of the MedNC network, this project aims to contribute to the integration and inclusion of young people in their approach to employability through training and continuing education to improve the chances of integration or promotion. They help graduate and youth who have not graduated from secondary and higher education, with or without qualification.

ETF: EUROPEAN TRAINING FOUNDATION

Programme & partner countries: **EU**
Start: **1994**
More information: **https://www.etf.europa.eu/en/practice-areas/promoting-employability**

Description: Collection of best practice, publications, videos, tools, library of policy measures
Purpose: Supports countries surrounding the European Union to reform their education, training and labour market systems. Staff has expertise and experience gained over nearly 25 years of working hand-in-hand with government, business, and social partners in countries in and around the EU neighbourhood. The aim is to support each country's own process for education, training, and labour market reform, with a range of evidence-based methodologies.

EUROGUIDANCE

Programme & partner countries: **EU**
Start: **1998**
More information: **https://www.euroguidance.eu/guidance-systems-and-practice/good-practices**

Euroguidance is a European network of national resource and information centres for guidance in 34 European countries. Its main target group consists of guidance practitioners in education and employment, among them professionals who provide information and guidance on international learning mobility to end-users seeking studying and training opportunities abroad. Euroguidance supports the national and international networking of guidance practitioners by organising seminars, training, and study visits on different themes. It also offers Career Management Skills Framework for different countries.

PROMETHEUS

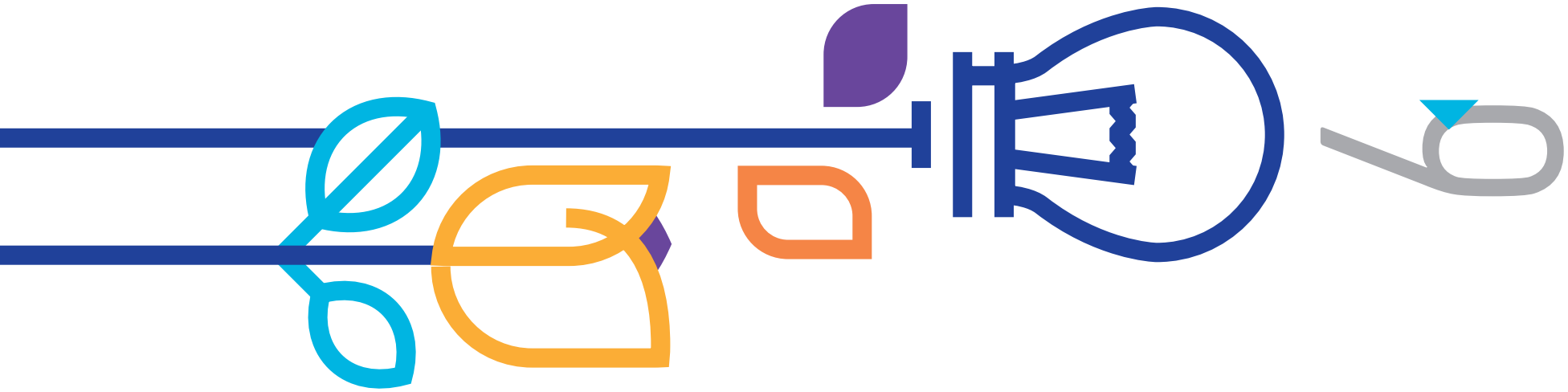
Programme & partner countries: **EU**
Start: **2003**
More information: **http://epale.ec.europa.eu/en/resources-centre/content/toolkit-25-tools-career-counselling-and-guidance**

The Prometheus Toolkit includes a set of 25 innovative career counselling and guidance tools. The tools can be applied in the different stages of the career counselling process and are selected in a way that they can fit various objectives and areas of career guidance. The majority of tools are appropriate both for face-to-face and online guidance and there are tools, specifically addressing individual counselling, as well as others, which are applicable in a group context. The Prometheus project addresses the need for career counsellors and guidance practitioners to also consider these challenges and looks to aid in making the counselling process more relevant to the needs and attitudes of a new generation of digital natives by providing an online platform with peer networking opportunities and offering a repository of best practices and online guides and toolkits for counsellors.

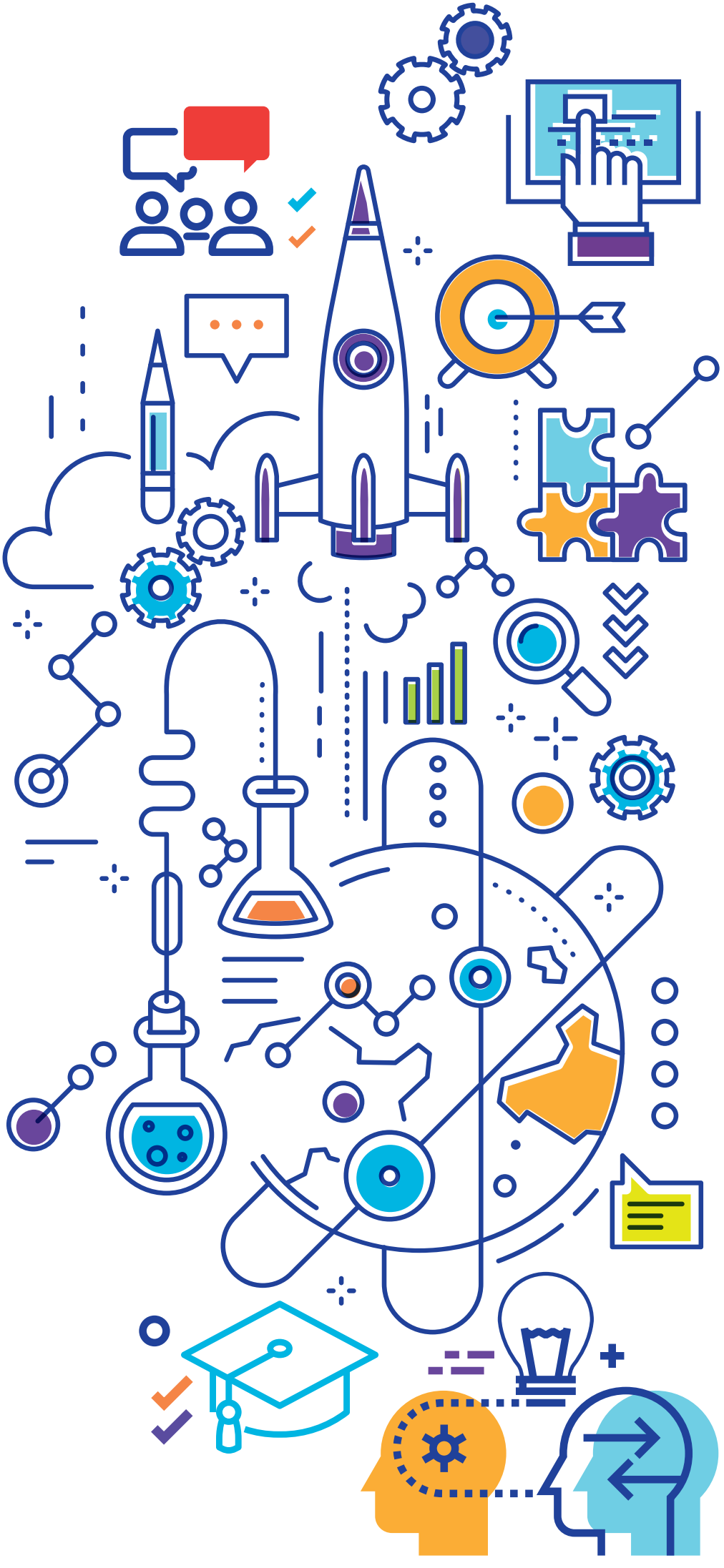
SKILLUP

Programme & partner countries: **EU**
Start: **2016**
More information: **http://skill-up-project.eu/**

Skill Up answers the urgent priority established by Europe 2020 policies of promoting graduates' employability by means of strengthening ties between higher education and VET curricula and the labour world through authentic learning scenarios and career counselling and guidance. The project sets the stage for scaling up innovative learning approaches, ICT-based methodologies, greater inter-sector cooperation, and the European-wide transfer of a replicable process that responds to real world work demands.



KNOWLEDGE EXCHANGE



Knowledge Exchange
From Knowledge Transfer to Multi-Actor Co-Creation

Never has it been clearer that our societies depend on technological, scientific, and social innovation to address current and future challenges and that the solutions will result from building bridges across disciplines, institutions, cultures, and countries. With the growing demand for innovation, research institutes and universities are confronted with expectations and demands that position them as a central player of the Triple Helix Model of Innovation[82–84]. This new and challenging role not only calls for research institutions to be closely interlinked with its academic partners, but also requires them to become embedded in the regional and national ecosystem amidst the many different actors that range from industry and policymakers to civil society organisations and investors. This chapter explores how academia can establish stronger interdisciplinary and cross-institutional connections going beyond the short-term project-based knowledge transfer. This requires academia to acknowledge that it is not the sole source of knowledge, enter relationships with external actors, and develop solutions together with other knowledge actors in the ecosystem.

Large-scale scientific and societal problems tend to be extremely complex, have multiple causes, and will never have one perfect solution. As the required expertise to address such complex problems is both specialised and scattered, the search for solutions increasingly occurs in open knowledge and innovation systems that involve diverse actors from academia, industry and society, involving multiple inputs, resource commitments, and motives. This has resulted in the active promotion of knowledge and innovation ecosystems as engines for growth and social development[85]. Although licences, patents, and spin-offs are important tangible results of commercialising research, there are numerous other channels in higher education institutions (HEIs) where knowledge exchange is increasingly relevant, for instance, in student and faculty **intersectoral mobility,** entrepreneurship education, curriculum development and

collaborative doctorates. As a result, academia-industry knowledge-exchange initiatives beyond the research and the patent-licence-idea model have become a complex, multifaceted, multi-level and multi-actor endeavour[86]. To accommodate these initiatives, knowledge transfer policies have expanded to ensure systematic impact and broader synergies.

Complex interplays within the ecosystem

For knowledge exchange to support innovation and employability, complex interplay between the many different actors of the system is required. In this dynamic setting, all actors – academia, industry, policymakers, and intermediaries – have to work together for the system to grow and produce the desired results (see Table 4, p. 97).

ACADEMIA

Traditionally, the university's mission has focused on two areas: research and teaching. Academia's role in knowledge production has placed it at the centre of the innovation and competitiveness agenda. This emerging centrality is indissolubly interlinked with its new role as a central actor in the coordination of innovation networks[87]. However, there is an overwhelming consensus that academia's most important contribution to regional innovation is to educate students and prepare them for their future professional role. Central concerns relate to quality, relevance (e.g. do the graduates have the relevant skills and competencies to match the needs of current and future challenges) and mindset (e.g. the entrepreneurial mindset).

The second dimension of the university's role in fuelling regional innovation consists of (co-) producing relevant knowledge. As a motor of regional (or national) innovation, the university has to look for an intersection or balance between international research and regional relevance. For instance, the Consiglio Nazionale delle Ricerche (CNR) based in Italy, plays a key role in this process through development policies as a strategic partner in innovation and competitiveness of the production system both in traditional sectors and emerging new ones. CNR, and other national research institutes, consolidate and nurture scientific research thus encouraging its implementation into the social, industrial and institutional milieu. Yet, it is important to acknowledge that: (a) academia understands its role in fuelling innovation more than the general innovation discourse may suggest. While the political discourse promotes HEI's contribution to regional innovation in terms of economic value, in practice, universities strongly emphasise the societal challenges linked to technological and economic innovation, prioritising questions of sustainable use of resources or social equality (as an example)[87]; and (b) academia can only deliver on the new role if certain prerequisites are met, for instance adequate research funding. In the Southern and Eastern Mediterranean, most national authorities are striving to raise research funding from a regional average of 0.6% (2017) of GDP [A] to 1%[88], while R&D funding in OECD countries is at 2.6% (2018) of GDP1.

Public **Research funding** in the **Southern and Eastern Mediterr anean r egion** is

0.6%
(2017) of GDP

compared with

2.6%
(2018) for OECD countries[1]

POLICYMAKERS

For the development of effective knowledge exchange innovation systems, public authorities, and governments – national, regional, and local – need to create innovation-conducive framework conditions, acting as primary regulator and funder, infrastructural developer as well as strategy moderator and facilitator. In the Mediterranean region, the European Bank for Reconstruction and Development (EBRD) is active in liaising with policymakers and industry to support the needs of small and medium sized companies. They have provided advocacy in Egypt in the manufacturing and tourism sectors to help express the needs for stronger governance to improve quality through qualification and occupational skill standards as well as curricula at the national level. Details about EBRD can be found at the end of this chapter. See Table 4 for a list of potential contributions from stakeholders.

INDUSTRY

Organisations (companies, public institutions and the **third sector** [A]) often cannot depend exclusively on their internal research and development process to match the increased pace of innovation. This is especially true for small and medium-sized companies. As a result, HEIs have become important partners, providing the most needed resource – competent graduates – while continuously generating new knowledge, including research-based solutions to specific innovation challenges. Just as vitally, universities are naturally disposed to scan knowledge frontiers and explore the next generation of technologies. They can thus identify new kinds of technological, environmental, and societal challenges which define future market trends. They look for new and often interdisciplinary approaches for addressing such challenges, expanding their horizons, and developing new pathways. In order to fully benefit from such dense collaborative networks of open innovation, industry needs some enabling conditions, such as skilled experts, relevant research centres and innovation platforms that bring together relevant actors. See Table 4 for a list of potential contributions.

INTERMEDIARY ORGANISATIONS

Intermediaries play a pivotal role in knowledge and innovation ecosystems. They act as agents or brokers in aspects of the innovation process between two or more parties. Intermediaries can be cooperative technical organisations (e.g. industry associations)[89], business incubators, innovation platforms, NGOs and consultancies or innovation market-place operators. Since the early 2000s, intermediaries strengthened the capacity and coordination of innovation processes[90]. These 'systemic' intermediaries act as boundary spanners and facilitate cooperation between different actors. They can close cognitive, normative, and managerial gaps that can present barriers to a well-functioning innovation system. Intermediary activities include [91,92]:

1. Awareness and exchange of knowledge
2. Advisory, consultancy and backstopping (e.g. providing information about potential collaborators)
3. Demand articulation
4. Facilitation and brokerage across networks, (e.g. acting as a mediator in between organisations)
5. Capacity building
6. Supporting access to resources
7. Validation and regulation
8. Protecting results
9. Commercialisation
10. Evaluation of outcomes

Potential contributions to the innovation ecosystem

Table 4

	CONTRIBUTION		
CO-CREATION	**Academia**	**Industry**	**Policymakers**
Strategy networks	• Foresight of emerging research fields and technology developments	• Foresight of emerging markets and technology developments	• Regional or municipal development perspectives and investment planning
Research thematic clusters	• Different disciplinary expertise on research development in thematic area • Access to international research partners • Ideas for new research • Researchers and graduates	• Knowledge of global economic developments • Expertise on market development and market potential • Applied research and development expertise • Access to global business partners	• Cluster-specific funding for staff • Funding for research conducted by regional cluster partners priority areas • Targeted start-up funds for priority thematic areas
Start-up or innovation services	• Students and researchers with business ideas • Community building among students and researchers • Marketing and communication of events	• Mentors • Jury members • Venture Capital • Partners for start-ups (e.g. as first clients or demonstration cases)	• Funding for service staff • Funding and framework for venture competitions • Start-up grants
Technology, transfer and innovation services	• Financing and training staff • Allowing commercialisation as acceptable pursuit	• Mentorship and financial support for IP	• Funding • Services provided by government agency
Joint core technical facilities	• Technical know-how and staff to ensure maintenance	• Infrastructure funding	• Infrastructure funding
Shared large research infrastructure	• Research and technical expertise to ensure state-of-the-art status and develop methodology	• Infrastructure funding, technological expertise	• Infrastructure funding
University research centres with impact mission	• University research with international visibility attracts national and international funds and talent to the region.	• Companies and public external stakeholders adopt research in their development and cooperate to meet challenges together	• Competitive funding to meet societal/ economic challenges • Adapting regulations to meet challenges
Joint labs/ interface research centres	• Provide researchers and facilities for applied research and prototype development • Research expertise • Researchers (Master's students, PhD, postdocs)	• Funding and expertise for IP and commercialisation • PhD funding • Research infrastructure funding	• Funding for centres • Infrastructure • Building permit • Regulations for private-public partnerships • Special framework contract for private-public partnership accounting
Joint campuses, science parks	• Openness to external partners, private-public partnerships, in research and education to create dynamic campus environments	• Infrastructural Investments private-public partnerships with long term perspective	• Urban planning and zoning laws allowing mixed use • Lobbying for national and international funds (e.g. EBRD) • Infrastructural investments

Source: adapted from: Reichert, S. (2019). EUA Study: The Role of Universities in Regional Innovation Ecosystems. European University Association[87]

THE TUNISIAN START-UP ACT IN A NUTSHELL

In 2018, Tunisia passed legislation known as the Start-up Act, an unprecedented legal framework supporting start-ups. The elaboration of the act was coordinated by the Ministry of Communication Technologies and Digital Economy and involved the whole Tunisian entrepreneurial ecosystem. The legislation offers advantages and incentives to entrepreneurs, investors and the start-ups. In order to benefit from the programme, they go through an online application that will grant them the 'Start-up label', which gives them access to the benefits of the Start-up Act. The latest application window opened in November 2020.

And what are the benefits? It is a series of incentives to encourage potential entrepreneurs (young professionals, researchers, young graduates) to take the leap and launch their start-ups. The Startup Act provides some eye- catching incentives:

Start-up grant: an allowance given to the co-founder and shareholder of a start-up to cover living expenses for one year. Its amount is indexed to the previous remuneration during the last 12 months for an employee and takes the form of a fixed allowance for the self-employed.

Leave: founders can take a one-year leave (renewable once) to dedicates themselves full-time to the launch and development of their start-up;

Graduates: young graduates eligible for employment programmes including the Stage d'initiation à la vie professionnelle (SIVP), who launch or work for a start-up, maintain their right of participation through the end of their relationship with the start-up for three years.

Patents: support by the State of the procedures and costs of registering start-up patents (nationally and internationally).

Positive failure: the Start-up Act does not penalise failure, promoting the amicable liquidation of start-ups through measures such as the Guarantee Fund for Start-ups, exemption from corporate tax, and Government support for salary costs and employers.

www.startupact.tn

JORDANIAN HIGHER COUNCIL FOR SCIENCE AND TECHNOLOGY (HCST)

Jordan outperforms several countries in the region in product innovation, technology absorption, competition, start-up skills, and cultural support indicators. The HCST sees higher education institutions and research centres as central actors in supporting their regional ecosystems through innovation and graduates with an entrepreneurial mindset. Its focus is on:

- Articulating policies and national strategies to support science, technology and start-ups
- Promoting a culture of innovation entrepreneurship
- Strengthening partnerships and networking between leading research universities, centres of excellence, and research institutions with industry
- Integrating the entrepreneurial mindset as a transversal theme in high education curricula
- Improving access to funding
- Activating business incubators and initiating and establishing innovation and entrepreneurship centres

Key initiatives:

- In 2019, the Government of Jordan introduced a new Ministry for Digital Economy and Entrepreneurship (MoDEE)
- In 2018, the Innovative Start-ups and SMEs Fund (ISSF) was launched as a private sector managed fund with USD 50 million from the World Bank and USD 48 million from the Central Bank of Jordan (www.issfjo.com)
- In cooperation with GIZ, the J-CORE stakeholder exchange strengthens the Jordanian entrepreneurship ecosystem, addressing ecosystem challenges in coordination with MoDEE

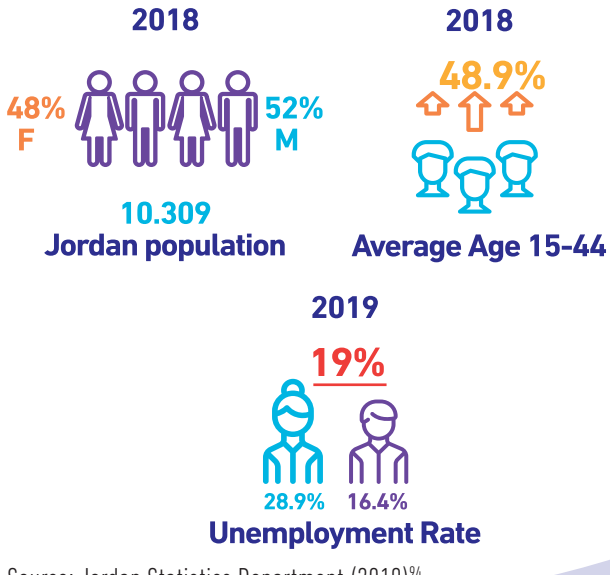
Enablers in the Jordanian ecosystem

Incubator/Techno Parks: **iPark, Al-Urdinia Lal-ebdaa, Shamal-start Generation Impact**
Accelerators: **Oasis500, Hassad**
Funds (VC. Angels) **Oasis500, Silicon Badia, Amam Ventures, Seven Circles, Innovative Start-ups and SMEs Fund (ISSF), iMENA**
Support Organisations **Queen Rania Center for Entrepreneurship, ZINC, The Tank by UMNIAH, Big by Orange**

www.hcst.gov.jo

In the past 5 years, Jordan has
improved
its placement in the
Global Entrepreneurship
Index by **23 ranks** placing itself **49th** out of 137 countries[93]

Figure 14: innovation plays a key role in addressing Jordan's youth unemployment



Source: Jordan Statistics Department (2019)[94]

Examples and best practices

RESUME: RESEAU MÉDITERRANÉEN POUR L'EMPLOYABILITÉ

Theme: **Employability and the Triple Helix**
Funding: **Erasmus+ / KA2 – Capacity Building in the Field of Higher Education**
Lead: **UNIMED, Mediterranean Universities Union**
Programme & partner countries: **France, Italy, Spain, Lebanon, Morocco, Tunisia**
Timeframe: **2015-2018**
More information: **www.resumeproject.eu**

The RESUME project aimed to enhance and reinforce the role and potential of HEIs in developing employability in Mediterranean countries by adopting a transversal entrepreneurial mind-set at the HEIs and by opening and structuring the dialogue among the universities, the enterprises and the policymakers.
The RESUME project addressed four priority actions:

- Establishing inter-ministerial commissions for entrepreneurial learning
- Establishing a platform for the identification and exchange of good practices
- Strengthening co-operation among HEIs and promoting links with business to foster entrepreneurship
- Establishing an accredited Southern Mediterranean entrepreneurship network paying particular attention to gender issues

THE NEXT SOCIETY

Theme: **Networked Community**
Funding: **EU**
Lead: **Anima**
Programme & partner countries: **Algeria, Egypt, Jordan, Lebanon, Morocco, Palestine, Tunisia**
Timeframe: **2017-2020**
More information: **https://www.thenextsociety.co/**

The Next Society is an open community of changemakers, entrepreneurs, investors, corporates, NGOs, public and private innovation, research, and economic development hubs from Europe and seven Mediterranean countries: Algeria, Egypt, Jordan, Lebanon, Morocco, Palestine and Tunisia. It aims at mobilising, promoting and reinforcing innovation ecosystems and economic development in the MENA region. The Next Society believes in Reverse Innovation, the capacity of innovators from emerging countries to come up with solutions to contemporary challenges that can inspire the rest of the world, by supporting South Mediterranean innovators who develop local solutions with a global reach or which allow to skip a generation in terms of use or technology. The key objectives of the programme are:

- Improve policy frameworks
- Foster start-up successes
- Promote and internationalise clusters
- Accelerate technology transfer towards the enterprise

SATT: LES SOCIÉTÉS D'ACCÉLÉRATION DU TRANSFERT DE TECHNOLOGIES

Theme: **Technology Transfer Accelerator Network**
Funding: **National funding**
Programme & partner countries: **France**
Start: **2014**
More information: **www.satt.fr**

In France, the SATT Network is the association that brings together the Technology Transfer Accelerator Offices, which have the challenging mission to accelerate the transformation of French research into innovations. Their aim is to enhance the value and to accelerate the process of technology transfer from publicly funded research toward industry. SATTs evaluate, market and license technology from French Universities and Public Research Organisations. Through its action the SATT Network enable to:

- Make available a common catalogue of technologies ready to be transferred
- Develop partnerships
- Display shared values
- Organise a common communication

PRIMA: PARTNERSHIP FOR RESEARCH AND INNOVATION IN THE MEDITERRANEAN AREA

Theme: **Partnership for Research and Innovation**
Funding: **Horizon 2020 & partner countries**
Lead: **UNIMED, Mediterranean Universities Union**
Programme & partner countries: **Algeria, Croatia, Cyprus, Egypt, France, Germany, Greece, Israel, Italy, Jordan, Lebanon, Luxembourg, Malta, Morocco, Portugal, Slovenia, Spain, Tunisia and Turkey**
Duration: **2014-2020**
More information: **www.prima-med.org**

PRIMA is the Partnership for Research and Innovation in the Mediterranean Area and the most ambitious joint programme in the frame of Euro-Mediterranean cooperation. PRIMA aims to build research and innovation capacities and to develop knowledge and common innovative solutions for agro-food systems, to make them sustainable, and for integrated water provision and management in the Mediterranean area, to make those systems and that provision and management more climate resilient, efficient, cost-effective and environmentally and socially sustainable, and to contribute to solving water scarcity, food security, nutrition, health, well-being and migration problems upstream. PRIMA gathers European Union Member States, Horizon 2020 Associated Countries and Mediterranean Partner Countries on an equal footing basis (co-ownership, co-management and co-funding) with the Participation of the European Commission, under the framework of an art.185 TFEU.

AREA SCIENCE PARK

Theme: **Science and technology park**
Funding: **National funding**
Programme & partner countries: **Italy**
Start: **1982**
More information: **www.areasciencepark.it**

Area Science Park is a leading multi-sector science and technology park which operates internationally. It is managed by a consortium of research and business actors and was officially recognised by the Ministry of University and Research in 2005 as a '1st level national research body', whose purpose is to provide a national point of reference for technology transfer. Area Science Park offers different services, in many of which it takes the role of an intermediary:

- Company creation: Area has developed a new model for business incubators called Innovation Factory. It steps in during the earliest stages of an enterprise's life cycle (the pre-seed phase), when risk of failure is highest
- Innovation in business: fostering the development of project concepts, seeking the funds required to support them, identifying national and international partners and creating training and knowledge sharing programmes.
- Promoting research: contribute to the marketing of patents and other industrial property titles and to the creation of spin-off businesses.
- Innovation Projects: participate in national and international scientific projects, technology development projects and innovation dissemination projects funded by the EU (FP7, Horizon 2020 and others).
- Capacity building: foster international partnerships and provides consultancy services in designing science and technology hubs.

Advanced instruments: offer top-notch infrastructure and skills to companies interested in carrying out industrial innovation and research projects in the advanced materials field.

Tools and resources

Knowledge exchange between academia and industry comes in many different shapes and sizes. Collaborative innovation certainly is a key area, but there are many more opportunities to collaborate and create partnerships – intersectoral mobility, curriculum development, teaching and learning are some pertinent examples.

Potential contributions to the innovation ecosystem by academia, industry, and policymakers

Table 4

Instrument	Format/Function
Research	
Contract research	Support industry in solving concrete problems and innovation challenges. This provides flexible funds that can be used freely for other research, infrastructural or maintenance purposes. There is also the possibility of aligning the academic research strategy with industrially relevant themes and expand the network.
Joint research projects	Joint research projects allow for a number of benefits on both sides. They provide industry with the latest, specialised, in-depth research know-how in academia, while academia develops awareness of latest trends in industry. This is also a chance for academic research to be inspired by application-derived questions. Other benefits are the development of an extended network, the benefits of out-of-the-box thinking, increased mutual understanding of each other's perspectives, interests, and challenges, and last but not least, the screening of new talent for employment.
Co-created research centres or joint Institutes/Labs	Funding of joint Institutes or Labs (infrastructure and PhD students) or co-created research centres enhance the long-term innovative capacity of both the corporate and academic partners, allow for state-of-the-art infrastructure and strengthening of the organisation's competitiveness, while alleviating public budget pressures. These initiatives can go as far as whole research, science and technology parks.
Cross-appointments	Part-time positions for industry researchers at the university and vice-versa (e.g. cross-appointments) which develops mutual knowledge of needs and challenges, and understanding of each other's methods, concepts, and attitudes.
Patent and licensing agreements	Commercialising research results through patenting and licensing these outputs.
Industry research fellowships	The aim is to develop and support industry-academia research partnerships.
Grants	Research grants, gifts, endowments, donations (financial or equipment), general or directed to specific departments or academics.
Endowed/ Sponsored chairs	Sponsoring chairs (internationally competitive salary, possibly also including start-up funds, research infrastructures) supports academia in hiring a high-level researcher to strengthen a specific research area. At the same time, the access to the researcher can strengthen a company's key competences.

Incubation and start-ups	
Mentoring	Successful entrepreneurs are available as mentors for start-ups or entrepreneurship training. This helps students to consider launching their own business a realistic option and makes available real-life support to entrepreneurs.
Research, science, and technology parks	Working in close proximity allows knowledge to be shared, innovation promoted, and research outcomes progressed to viable commercial products. Science parks are also often perceived as contributing to national economic development, stimulating the formation of new high-technology firms, attracting foreign investment, and promoting exports.
Equity	Equity holding in companies by universities or faculty members.
Teaching and learning	
Curriculum & teaching	Practitioners are involved in teaching – this can be anything from short guest lectures about a specific topic or a one-day lab session to a full course as part of the curriculum. This provides students with insight into real-life professional challenges and solutions, especially in areas where academic research is lagging fast market developments.
	Integration of real-life cases (e.g. case teaching) and challenges (e.g. student capstone projects in industry). *This increases the relevance and appeal of study programmes and develops students' interdisciplinary problem-solving skills.*
Internships	Providing internships for students to improve their employability and support potential employers in identifying and testing potential future employees.
Thesis	Joint supervision of masters' or PhD theses to provide students with the possibility to experience the real work environment, gain problem-solving skills and support industry to solve concrete problems.
Student hackathons	Competition during which students design, build and a develop solutions for a specific challenge.
Student competitions	Individual students or teams compete for a prize where skill is the main predictor of the winner. There can be a competition between students or teams of students within a classroom or across different universities or geographical regions.
Scholarships	Undergraduate and post-graduate student scholarships.
Lifelong learning	Develop and deliver training programmes for industry players to support them with the continuous upskilling of their employees.
Other	
Advisory boards	Participation in advisory boards.
Brokerage platforms	Participation in brokage platforms (e.g. regional technology transfer organisations, industry association).
Advisory/ Consultancies	Expert advice in the form of consultancy services draws upon and applies existing knowledge and expertise in the practice world. It can also generate longer term research collaborations. The University recognises and encourages consultancy activity, as it contributes to its aim of promoting external engagement, enterprise, and innovation. It is important to differentiate between institutional and individual consultancies.

European Bank
for Reconstruction and Development

Linking demand to supply in employability

EBRD European Bank for Reconstruction and Development Employment & Skills Programmes

The EBRD has developed a unique private sector focused approach to economic inclusion which integrates a focus on gender into the Bank's transition mandate to support countries through projects and policy engagement in their transition towards sustainable and inclusive market economies. The EBRD promotes inclusive market economies by harnessing the power of the private sector to create equitable access to economic opportunity for all. This distinct approach to economic inclusion makes use of the Bank's private sector engagement to support its clients in addressing key operational challenges – whilst at the same time opening economic opportunities to underserved groups.

The Bank works pro-actively with clients across sectors such as manufacturing, retail and tourism, agribusiness, power and energy, natural resources and financial institutions to achieve measurable and verifiable inclusion outcomes. Economic inclusion is fully integrated into the EBRD's transition mandate and its project selection, appraisal and evaluation processes across all sectors and regions.

The EBRD's inclusion approach is based on a clear definition and robust analytical framework:

- Based on the concept of equality of opportunity, the EBRD defines economic inclusion as the opening up of economic opportunities to previously under-served social groups, regardless of circumstances beyond their control, such as their gender, place of birth, socio-economic environment or age.
- At an operational level, EBRD defines economic opportunities as access to jobs and skills, finance and entrepreneurship and services.
- Annual inclusion 'gap' assessments measure the extent to which women, young people or people in remote regions face disproportionate challenges in accessing employment, entrepreneurship or services. These 'gaps' allow for the Bank to prioritise investments to address key inclusion challenges through its investment and policy activities across the region.

On the policy side, the EBRD contributes to policy framing, negotiations, and decision-making. Inclusive investments provide the basis for policy engagement where the EBRD brings together private sector employers (its clients and other interested companies) and education authorities in order to raise vocational skills standards based on the requirements of employers and to enhance the effectiveness of dual education models (such as apprenticeships). Until today, the EBRD has invested EUR 11.4 billion in more than 290 projects with private sector companies targeted at gender and economic inclusion.

www.ebrd.com

How ERBD supports policy reforms and the demand side of employability



We promote **private sector dialogue** for inclusive policies

and help to advance **inclusive policy reforms,**

thereby helping to unlock **sustainable and inclusive growth**

For instance, we:

- Facilitate **public private dialogue** to address sectoral growth barriers and inclusion challenges, thereby ensuring **demand-driven solutions**

We have worked to:

- Introduce **skills standards** reflecting employer needs
- Remove **regulatory barriers to female employment**
- Promote **inclusive public procurement**

Through:

- **Scaling up** of inclusive business practices and policy solutions

How EBRD supports skills development and the supply side of employability



We are working with our clients to identity **core business challenges**

and jointly develop **tailored solutions** to address them,

at the same time creating **economic opportunities** for all

These chellenges include:

- Finding and retaining skilled talent
- Enhancing workforce diversity
- Accessing new markets and/or target groups

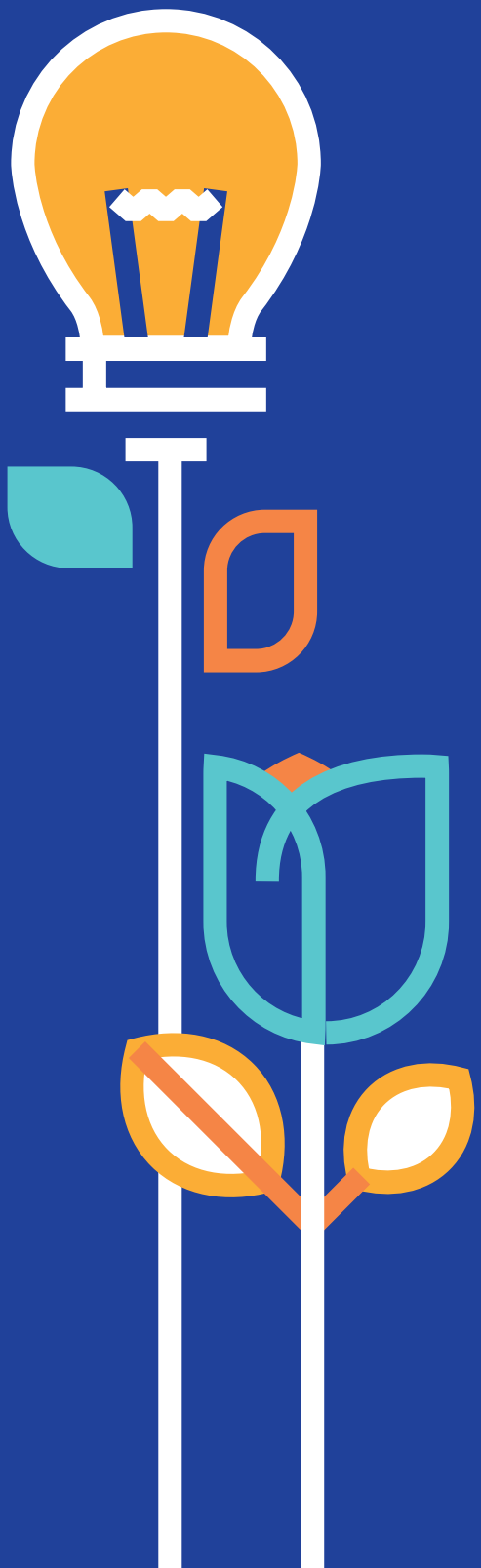
We support our clients in:

- Developing and expanding hight-quality trainig programmes
- Introducing Equal Opportunity Action Plans
- Designing new products and sevices

We open up access to:

- **Skills and jobs**
- **Finance and entrepreneurship**
- **Key services** that enhance economic opportunities.

10



FOCUS

PARTNERSHIPS FOR INNOVATION

Higher Education-Industry Partnerships for Innovation

Academia and industry have a long tradition of collaboration, and when universities and business work together to push the frontiers of knowledge, they can become a powerful engine for innovation. The benefit of such partnerships has long been obvious for universities: external research funding, significant inputs to keep curricula updated, the possibility of generating solutions for pressing global challenges and legitimacy, especially as academia is experiencing mounting societal pressure to contribute to economic growth. According to research, the most productive collaborations are strategic and long-term. They are built around a shared vision and are based on deep professional ties, trust and mutual benefits that bridge the sharp cultural divide between academia and industry95. Today, new types of industry-university partnerships have emerged going far beyond the traditional research partnership.

Towards co-creation and open innovation

Partnerships and collaboration between academia and industry (companies, public institutions, NGOs, and civil society organisations) have a long history of building organisational knowledge and improving competitiveness. The intensification of relationships can be attributed to different pressures. The rise of the global knowledge economy has intensified the need for strategic partnerships to be taken to the next level. For industry, the ever-increasing competitive landscape, the pace of technological innovations and the shorter product life cycles require organisations to be on top of the latest advancements and innovations. The scientific community is called upon to confront grand challenges such as climate change, water quality, and affordable and clean energy through new knowledge and innovative approaches. In the

past, innovation has often been conceived as a linear model, a 'pipeline' in which fundamental, university-based research is applied through businesses and translated into new products[95]. However, innovation is now seen as a much more uncertain and interactive process96 where innovators draw on a wide range of knowledge sources and collaborations. Within this interactive process, the academic system is regarded as part of an innovation system, implying that universities are part of the larger eco-system of knowledge-using and knowledge-generating organisations that interact in creating value.

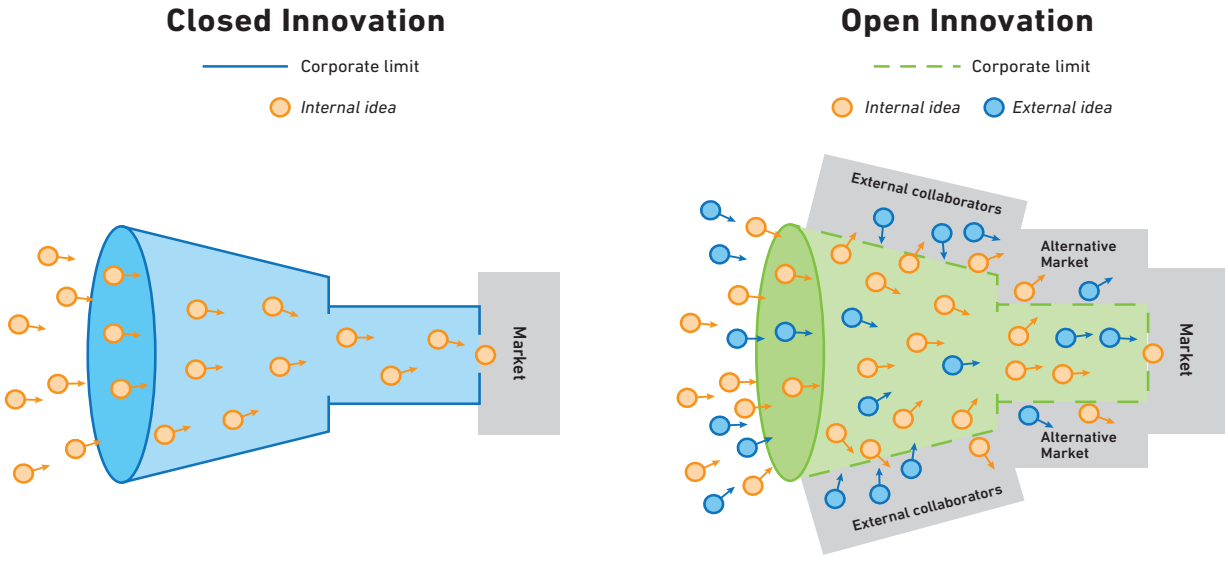
The idea of the innovation system creates a flexible structure in networks for the flow of technology and information between universities, research centres, industry, and policymakers. Together, the three types of actors — or four, if we count civil society as a separate actor — develop a new innovation engine, with intertwining common interests, values, narratives, strategies, and investments. Thus, in the process of transforming their own roles, they develop a connective tissue, or **Triple Helix** to use Etzkowitz's[20] fitting description. It is during this process that embeddedness in the regional, national, and international innovation systems is important.

As a result, academia has been gradually complementing the traditional linear model of knowledge production and innovation with a different mode in which research problems are approached by a wider set of stakeholders and disciplines with frequent interaction[96,97]. In line with this development, academia is increasingly seen as a promising platform for enhancing organisational capacity in open innovation (see Figure 15), where industry employs external networks in developing innovation and knowledge, as a complementary option to traditional internal research and development[98].

Open vs. closed innovation

Figure 15

Open and closed innovation are primarily different in the way they generate innovation. Both have their place depending on the context and situation.



Source: Chesborough (2003)[99]

Closed innovation relies on the idea that internal expertise (ideas), along with an iterative process for managing that expertise, can sustainably produce new business. Closed innovation companies operate under a self-contained innovative environment, that is, information is kept within the confines of the company and is not shared with external parties. Thus, it looks like the funnel on the left, with solid walls representing the limiting yet secure internal development process.

Open innovation, on the other hand, is based on the belief that knowledgeable and creative organisations and individuals outside the company can also contribute to achieving strategic goals and that sharing intellectual property both ways is useful for different parties in different ways. The open innovation funnel on the right is more like a hybrid between a sieve and a funnel, as the development process is not limited to individuals within the facilitating company.

Motivations and key success factors for collaboration

The motivations for academia and industry to collaborate are numerous. For universities and research centres they range from securing resources, accessing expertise and business opportunities to legitimacy; whereas industry is looking to increase its competitiveness, ensure access to state-of-the art expertise and research facilities and enhance its reputation for a comprehensive list of motivations, see Table 6. Although each determinant alone is

Possible motivations of academia and industry to collaborate

Table 6

	Academia	Industry
Necessity	• Responsiveness to government initiatives/policy • Part of strategic institutional policy	• Responsiveness to government initiatives/policy • Part of strategic institutional policy
Reciprocity	• Access complementary expertise, state-of-the-art equipment, and facilities • Employment opportunities for university graduates	• Leverage student internships • Hiring of researchers or graduates
Efficiency	• Access funding for research (e.g. government grants for research, lab equipment, infrastructure) • Business opportunity (e.g. exploitation of research capabilities, deployment of intellectual property rights (IPR)) • Personal financial gain for researchers	• Commercialise university-based technologies for financial gain • Benefit financially from serendipitous research results • Cost savings (easier and cheaper than to obtain a license to exploit foreign technology) • National incentives for developing such relations such as tax exemptions and grants • Enhance the technological capacity and economic competitiveness of firms • Shortening product life cycle • Human capital development
Stability	• Shift in knowledge-based economy (growth in new knowledge) • Discover new knowledge/test application of theory • Obtain inputs for curriculum development/review • Expose students and faculty to practical problems/applied technologies • Publication of papers	• Shift in knowledge-based economy (growth in new knowledge) • Business growth • Access new knowledge, cutting-edge technology, state-of-the art expertise/research facilities, and complementary know-how • Access to research networks or pre-cursor to other collaborations • Solutions to specific problems • Subcontract R&D (e.g. in case of lack of inhouse R&D) • Risk reduction or sharing
Legitimacy	• Societal pressure • Service to the industrial community/society • Promote innovation (through technology exchange) • Contribute to regional or national economy • Academics' quest for recognition or achieve eminence	• Enhancement of corporate image

Source: Adapted from Ankrah S & AL-Tabbaa, O. (2015)[98]

sufficient to lead to collaboration, multiple determinants can also co-exist or interact when organisations decide to enter a partnership or an interorganisational relationship. Moreover, there are several factors that facilitate or inhibit the collaboration[98], such as adequate resources, incentive structures, flexible university policies, support from leadership, mutual trust and commitment, continuous dialogue, strong project management, built-in flexibility university-industry boundary spanners and geographic proximity.

Role of industry

With the rise of open innovation (see Figure 15, p. 109) the relationship between universities and industry has changed. Facing the accelerated pace and complexity of innovation, companies and public organisations often can no longer rely on their internal R&D processes alone but have to scan and absorb externally sourced relevant knowledge in a wide variety of disciplinary areas, sectors and institutions. In a study carried out by the European University Association[100] in 2019, representatives from companies across the board comment frequently on such open forms of innovation, while acknowledging the continued importance of closed innovation for competitive product development. The study also revealed that most technologically oriented companies, and all the large multinationals, have developed their own strategic, sometimes highly systematic approaches to innovation scouting and knowledge development involving multiple actors. Companies explore innovation potential and partnerships with other companies, supplier firms and start-ups, in networks with a complex and constantly changing give-and-take of ideas, knowledge, intellectual property, and market opportunities. Universities and research institutes are key partners in such external knowledge sourcing. They provide the most needed resource, namely competent graduates, while continuously producing new knowledge, including research-based systems and solutions to innovation challenges. Just as vitally, academia is naturally disposed to scan knowledge frontiers and explore the next generation of technologies. They can thus identify new kinds of technological, societal, and environmental problems which may define future needs of users and markets. They are increasingly adept at looking for new, often interdisciplinary approaches to solving such problems, thus expanding horizons, and showing the path toward future technologies. HEIs can increase their visibility as actors in the innovation ecosystem by creating a profile on SEMED, a digital platform that brings together loosely connected intersectoral players in highly diverse cultural and regional circumstances. Details about SEMED can be found at the end of this chapter.

Policies promoting science-industry collaboration

Governments play a key role as facilitators for collaboration and innovation processes at all levels. Policies promoting science-industry co-creation focus on fostering more intense modes of research collaboration through creating enabling framework conditions for both academia and industry. These include initiatives such as long-term funding, tax incentives and shared facilities. The collaborative research projects might also involve public institutions and civil society organisations.

A well-established approach to promoting science-industry collaboration has been to provide financial grants to research projects, conditional on the establishment of consortia between academia and industry. Through the EU neighbours programme, the MedUP! Project is one such collaboration, promoting an enabling environment in the Southern Mediterranean partner countries (Egypt, Jordan, Lebanon, Morocco, Palestine and Tunisia) for the development of the social entrepreneurship sector as a driver for inclusive growth and job creation. Over the years, these collaborative grants have been implemented quite broadly, and now rank among the most relevant innovation policy instruments across OECD countries in terms of relative budget[101].

Beyond collaborative research grants, policies can also support longer-term co-creation relationships by developing joint laboratories between academia and industry. Such private-public partnerships targeting the joint generation of knowledge are increasingly supported by policymakers[101,102] and have also become more attractive to firms adopting open innovation strategies[103,104]. They are often referred to as 'collaborative research centres'. Given their strategic, long-term, open-ended scope, they are closely related to the notion of 'centres of excellence'. Even if the boundaries are blurred, the distinctive feature of co-creation (compared to excellence initiatives) is the partnership formed between academia and industry to fund, manage and implement the centre's research activities.

A good example of this is the German Research Campus initiative (www.forschungscampus.bmbf.de) which meets three criteria: (a) it merges private and public research competences at a single location; (b) it has a medium- to long-term perspective; and (c) it builds on a reliable public-private partnership. Following the selection made in 2012, a total of nine research campuses are currently funded, for a period of up to 15 years (until 2027), with the possibility of extending it further through a follow-up programme. The research campuses represent a new type of research structure in the German system, where researchers from universities, research institutes and companies work 'under one roof'. While several companies – including SMEs – must participate in a research campus, large multinational companies are the main driving force. The research campuses operate under various forms of organisation and contracts, depending on their specific needs.

The Swedish Strategic Innovation Programmes (SIP) initiative (https://www.vinnova.se/en/m/strategic-innovation-programmes/) is based on a different approach. It features larger consortia of various actors (universities, companies, civil society organisations and government agencies), and a more explicit focus on finding sustainable solutions for national and global challenges. The first step of the programme consisted of a bottom-up process, where key actors of the innovation system worked together to formulate 'strategic research agendas' (SIAs) through widespread consultative processes involving large numbers of relevant actors. The second stage consisted of inviting proposals for SIPs within the areas defined by those SIAs. Sixteen SIPs have been selected to date. Once initiated, the SIPs are responsible for launching calls for project proposals (one or two calls every year for each SIP) and overseeing the implementation of the resulting projects. The programmes also conduct a small number of 'strategic projects', which are usually larger and organised through a more direct process, without issuing an open call. SIPs organise regular (e.g. annual) consultations with their members and stakeholders in order to continuously assess needs and priorities, as well as industry fairs and workshops on specific topics of interest to the community.

Another good example is in Barcelona, where the regional government has developed a wide array

of innovation programmes which are co-funded by European Regional Development Funds, including a start-up support, an industrial PhD programme, seed funding for knowledge industry projects, support for networks and clusters, and certification for tech transfer centres, to name just a few. These instruments are developed and administered through the Catalan agency for business competitiveness, ACCIO.

FROM AD HOC TO STRATEGIC PARTNERSHIPS

University collaborations are first and foremost established by individual researchers or company staff and focus on specific needs identified by those individuals. This means that collaboration partners are likely chosen based on personal networks in that the rationale for partner selection is familiarity between individuals rather than a good fit between the two (or more) organisations. Although this may lead to positive outcomes, from the perspective of the organisation, the university collaboration is limited to the specific project (typically within a business unit). From the university or research centre perspective, individual researchers and their students gain a source of funding, insight into relevant problems, and opportunities to access novel assets or partners. Although these might lead to many collaborations, there are few synergies. Opportunities for broader engagement and impact are lost. Large corporations and leading academic institutions are moving towards more strategic partnerships in which relationships are no longer simply based on personal connections. In fact, companies have started to use company-wide master research agreements to create transparency in their collaboration activities, improve their negotiating positions, accelerate the deployment of projects, and encourage interfaculty collaboration on topics of shared interest[103].

Conclusion

Like research excellence initiatives, public-private partnerships should be supported by significant funding over a long period of time, providing that their ambition is to deliver innovation that addresses important societal challenges. The success of these initiatives depends to a large extent on the capacity of university and research centres to work with industry, creating a mutual benefit. Existing collaborative experiences and trust between the partners are key success factors for a fruitful, long-term relationship and positive outcomes[102]. Ultimately, the success of these programmes depends on the parties' ability to develop a mutual benefit and a good understanding, to enable the centres' continuity after the public funding phase expires. Over the course of the programme, the research centres develop new research methods, skills, and competences, as well as obtain new equipment and infrastructure, which are highly valued by the industrial partners.

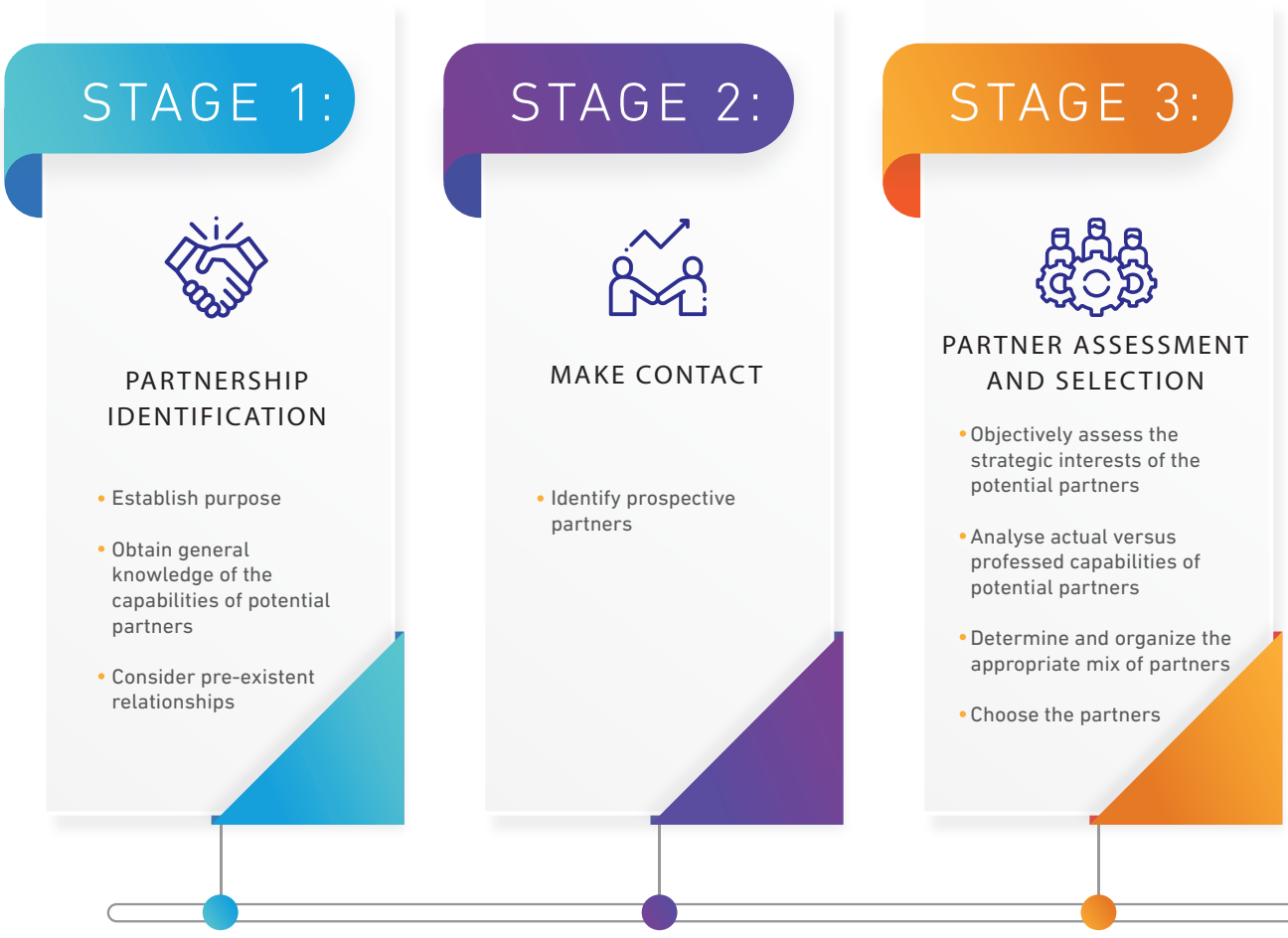
INSTITUTIONAL AMBIDEXTERITY

While the aspirations of university-industry partnerships can be easily described, it is often challenging to establish and run these partnerships effectively, even when the resources are available. The challenge is amplified in an ecosystem where the various stakeholders operate with their own ambitions and logics. These need to be properly aligned to achieve impact and avoid frustration that derive from marked differences in culture and governance[103]. Whereas academic culture is characterised by a high degree of distributed autonomy and governance, corporate culture tends to emphasise central decision making and strategic alignment[105]. But even if the cultural divide between academia and industry runs deep, it can be overcome through strong leadership, incentives, structures, and boundary spanners that can operate in both 'worlds' (institutional ambidexterity), focusing on the possible benefits of operating across coexisting and contradictory logics[106].

Forming and operationalising collaborations and partnerships

An example defining alliance formation in five steps can be found in Table 7[98], beginning with the definition of the alliance opportunities and ending with making the deal. The exact number of steps or stages greatly depends on the degree of complexity and formality.

Stages of forming partnerships
Table 7



Source: Adapted from Ankrah S & AL-Tabbaa, O. (2015)[98]

STAGE 4:

PARTNERSHIP NEGOTIATION

- Define the partnership
- Define and agree on the partnership's documented purpose or mission/vision
- Determine the specific common goals/objectives for the particular effort
- Define the organizational structure of the partnership
- Define the management and administration of the partnership with clearly defined responsibilities
- Agree on the plan
- Specify the milestones
- Identify the measures/indicators for success
- Specify the interim and/or final deliverables

STAGE 5:

AGREEMENT SIGNING

- Preparation and signing of collaboration agreement and/or intellectual property agreement

10 KEY success factors for Academia Industry Partnerships

1. Confirm that Academia-Industry Partnership is a key strategic priority for HE leadership
2. Develop a shared vision and then the strategy
3. Focus on long-term strategic partnerships providing benefits for both sides
4. Ensure project leadership can work across boundaries and have 'ambidexterity'
5. Encourage dialogue and cross-fertilisation of ideas
6. Define clear incentive structure for researchers
7. Ensure adequate capacity and resources
8. Build in flexibility
9. Do not get hung-up on intellectual property (IP)
10. Consider geographical proximity a plus

Key publications

S. Ankrah and O. AL-Tabbaa, *"Universities-industry collaboration: A systematic review,"* Scand. J. Manag., vol. 31, no. 3, pp. 387–408, Sep. 2015.

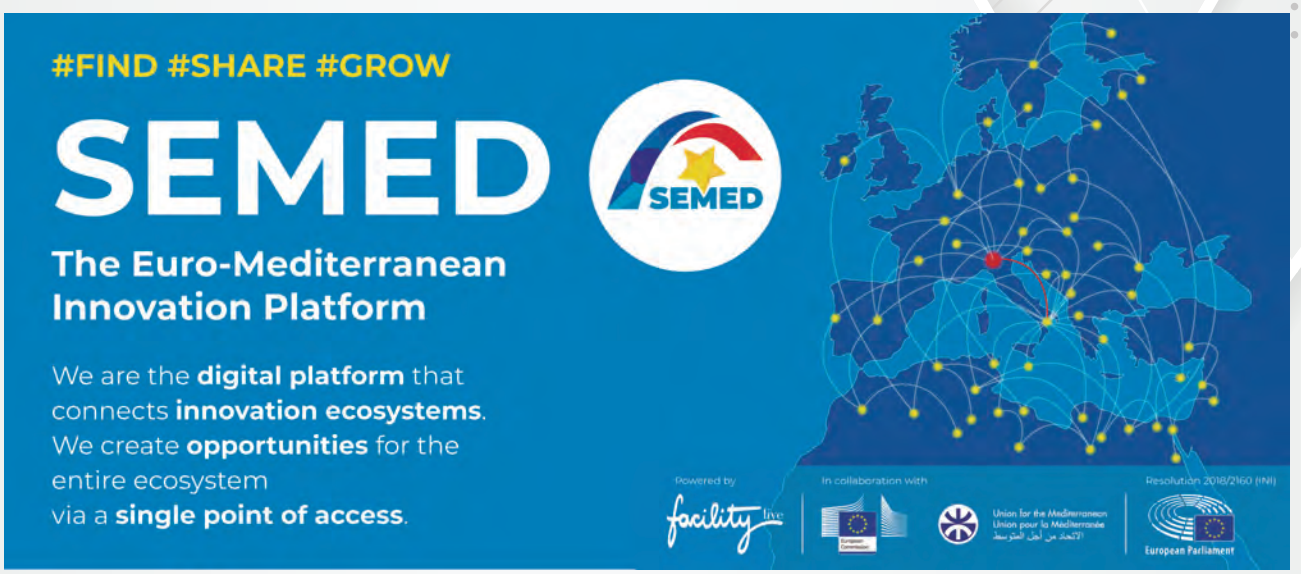
G. Edmondson, L. Valigra, M. Kenward, R. L. Hudson, and H. Belfield, *"Making Industry-University Partnerships Work: Lessons from successful collaborations,"* Brussels, 2012.

L. Frølund, F. Murray, and M. Riedel, *"Developing Successful Strategic Partnerships With Universities Developing,"* MIT Sloan Manag. Rev., no. Winter, pp. 71–79, 2018.

J. Guimón, *"Policy Initiatives to Enhance the Impact of Public Research: Promoting Excellence, Transfer and Co-Creation,"* 81, 2019.

K. Koschatzky and T. Stahlecker, Eds., *"Public-private partnerships in research and innovation: Trends and international perspectives,"* 6, 2015.

S. Reichert, *"EUA Study: The Role of Universities in Regional Innovation Ecosystems,"* 2019.



Create a profile and become part of the ecosystem!

SEMED – Start-up Europe Mediterranean

Academia is at the forefront of innovation through research, and thus has a key role to play in knowledge networks and the flow of technology and information between partners who work cooperatively and competitively to develop innovative products and services. Innovation thrives in an agile and open environment that fosters active collaboration – an innovation ecosystem – which promotes making better decisions, discovering better solutions and creating value to keep up with the rapidly changing world.

Start-up Europe Mediterranean (SEMED) was envisioned to unleash the potential of innovation in the Mediterranean countries by overcoming the barriers in bringing together loosely connected intersectoral players in highly diverse cultural and regional circumstances. SEMED, powered by FacilityLive in collaboration with the European Commission, is the digital platform that connects innovation ecosystems of the Mediterranean and creates opportunities for the entire ecosystem via a single point of access.

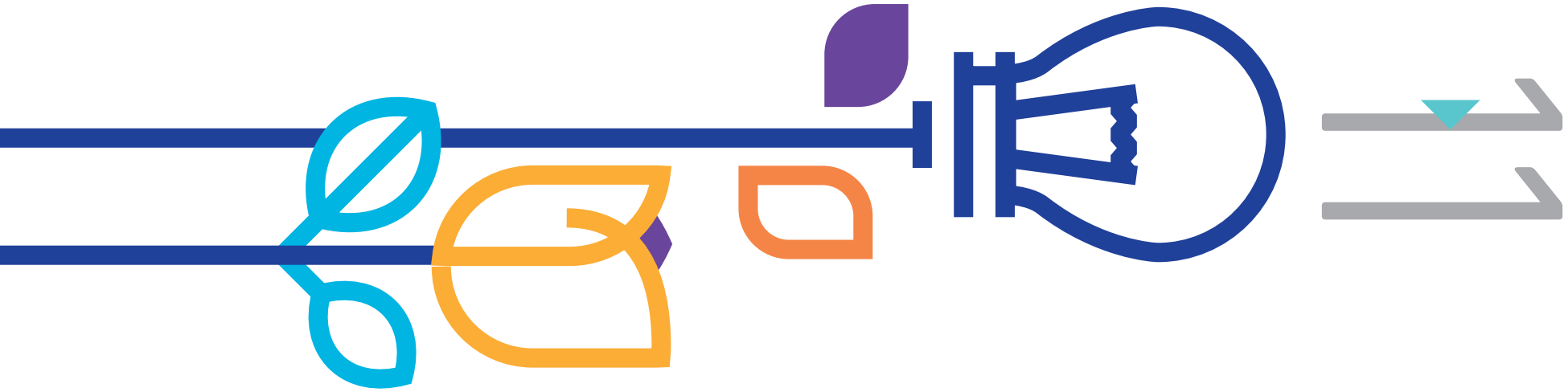
SEMED was launched in Matera, Italy, amidst Matera's celebration of winning the European Capital of Culture in 2019. The SEMED platform uses technology to enable potential innovators to identify and gain access to the right networks, players and information using sophisticated search and navigation techniques offering an innovative user experience.

Examples of SEMED functionality include:

- Identifying potential partners beyond geographical proximity and across discipline or sector
- Highlighting open opportunities, initiatives and resources (e.g. funding in North Africa)
- Providing contextual information (e.g. policies, regulations and information on public funding and procurement)
- Offering a selection of news, videos and events for specific regions
- Searching and mapping according to a list of criteria
- Creating 'packages' that can be exported and shared (e.g. as part of a service provided by an innovation collider to researchers)
- Providing space to post an institution's own calls (e.g. expertise, funding, potential partners)
- Allowing an HEI to promote its own profile and activities beyond national boundaries in the SEMED innovation and entrepreneurship ecosystem

HEIs can increase their visibility as actors in the innovation ecosystem by creating a profile to find and be found. SEMED is self-sustaining, based on active participation of actors in the innovation ecosystem and on a strong 'Give Back' concept – the more everyone engages, invests and shares the more everyone gets out of it.

www.semed.eu



DIGITAL INNOVATION

Digital Innovation for Employability

New technology and innovative applications are changing the way higher education institutions (HEIs) and research centres engage with their students, partners, and stakeholders such as education ministries. Digital innovation affects academia from all sides: from the way they deliver education to the course content, ensuring that their graduates have the skills required to contribute in an increasingly digital working world. Universities need to invest in the talent and infrastructure to support these developments, such as academic staff with expertise in learning systems, digital learning spaces and platforms to streamline e-learning, and administrative processes. Remote learning has been steadily growing, and due to the global pandemic, the pace has jumped ahead, moving towards optional or entirely remote learning. This move depends upon technology and to ensure that the technology is used effectively, educators need to play a major role in shaping this shift. Essentially, digital innovation applies the Triple Helix framework, with particular emphases on the role of HEIs as the source of new knowledge and technology.

Background and context

Technology spans all sectors, all types and all sizes of organisations. Whether it is for work or personal use, digital technology is part of every aspect of daily life. It is so pervasive that it has re-defined innovation itself – how many innovative ideas use digital technology? Being innovative today – improving methods, enhancing experiences and improving efficiency – usually involves digital technology. Digital innovation is not digitisation nor digital transformation which involve the ongoing process of moving into digital frameworks. Instead, digital innovation is the creative process or the break from a traditional model, just as the pre-digital version of innovation has always been[107]. Nonetheless digital innovation can result in enhancing or transforming existing model. Good examples of digital innovation could be AirBnB and Uber that completely overturned the way things work in their respective markets, although these examples rely on credit or debit

cards, which are difficult to obtain in certain parts of the region. In many countries in Africa, digital innovation has improved access to financial tools through digital means effectively sidestepping the era of desktop computers and landlines[108].

Digital innovation is related to the **4th Industrial Revolution** which refers to the convergence of digital, biological, and physical innovations that will result in disruptive changes. These disruptions can be positive, leading to an empowering, collaborative, and sustainable social and economic environment if the underlying changes that cause them are based on shared values of the common good, human dignity, and intergenerational stewardship. Since innovation is a creative process, it involves not only digital skills but also human skills such as originality and initiative, critical thinking and analysis, leadership and emotional intelligence. Digital innovation and the 4th Industrial Revolution therefore represent a multidimensional challenge with not only economic but also social opportunities such as:

- Inclusive and human-centred solutions
- Sustainable economies
- Adapted and modernised governance models
- Reduced material and social inequalities
- Commitment to values-based leadership of emerging technologies

4TH INDUSTRIAL REVOLUTION

The Fourth Industrial Revolution represents a fundamental change in the way we live, work and relate to one another. It is a new chapter in human development, enabled by extraordinary technology advances commensurate with those of the first, second and third industrial revolutions. It refers to the convergence of digital, biological, and physical innovations that will result in disruptive changes. These disruptions can be positive, leading to an empowering, collaborative and sustainable social and economic environment if the underlying changes that cause them are based on shared values of the common good, human dignity, and intergenerational stewardship117.

The digital divide and reinvention

Moving online can potentially increase access to HE since it eliminates a number of logistic hurdles for gaining physical access to the classroom. However, for students from lower-income backgrounds, it can counterintuitively increase the digital divide, as access to the internet and ownership of a personal computer are prerequisites for remote learning. During the COVID-19 crisis this weakness in the remote learning strategy was highlighted, as students with no internet connection were unable to follow their classes that suddenly required internet to attend.

The access issue for remote learning exists in all countries and is usually more pronounced in rural areas. However, the move to digital can also level the playing field since certain barriers to entry are lowered. The Mediterranean region has had its share of success stories, mainly: the creation of start-ups, entrepreneur mentorship, and partnership with the private sector109. Tunisia's Start-up Act in 2018, is an excellent example of applying the Triple Helix of academic, industry and government partners to introduce an innovative framework that offers advantages and incentives to entrepreneurs, investors and start-ups (see Chapter 9: Knowledge Exchange). The Mediterranean also has an increasing number of 'smart rural areas' where good governance is combined with local initiatives through regional and national public policies, corporate social responsibilities, inclusive investment and synergies between research, development needs and value creators within these territories[110].

The Global Innovation Index ranks

Tunisia
as the
number one
innovation economy
among low-income countries[114]

These types of dispersed initiatives are important because without them, talented graduates from the Southern Mediterranean region could be recruited away from the area by European firms looking for specialists in IT and other technologies. To stem this 'brain drain', cross border or South-South cooperation is decisive. A tool such as SEMED, the digital platform that connects innovation ecosystems of the Mediterranean, can help to find potential partners for collaboration and investment. Details about SEMED can be found at the end of Chapter 10: Partnerships for Innovation. Creation commonalities across regulatory, institutional and operational frameworks can facilitate innovation and, in turn, trigger investment which can eventually create jobs. Digital solutions can be a powerful tool to accelerate growth in the Mediterranean, however it needs to be based on fundamental reforms to stimulate cross-sectoral cooperation111.

Digitalisation
offers SMEs opportunities to
innovate and grow,
it seriously affects
the world of work and
skill requirements
for Employees[116]

Link to skills and the future

Any discussion of digital innovation assumes an underlying skill set in digital technology. This requires up-skilling of the existing labour force and updating of existing curriculum to prepare graduates to participate actively in a world that relies on digital technology. Another factor is job creation. Labour markets struggle to provide enough work for the increasing population. This is pronounced in the Mediterranean region where the youth population is growing faster than the economy. The International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) promotes digital innovation that is socially 'intensive' in the framework of the technological and digital growth in agriculture. Details about CIHEAM can be found at the end of Chapter 3: Skills. Another actor in this area is the Partnership for Research and Innovation in the Mediterranean Area (PRIMA) which aims to make food systems sustainable and integrated with water management in the Mediterranean area. This opens up an alternative path for youth and addresses the prospect of agriculture without farmers and potentially attracts a new generation interested in a form of competitiveness not only measured by financial performance, instead by social change and human development.[110]

The growth of the
digital economy in North Africa
could become one of the
key solutions
to the region's youth unemployment crisis[115]

Trends

Digital innovation is not restricted to technology firms. Digital innovation for non-tech organisations is one of the most salient trends in the global sphere[112]. It can help an organisation rethink its internal processes to keep up with the increasing pace in the knowledge economy and the increasing expectation to provide a seamless experience for their customers and constituents. Emphasis on employee experiences inside an organisation is also key to ensuring quality reception outside the organisation.

Organisations that are already well established in their field sometimes fail to innovate because they fear they will damage their core activities.

This is a dangerous strategy to adopt in a rapidly changing technological landscape where participants either disrupt or are disrupted[113]. Innovative new ideas can be transformed into successful applications faster, better, and cheaper thanks to digital technology.

The influence of policy on creating fertile territory for innovation is crucial. As the Start-up Act in Tunisia (see Chapter 9: Knowledge Exchange) demonstrates, favourable work conditions made possible by governmental support frees entrepreneurs to use their creativity and cooperate across sectors to generate innovative approaches.

Provisions and approaches

In terms of higher education (HE), an example of digital innovation is the massive open online course (MOOC) which started innocuously with professors making course material freely available online and finding themselves on the receiving end of hundreds of thousands of students. MOOCs have evolved dramatically since their introduction in 2011 and illustrate the fallacy of the argument that innovation cannibalises its own business model as new products and services displace its own older products and services. Instead of lowering enrolment in tradition courses, it expanded access to HE for atypical students ranging from underserved populations to established professionals looking to gain skills.

A more recent example of digital innovation in HE is using technology to conduct a single course across multiple universities, in multiple countries, connecting virtually through multiple portals and devices. In a way, this example took the technology that enabled the MOOC and moved away from the individual learning of the MOOC framework and returned to the collective learning environment of the classroom — a modern, virtual classroom, but a highly interactive one with students, group work, activities, guest lectures and presentations.

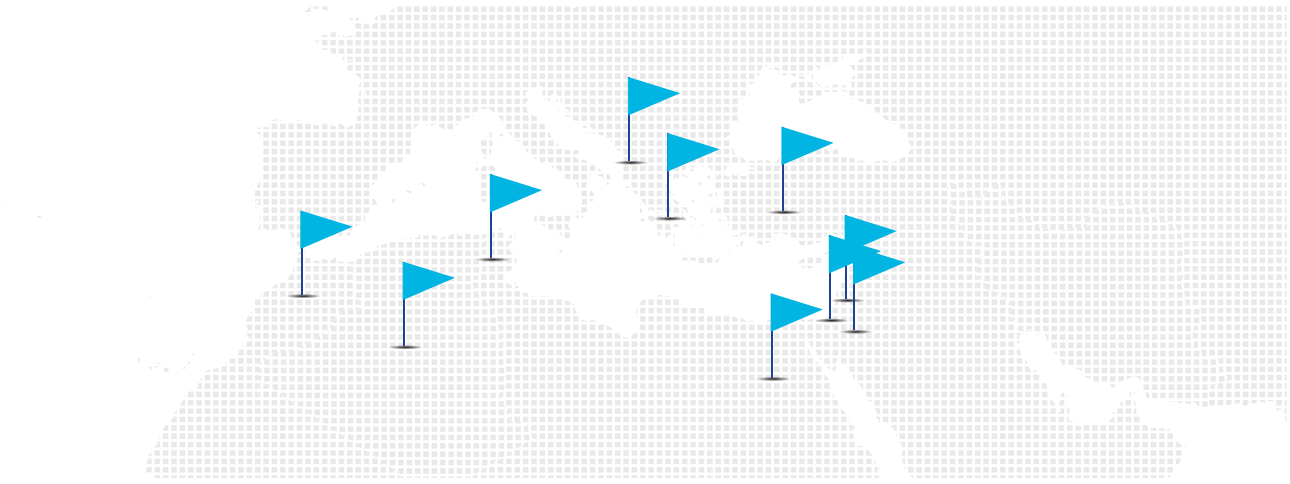
A regional example is the MOOC 'Sustainable Food Systems: a Mediterranean Perspective' offered by the United Nations Sustainable Development Solutions Network (SDSN) which explores how to produce more, better quality, and safer food while simultaneously achieving social and environmental goals. E-learning, whether in the form of a MOOC, a virtual class, or blended learning, combining in person and remote learning, has been on the rise. Covid-19 changed everything and almost overnight campuses around the world moved to partial and then, in many cases, full remote learning. This shift was so sudden, the ramifications are yet to be seen.

Tools and resources

Centres of Excellence for High Performance Computing in Barcelona and Bologna have stated their willingness 'to extend expertise and capacity' to countries in the Southern Mediterranean region[115]

Building online employability: a guide for academic departments – University of Derby
This guide will help academic departments to support students to think about their careers and to use the online environment wisely. Numerous reports demonstrate that the array of social media and online technologies can seriously disadvantage a students' career development, but if used well they can support students to find out about and transition into their future career.

https://derby.openrepository.com/handle/10545/294311



Number of innovation support organisations in the Southern Mediterranean region[110]
Table 8

Country	Number of Innovation Support Orgs	Objectives	Services
Albania	10	• Job creation • Promoting the Entrepreneurship culture among young people • Development of the culture of innovation and promotion of Research Results • Strengthening collaboration between Academic institutions and economic stakeholders • Accelerating the creation of Profitable enterprises	• Assistance in project identification and Administration • Shared office services, training, technology support and equipment • Assistance in obtaining the financing necessary for business growth. • Consultancy in financial, marketing, legal, tax, and • Technical issues
Algeria	11		
Egypt	18		
Jordan	11		
Lebanon	13		
Palestine	6		
Morocco	14		
SWG*	6		
Tunisia	39		
Turkey	32		
TOTAL	**160**		

* SWG (Regional Rural Development Standing Working Group of South Eastern Europe)

Digital innovation is changing the way academia engages with students, partners, and stakeholders.

Examples and best practices

TEACH YOURSELF

Theme: **Online education and resources**
Funding: **HCST, Jordanian Ministry of Education**
Programme & partner countries: **Jordan**
Duration: **Ongoing**
More information: **https://www.psut.edu.jo/content/teach-yourself**

The programme utilises existing digital learning materials from public universities in Jordan in addition to using open source material available on the internet:

- Online education platform for university students
- Open Source Education Resources Platform
- Strengthening co-operation among HEIs and promoting links with business to foster entrepreneurship
- Higher Council for Science and Technology

MED MSME: MICRO, SMALL AND MEDIUM-SIZED ENTERPRISE IN THE MEDITERRANEAN

Theme: **Political Initiative**
Funding: **European Union**
Programme & partner countries: **Algeria, Egypt, Israel , Jordan , Lebanon , Libya , Morocco , Palestine , Syria, Tunisia**
Timeframe: **2018-2022**
More information: **https://lapresse.tn/40519/ue-programme-med-msmes-une-opportunite-pour-les-micros-petites-et-moyennes-entreprises-tunisiennes/**

MED MSME creates constructive synergies through exchanges of North-South and South-South political dialogue, regional initiatives and good practices for a collaborative approach with common implementation mechanisms. It builds on the efforts of partner countries to improve economic growth through micro, small and medium enterprises (MSMEs) as leverage, aiming to:

- Improve the adaptation of certain aspects of development policies and regulations to MSMEs
- Promote administrative simplification as an element of policymaking in favor of SMEs
- Adjust the adaptation of certain aspects of MSME financial policies and instruments, in particular with regard to alternative financial mechanisms
- Increase awareness among MSME representatives and relevant stakeholders of the financial instruments and tools available through a regional platform or coordination mechanism, in order to strengthen South-South dialogue
- Increase awareness and effectiveness of the EU initiative for financial inclusion

FABLAB

Theme: **Innovation, makers**
Funding: **Berytech, Kingdom of Netherlands**
Programme & partner countries: **Lebanon**
Start: **2002**
More information: **https://fablab.berytech.org/**

Berytech Fab Lab is an open-access digital fabrication lab for students, professionals, artists, techies, entrepreneurs, and makers across Lebanon. The lab empowers them with the latest digital manufacturing technologies and a vast array of resources to create, fabricate, and transform their ideas into working prototypes and innovative products. Resources include industry-grade technology, facilities with a wide range of machines and equipment, educational workshops, mentorship for prototyping, and digital fabrication.

MINDE: MASTER'S OF I LEVEL IN DIGITAL INNOVATION & ENTREPRENEURSHIP

Theme: **Digital innovation, entrepreneurship**
Funding: **FacilityLive, University of Pisa**
Programme & partner countries: **Italy**
Duration: **Ongoing**
More information: **https://www.masterminde.com/**

Master's programme combining management, entrepreneurship, innovation and digital transformation.

PLEDGE VIEWER

Theme: **Digital Skills and Jobs Coalition**
Funding: **European Commission**
Programme & partner countries: **Europe**
More information: **https://pledgeviewer.eu/**

Offers various initiatives, such as code week, digital skills awards, digital opportunity traineeships. Any organisation can make a pledge of any type and scale from small local associations working with specific groups of beneficiaries to large multinationals providing online training modules and certification.

OPEN MED

Theme: **Opening up Education in South-Mediterranean countries**
Funding: **Erasmus+ KA2**
Programme & partner countries: **Southern Mediterranean**
Duration: **2015-2018 (closed)**
More information: **https://openmedproject.eu/**

The OpenMed project worked towards widening participation and adoption of Open Educational Resources (OER) and Open Educational Practices (OEP) in a bottom-up approach to support the modernisation of the Higher Education sector in in the South-Mediterranean. The project involved an international consortium composed by five partners from Europe and nine from Southern Mediterranean Countries.

JOVITAL: JORDAN OPPORTUNITY FOR VIRTUAL INNOVATIVE TEACHING AND LEARNING

Theme: **Pedagogy (incl. virtual teaching)**
Funding: **Erasmus+ / KA2 – Capacity Building in the Field of Higher Education**
Lead: **Technische Universität Dresden , Germany**
Programme & partner countries: **Italy, Slovenia, UK, Jordan**
Timeframe: **2017-2021**
More information: **www.jovital.eu**

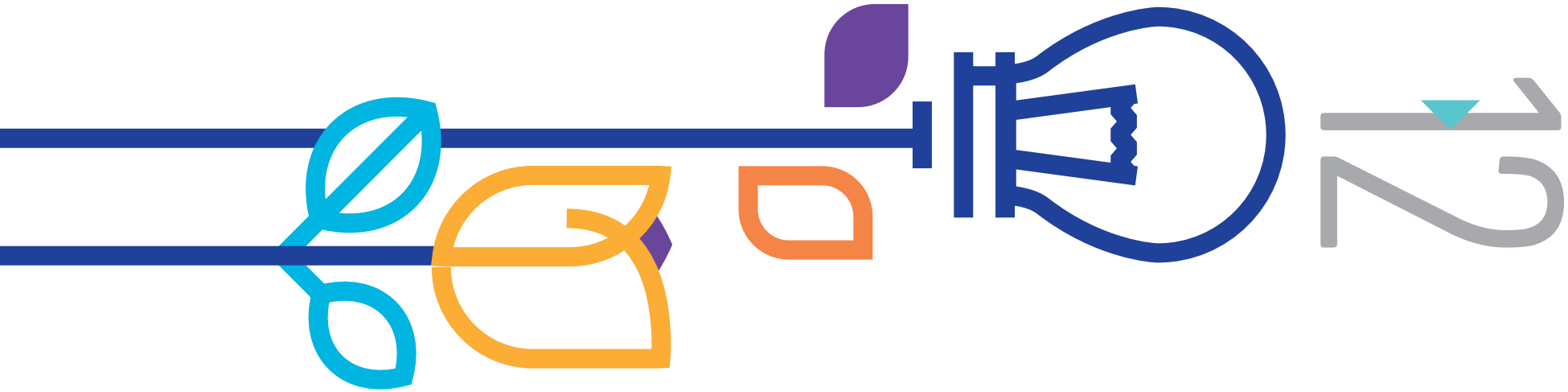
JOVITAL offers HEIs in Jordan a chance to explore, implement, and disseminate state-of-the-art academic practices to enhance teaching quality and improve learning outcomes. A comprehensive capacity building programme is being implemented to facilitate intensive knowledge transfer between the consortium members to address the problems of outdated instructor-centred teaching methods, limited physical academic mobility, and ineffective use of ICT in formal higher education in Jordan. The specific objectives of JOVITAL are:

- Qualification of academic staff at Jordanian HEIs on modern pedagogical and didactical methodologies for innovative virtual teaching and learning settings
- Support Jordanian HEIs in adopting and implementing effective ICT-based internationalisation at home activities and integrate Jordanian HEIs in a global network for 'Virtual Mobility'
- Open up higher education in Jordan to integrate disadvantaged groups including women, rural populations and refugees in inclusive virtual classroom settings

EVE ERASMUS+ VIRTUAL EXCHANGE

Theme: **Innovative exchange (virtual)**
Funding: **EC Erasmus+**
Lead: **UNIMED**
Programme & partner countries: **Europe, Southern Med**
Timeframe: **2018**
More information: **https://www.uni-med.net/progetti/erasmus-virtual-exchange/**

Erasmus+ Virtual Exchange (EVE) is a pilot project, which provides an accessible, ground-breaking way for young people to engage in intercultural learning experiences online. Through a range of activities, EVE aims to expand the scope of the Erasmus+ programme through online collaborative learning activities known as Virtual Exchanges (VE). EVE offers a safe online community to participate in facilitated discussions, increasing intercultural awareness and building 21st Century skills through VE. The project encourages and promotes intercultural dialogue, employability, and citizenship, strengthening the youth dimension of the EU neighbourhood policy. The project is open to any young person aged 18-30 residing in Europe and the Southern Mediterranean.



CAPACITY DEVELOPMENT

Capacity Development and Continuous Change

Universities are learning organisations. They are dedicated to learning – they create and acquire knowledge. At the same time, higher education institutions are complex structures and therefore approaching change and organisational learning is not simple nor obvious. Yet, fast-changing external conditions and pressures, such as the Covid-19 crisis, have forced universities to strengthen their strategic and operational capacity, enhance their scholarship and teaching, improve relevance, develop coherent practices, and fulfil their so-called 'third mission'. As a result, academic institutions and their governance bodies have been investing in organisational learning by developing a shared vision, aligning institutional strategies, adapting governance and engaging academic and administrative staff in the continuous improvement of research, teaching, student services and other topics linked to the expanded role of the contemporary university. Organisational learning has therefore become a key factor for long-term success. In support of this trend, Erasmus+ has expanded their funding offer. Their 2021-2027 programme offers numerous opportunities for a wide range of organisations, including universities, research organisations, education and training providers, think-tanks, and private businesses.

In academia, change and organisational learning can be very complex tasks. Universities are 'knowing organisations'[118], which can make it challenging to transform them into 'learning organisations'. The motivations behind the actions taken by individuals inside higher education institutions are not always clear. Depending on the national system and the organisation, hierarchies and governance structures can be rather ambiguous[119]. Moreover, the various disciplines inside the same academic institution often have diverging **institutional logics**[57]. In the past, the traditional way of assuring academic quality and relevance within

INSTITUTIONAL LOGICS

Institutional logics are systems of cultural elements (values, beliefs, and normative expectations) by which people, groups, and organisations make sense of and evaluate their everyday activities, and organise those activities in time and space[57]

universities tended to be implicit. The quality of teaching and learning was maintained principally by reliance on the shared norms and disciplinary traditions of the academic staff[120]. However, with the changing role of academia, higher education institutions and their governance bodies have been strengthening their strategic and operational processes evolving into learning organisations. Exchange among universities in a region is a well-recognised form of institutional leaning. In Morocco, for instance, the Euromed University of Fes is a new regional centre of excellence promoting dialogue, intercultural exchange, sharing of knowledge and cooperation in the fields of higher education, research and innovation. A different model can be seen in Téthys, which extends academic partnerships to a network, opening institutional boundaries to large-scale international cooperation which can facilitate many forms of exchange, such as shared programmes for staff and students, that can strengthen a university's efforts in developing capacity. Téthys is supported by Aix-Marseille University and brings together more than 70 universities from 19 countries including the main universities of the Maghreb, the Mashriq and the countries of southern Europe. A place for a higher education institution to begin the process of evaluating its current capacity for change could be through the HEInnovate initiative, which offers an assessment tool, open and available to all institutions regardless of geographical area. Details about HEInnovate can be found at the end of this chapter.

Higher education capacity development and Erasmus+ project funding

The European Union's Erasmus+ programme offers numerous opportunities for universities and research institutes – but also think-tanks and business organisations – to engage in higher education capacity development. All countries around the Mediterranean basin have access to the programme. The aim of the Erasmus+ programme is to support eligible partner countries to

- Modernise, internationalise, and increase access to higher education
- Address the challenges facing their higher education institutions and systems
- Increase cooperation with the EU
- Voluntarily converge with EU development in higher education
- Promote people to people contacts, intercultural awareness, and understanding

Special emphasis is put on progression towards the Sustainable Development Goals (SDGs) as higher education and research plays a unique role in producing new knowledge and innovation to address global challenges, especially SDGs 4, 8, 9, and 17.

The Erasmus+ programme is mainly made up of three so-called 'Key Actions' (KA): **(a)** Learning Mobility of Individuals, **(b**) Cooperation for Innovation and Good Practice, and (c) Support to Policy Reforms. In terms of organisational capacity development, the actions under KA2 (Cooperation for Innovation and Good Practice) make it possible for organisations from different participating countries to work together, to develop, share and transfer best practices and innovative approaches in the fields of education, training and youth.

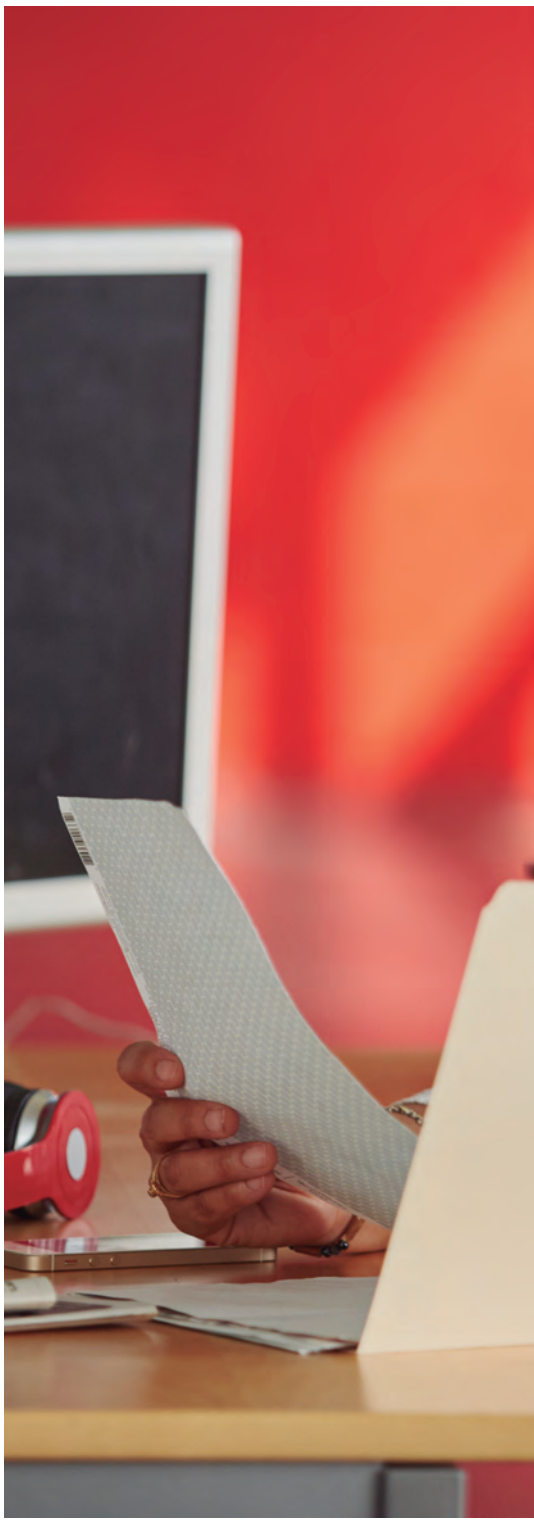
KA2 is related to the European Universities initiative which allows an inter-university campus through long-term structural and strategic cooperation between existing universities, developing a regional identity. This type of cooperation could be an inspiration for similar South-South structures. There are two Erasmus+ theme areas under KA2 that are of particular interest to universities and research institutes:

- **Knowledge Alliances** to foster innovation in and through higher education together with businesses, and beyond, contributing to new approaches to teaching and learning, entrepreneurship in education, and the modernisation of higher education systems
- **Capacity-building projects** in the field of higher education to support the modernisation, accessibility, and internationalisation of higher education in Partner Countries

As part of a project, organisations may engage in development and networking activities, including strategic improvement of the professional skills of their staff, organisational capacity building, and creating transnational cooperative partnerships with organisations from other countries in order to produce innovative outputs or exchange best

practices. Capacity building encourages collaboration between academia, policy bodies and industry, and projects typically focus on one of three main activities:
Curriculum development
Modernising governance and management of HEIs and systems
Strengthening relationships between higher education and the wider economic and social environment

More information is available at **https://eacea.ec.europa.eu/erasmus-plus_en.**



BUILDING BLOCKS OF THE LEARNING ORGANISATION[140]

- Supportive learning environment
  - Psychological safety that allows for open discussions
  - Appreciation of differences and diverging views
  - Openness to new ideas and approaches
  - Time to invest into learning, testing, implementing and reflection of new approaches
- Concrete learning processes and practices
  - Frequent experimentation with new approaches
  - Collection and analysis of information on trends in the field
  - Education and training
  - Information transfer – learning from best practices inside and outside the organisation
- Leadership that reinforces learning
  - Demonstrating a willingness to learning
  - Entertaining alternative viewpoints
  - Signalling importance of spending time on problem identification, knowledge transfer, and reflection
  - Engagement in active questioning and listening

Fast-changing external conditions present universities with an opportunity to strengthen their strategic and operational capacity, enhance their scholarship and teaching, improve relevance, and fulfil their so-called 'third mission'.

Examples and best practice

Below are some ongoing and past capacity development projects that serve as best-practice examples. A more comprehensive list can be found on the website of the Mediterranean Universities Union at https://www.uni-med.net/en/projects.

MIGRANTS: MASTER'S DEGREE IN MIGRATION STUDIES: GOVERNANCE, POLICIES AND CULTURES

Theme: **Migration governance, HE Capacity Building**
Funding: **Erasmus+ KA2**
Lead: **University of Palermo, UNIMED**
Programme & partner countries: **France, Italy, Spain, Tunisia**
Timeframe: **2017-2020**
More information: **https://www.uni-med.net/en/projects/migrants/**

Moving away from addressing the migration phenomenon in the context of an emergency, this project aims to improve migration governance and cooperation among the countries that face international migration.
It strengthens knowledge and understanding of the complexities of migration, aiming to improve shared policies that reduce the risks of irregular and not-governed migration. According to Global Compact's vision of international migration, it is important to recognize that a comprehensive approach is needed to optimize the overall benefits of migration, while addressing risks and challenges for individuals and communities in all the countries involved. No country can address the challenges and opportunities of this global phenomenon on its own. The main objective of MIGRANTS Project is to improve the quality of Tunisian higher education and enhance its relevance for the labour market and society in order to support its capacities in local, international cooperation and global partnerships for safe, orderly and regular migration, in line with national priorities, policies, action plans and strategies, through a whole-of-government and whole-of society approach.

Objectives:

- Develop a new Joint Master's Degree in "Migration Studies: Governance, Policies and Cultures" between the three Partner Universities
- Improve Partner Universities teaching staff's capabilities through a comprehensive programme of training, job shadowing, coaching and mentoring activities, and support in acquiring scientific qualifications in Migration Studies
- Disseminate and exploit the results of the project, step by step, in order to guarantee its impact and sustainability
- Implement an orientation plan for students from enrolment through graduation and placement

SAGESSE: AMÉLIORATION DE LA GOUVERNANCE DANS LE SYSTÈME DE L'ENSEIGNEMENT SUPÉRIEUR EN TUNISIE

Theme: **Governance, HE Capacity Building**
Funding: **Erasmus+ KA2**
Lead: **UNIMED**
Programme & partner countries: **Italy, Spain, UK, Tunisia**
Timeframe: **2020-2022**
More information: **www.sagesseproject.eu**

HEIs in Europe and in Southern Mediterranean countries are asked to contribute more actively to their countries' economy competitiveness, in addition to their mission of producing knowledge. Universities need to be innovative to deliver education that offers better employability to their graduates. By bringing together all 13 Tunisian public universities and the Ministry of Higher Education and Scientific Research, the SAGESSE project aims to modernise the Higher Education system in Tunisia by strengthening its quality assurance system, governance mechanisms and results-based funding. By promoting a university's autonomy mostly in the financial, academic and human resources areas, the project will improve graduate employability and promote innovation and research.

MAYA: MASTER'S IN AGRICULTURAL AND HYDROLOGICAL APPROACHES TO A BETTER SUSTAINABLE DEVELOPMENT

Theme: **Agriculture, HE Capacity Building**
Funding: **Erasmus+ KA2**
Lead: **University of Sassari, UNIMED**
Programme & partner countries: **Italy, Tunisia**
Start: **2017-2020**
More information: **https://www.uni-med.net/progetti/maya/**

MAYA is a new inter-university postgraduate master's programme on integrated water and agriculture management (IWAM) involving three Tunisian universities. The project intends to improve institutional and individual capacities and overcome barriers in Tunisia linked to the lack of scientific knowledge and technical expertise able to cope with complex issues. The new curriculum will take into account new approaches to tackle with environmental degradation focusing in particular on the quality and quantity of water resources and on the existing linkages between agriculture, water management and environment.

ENBRAIN: BUILDING CAPACITY IN RENEWABLE AND SUSTAINABLE ENERGY FOR LIBYA

Theme: **Energy, HE Capacity Building**
Funding: **Erasmus+ KA2**
Lead: **Politecnico of Torino, UNIMED**
Programme & partner countries: **Libya, Italy, Portugal, Spain**
Timeframe: **2017-2020**
More information: **https://www.uni-med.net/progetti/enbrain/**

Enbrain is a project to design and develop an innovative educational platform based on new courses, e-learning methods and digital tools that may promote a systemic multi-dimensional vision of the global energy challenge.

Objectives:

- Design a master's programme in Renewable and Sustainable Energy in Libya
- Pilot the master's programme in Renewable and Sustainable energy in at least one Partner University
- Pilot start-up seed-courses on Renewable and Sustainable Energy to be integrated into existing curricula
- Create platform to engage citizens in renewable and sustainable energy via an open-access MOOC

ULISSE: UNDERSTANDING, LEARNING AND IMPROVING SOFT SKILLS FOR EMPLOYABILITY

Theme: **Soft skills**
Funding: **Erasmus+**
Programme & partner countries: **EU**
Timeframe: **2015-**
More information: **https://ulisseproject.eu/**

The ULISSE project aims to unveil the true meaning of soft skills by developing the concept of 'Not-So-Soft-Skills' and creating a common language with respect to soft skills among the key actors involved (intermediaries, job seekers and employers). Based on this, the project partners will design specific training paths for addressing the company's NSSS needs, to increase student employability and job matching. The training courses will be focused on tools, procedures and methods, specifically designed to address this goal, ensuring effective and Pareto efficient results.

EMNES: EURO-MEDITERRANEAN NETWORK FOR ECONOMIC STUDIES

Theme: **Socio-economics and policymaking**
Funding: **Euro-Mediterranean Economists Association**
Programme & partner countries: **Euro-Mediterranean**
Timeframe: **On-going**
More information: **https://emnes.org/**

EMNES develops research activities, disseminated through a series of internal and external publications (studies, working papers, policy papers, policy-graphics and books) and the organisation of events (annual conferences, policy workshop meetings and joint seminars) to bring together leading researchers, policymakers and representatives of the civil society to discuss and debate optimal policies for the future of their region.

EBSOMED: ENHANCING BUSINESS SUPPORT ORGANISATIONS AND BUSINESS NETWORKS IN THE SOUTHERN NEIGHBOURHOOD

Theme: **Mediterranean Business Ecosystem**
Funding: **Euro-Mediterranean Economists Association**
Programme & partner countries: **Euro-Mediterranean**
Timeframe: **2018-2022**
More information: **http://ebsomed.eu**

EBSOMED is a project co-financed by the European Union and coordinated by BUSINESSMED (Union of Mediterranean Confederations of Enterprises) as part of a consortium of six partners. More than thirty organisations from 26 countries are also affiliated to the project. The ultimate goal of this 4-year project is to promote the Mediterranean Business Ecosystem by boosting investment and job creation in the region with a view to economic growth. This will be done through the strengthening of the capacity building of Business Support Organisations (BSOs) in the Southern Neighbourhood Countries.

heinnovate

Is your Higher Education Institution promoting the development of an entrepreneurial culture?

HEInnovate – Innovation and Entrepreneurship in Higher Education

Increasingly, HEIs are confronted by the most difficult social and economic challenges facing our societies, from digitalisation, to regional imbalances, skills deficits and social mobility. The most recent example is the Covid-19 crisis, where HEIs globally were involved in every element of the response, from mapping the spread of the disease, to contributing to scientific advisory committees on how to manage lock down, to developing a vaccine and treatments for those infected. It is unsurprising when considering the breadth of these challenges that the mandates of HEIs are becoming ever more complex and broader.

In this context, HEIs need to examine whether traditional approaches to teaching, research and collaboration allow them to be their most effective. This ties into the growing interest in the innovation and entrepreneurship agenda with the aim to implement a faster and more reactive pace for research, a teaching approach focused on creativity and problem solving and an outward collaborative working with public and private actors in the community.

The HEInnovate framework developed by the OECD and the European Commission brings these strands on HE reform and innovation & entrepreneurship together. The project aims to support individual HEIs and national higher education systems become more innovative as well as generate new development opportunities.

The HEInnovate approach is based eight dimensions of innovation and entrepreneurship:

- ***Leadership and governance*** which concerns the strategic support for innovation and entrepreneurship within an institution.
- ***Organisational capacity*** focuses on the capacity of an organisation to implement its strategy, with a focus on funding, people and incentives.
- ***Entrepreneurial teaching and learning,*** includes the direct learning about entrepreneurship as well as the development of a wider entrepreneurial mind-set when it comes to problems solving, including using interdisciplinary approaches.
- ***Preparing and supporting entrepreneurs*** focuses on how an HEI empowers students, graduates and staff to start businesses.
- ***Knowledge exchange and collaboration*** includes the 'third mission' of HEIs, defined as the stimulation, direct application and exploitation of knowledge for the benefit of the social, cultural and economic development of society.
- ***Digital transformation and capability*** consider how HEIs should optimise and transform digital technologies to support innovation and entrepreneurship in higher education.
- I***nternationalisation*** considers how HEIs collaborate with partners abroad, as well as take advantage of alternative ways of thinking.
- ***Measuring impacts*** focuses on how HEIs should assess its impact on its eco-system and networks, combining quantitative and qualitative assessments.

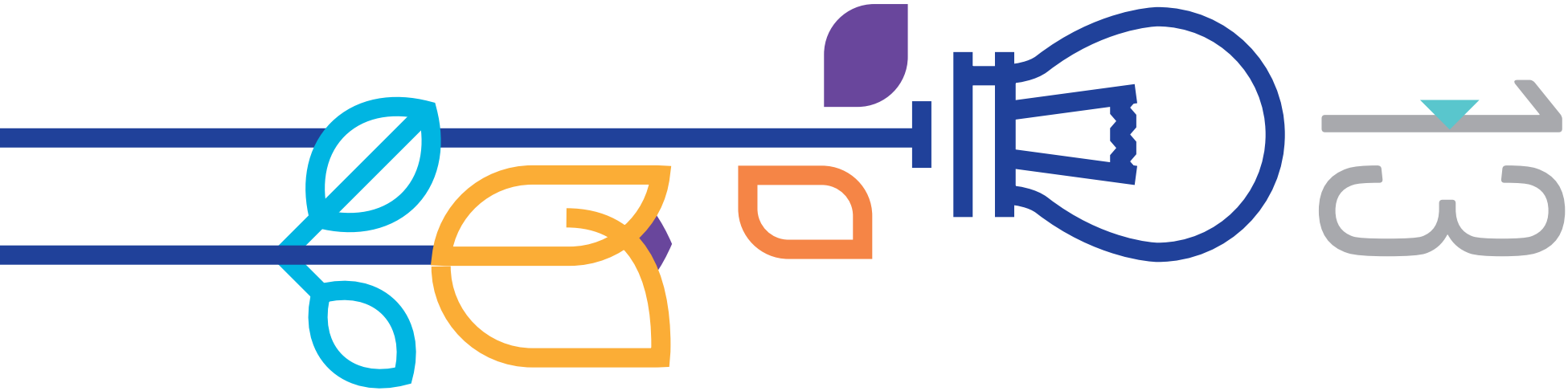
HEIs can consider their performance against these dimensions using a free self-assessment tool developed by the HEInnovate team. Over 1200 HEIs globally have downloaded the tool.

In parallel, the OECD and the European Commission also undertake Country Reviews, which assess the implementation of the entrepreneurial and innovation agenda in a given EU country by evaluating both the national policy framework and institutional practices. There have been nine such reviews so far: Bulgaria, Poland, Hungary, Romania, Austria, Croatia, Italy, Ireland and the Netherlands. (Reviews for Sweden, Lithuania and Greece are currently in train).

It is clear from the **country reviews** that HEIs have developed a number of promising initiatives and programmes that go outside the traditional boundaries of teaching and researching and into how the HEI supports the response to wider economics and social needs. There were examples across the each of the dimensions of the HEInnovate framework, but when considering the conclusions of the country reviews in the round, the 'entrepreneurial agenda' of HEIs is typically based on:

- Supporting start-ups
- Developing an entrepreneurial mind-set of students and staff (21st Century Skills)
- Participating in regional/urban development (smart specialisation strategy)

www.heinnovate.eu



EQUITY, DIVERSITY & INCLUSION

Equity, Diversity & Inclusion
Universities Promoting Equality

There is a clear link between equity and employability since under-represented groups are effectively an untapped source of potential labour. If they are given increased access to educational experiences that build employability skills and facilitate their transition to the world of work, they can contribute directly to the economy. Despite the advantages for higher education institutions (HEIs) to promote equity, diversity and inclusion, there are still significant barriers. HEIs are expected to shape the next generation in terms of socialisation which necessitates their confronting social inequalities and setting an example within their own walls, for instance with inclusive teaching and approaches to research (by integrating gender, socio-economic or differently abled aspects). Improving equity, diversity and inclusion in a university setting can be a positive step toward reducing unemployment as the unemployment rates in some parts of the Mediterranean region are starkly divided along gender lines.

Background and context

It is widely accepted that **diversity** is linked to quality. Diversity promotes innovation and creativity[121] and hearing different – even dissenting – views can anticipate issues, making outcomes more robust. In addition, diversity improves cognitive development, stimulation, motivation and satisfaction. Diversity refers to 'individual or group-social differences among persons such as gender and gender identity, age, sexual orientation and identity, ethnic origin, cultural, political or religious affiliation, physical or mental condition and health', and across all of these, socio-economic status[122]. An example of a targeted initiative that generates this stimulation and satisfaction is Mediterranean New Chance (Med NC), which addresses the socio-professional integration of young people, with special attention for young women and disadvantaged youth, through educational experiences with South-South partners as well as exchanges with Northern Mediterranean countries.

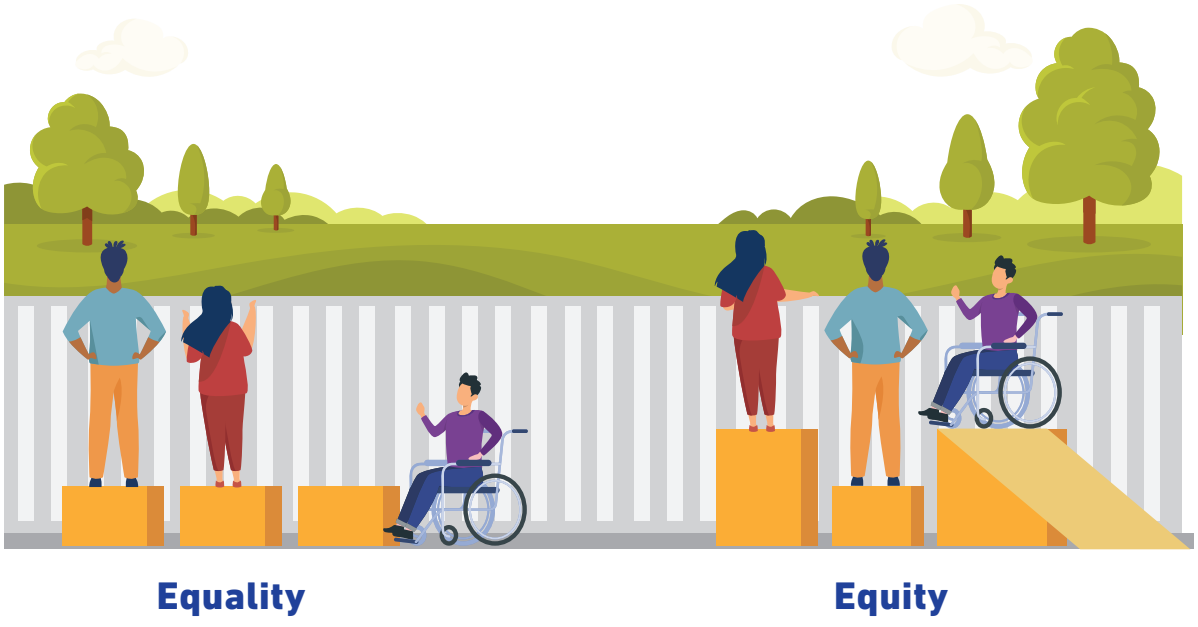
Equality and **diversity** increase quality and **excellence**[126]

Equity, access and inclusion are all related to ensuring that an environment can be as diverse as possible and thus, as high quality as possible. An individual's experience of exclusion and discrimination is not the inevitable consequence of their difference, but rather caused by the way institutions and society at large do not address or redress those differences. Equitable access can only be achieved when institutions give equivalent attention and accommodations to each individuals' needs, as illustrated in Figure 16.

THE SOCIAL MODEL OF DISABILITY[123]

The word disability is used to refer to the restrictions caused by society when it does not give equivalent attention and accommodation to the needs of individuals with impairments. As a simple example, if a person is unable to climb stairs, the medical model focuses on making the individual physically able to climb stairs. The social model tries to make stair-climbing unnecessary, such as by replacing the stairs with a wheelchair-accessible ramp. According to the social model, the person remains impaired with respect to climbing stairs, but the impairment should no longer be considered disabling in that scenario, because the person can get to the same locations without climbing any stairs.

Equality vs equity: every individual has the right to just treatment and equal access
Figure 16



Employability has equity implications. Educational experiences and processes contribute to the development of employability skills and some student groups benefit more than others from higher education institutional strategies that can control access to these experiences. Certainly, reaching gender parity in enrolment and graduates, as several countries in the Southern Mediterranean have, is an important milestone. To overcome limitations in access, there needs to be conceptual clarity, an understanding of the causes and effects, empirical evidence and recommendations for interventions[124]. HEIs are in a special position as the main drivers of education for sustainable development to integrate diversity and gender equality. The strength of the institution itself can enable HEIs to demonstrate social responsibility and lead the way in building equity, diversity and inclusion.

The World Bank ranks Morocco as a frontrunner in **women's education**[128]

Socio-cultural norms, **gender discrimination and lack** of safe, reliable, and affordable transport are the main causes of the

gender gap in employment in non-EU Mediterranean countries[128]

It is not the **existence of implicit bias,** unequal distribution of privilege, or micro-aggressions, **but rather the lack of awareness** at the level of the institution and the community at large that perpetuates inequity[126]

Universities have a history of fostering intellectual diversity

A human right to higher education was included in the International Covenant on Economic Social and Cultural Rights[124], which came into force in 1976, and the European Convention on Human Rights[125] in 1950. The world has changed significantly since. Higher education is a prerequisite for many jobs and those who have attained higher education enjoy improved life circumstances. And HEIs have an important role to play to defend the right of those who do not naturally benefit from easy access to tertiary education. HEIs recognise that education is not always equally accessible to all when it comes to disabilities, ethnic minorities or untraditional students (e.g. mature students). While an HEI may have a diverse student and staff population, it still may not be inclusive. More than having diversity, inclusiveness means that the institution values diverse backgrounds and this implies that the institution is aware of the differences and therefore also the privileges certain groups enjoy[122]. For example, access is open to everyone in many universities, however the support required for special needs students may not be in place, hence the access is not actually open to certain groups with diverse needs. HEIs are viewed as role models in innovative practices such as providing support tools for differently abled students and this approach can influence graduates and regional employers to similarly implement practices that support open access policies. Questioning practices around equity, diversity and inclusion is justifiable and HEIs have well-developed tools to do so.

Gender equality legislation exists in many countries in the region, however what is crucially missing is its **lack of adequate implementation**[128]

DECOUPLING STRATEGIES

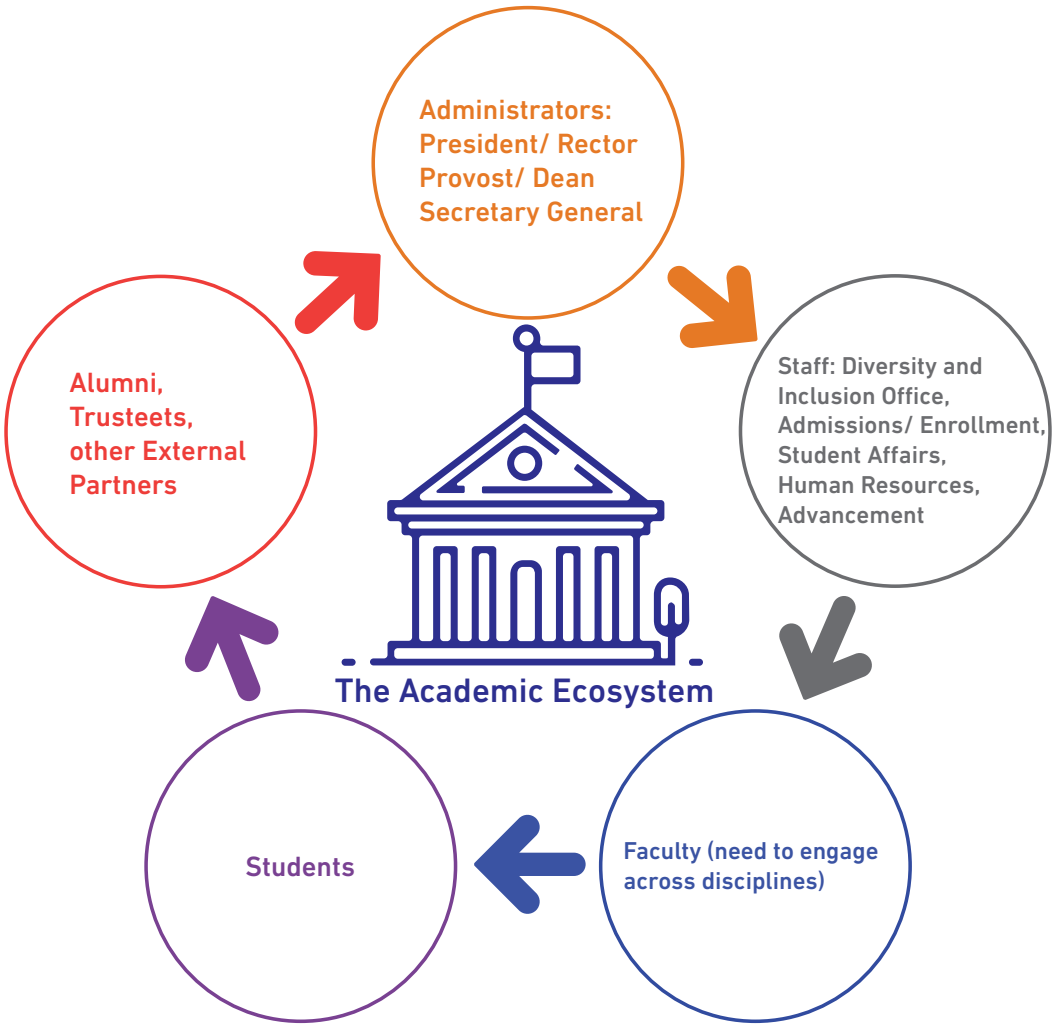
A decoupling strategy is a coping mechanism that happens when organisations decide to implement a programme while failing to implement expected practices that would go along with it. Decoupling is a way of reconciling conflicting institutional demands, or 'avoiding' conforming to institutional pressures by covering up 'nonconformity behind a façade of acquiescence'[129]. The concept explains how organisations deal with conflicting demands, especially when they are imposed by constituents that control critical material or symbolic resources. Decoupling might not always be deliberate or strategic130. Researchers have demonstrated that it can be non-intentional, can serve as a well-meant buffering mechanism, and can be motivated by one's ideology or profession[131–134].

When women agree that
women are vulnerable,
when ethnic minorities acknowledge
they are culturally different,
it is even more difficult to realise these judgements contribute to unequal treatment of individuals based on their group membership – and are a
root of discrimination[126]

Provisions and approaches

Promoting equity, inclusivity and access to achieve real diversity requires a commitment from the leadership of an HEI and needs to involve all levels of the academic ecosystem (Figure 17)[121]

Promoting equity, diversity, and inclusion in the academic ecosystem
Figure 17



Source: adapted from Martinez-Acosta & Favero (2018)[121]

The HEI administration is particularly important in any project to improve equity since they manage the procedures and systems that define access and inclusivity. Specific actions include establishing an Equity, Diversity and Inclusion officer and reaching out to prospective students and academic staff from under-represented groups to communicate the support structures in place for such individuals. Many HEIs already have an equal opportunities office, which may be required by the ministry or put in place to keep pace with other HEIs, who have such offices and personnel. When these resources are integrated into the strategy of the institution, the institution's culture can expand into making equitable practice part of everyday interactions and so avoid the pitfalls of 'decoupling' the concept of equity from the actual practice. Equity, Diversity and Inclusion Policies should be introduced by HEI leadership to send a clear message to all members of the academic community of the importance of the effort, giving explicit procedures for how to address issues that arise and where resources are to help. Even at a curriculum level, elements can be introduced to ensure that all students are aware of the institutional position on the subject[121].

An academic environment that can effectively address social inequalities is necessary to find solutions to the Sustainable Development Goals (SDGs). One particular aspect of inclusivity – disabilities – poses an interesting example for HEIs, considering their role in knowledge production in the form of research and teaching:

Including researchers with disabilities in the research process means that the voice of people with disabilities are included in recommendations and outputs, which has a ripple effect, effectively expanding inclusion. 'Nothing about us without us' is the ambition of the disability movement. When this concept is integrated in the administration of HEI research and teaching processes, inclusive action will be affected across a wider and increasing range of activities.

Disability-inclusive tertiary education is especially relevant when considering the major steps already taken to improve access to primary and secondary education for people with disabilities. When these young students finish secondary school, HEIs need to accommodate them so that they are not stalled at the end of high school, potentially wasting their ability to continue studying and eventually contribute to the work force[125].

Disability inclusive higher education is particularly pertinent, given the progress that has been made in improving access in both primary and secondary education[125]

Opportunities for HEIs to move towards equity, diversity, and inclusion

The lack of diversity in HEIs is often considered to be the inevitable result of the pursuit of excellence, where merit alone is rewarded. However, bias is built into the decision-making structures and the definition of excellence is limited to traditional measures of success instead of a broader view that recognises the contributions of diverse others to that success. Social inequalities are firmly in place prior to reaching the HEI level (from childhood). Although HEIs are not the cause, they can lead the way in confronting these inequities. Valuing diversity can solidify an HEIs long-term relevance in a rapidly changing world, improving outcomes not only for the HEI but also society. Opportunities include[126]:

- To better reflect society and connect local and global challenges
- To discover and include the greatest talent, by reconsidering the definitions of excellence and success in the academic community
- To fully realise the potential in all staff and students
- To enhance wellbeing across the institution, to the benefit of recruitment, retention and performance
- To increase the validity and quality of research results and knowledge production and transfer

Success factors

To attain diversity, a variety of factors need to be in place, the most significant of which are resources and awareness[127]:

- Funding and resources
- Awareness about the issue
- Identifying and reaching target groups
- Relevant data on the topic
- Information and training
- Agreement and support within the HEI
- Government support
- Qualified staff to manage the issue
- Activities to address the issue
- Strategic approach
- Support from HEI leadership

Specific challenges

- Addressing decoupling mechanisms
- Avoiding tokenism or symbolic efforts which are not backed by concrete strategies and funding
- Developing accessible reporting mechanisms against discrimination and abuse
- Acting against implicit bias and denial of discrimination
- Eliminating bias and blind spots in research and university assessment
- Embedding inclusive research and innovation across the university
- Recognising the less visible characteristics of equity, diversity and inclusion
- Intersectionality as a framework to understand the value and complexity of diversity
  - By highlighting the multi-faceted nature of diversity, the intersectionality framework helps to explain why singly targeted interventions for narrowly defined groups are unlikely to be effective and why the interconnected, system-wide approach is the best way forward.

Tools and resources

Gendering the Academy and Research: Combating Career Instability and Asymmetries (GARCIA)

The GARCIA Project was concerned with the implementation of actions in European Universities and research centres to promote a gender culture and combat gender stereotypes and discriminations. The project ran from February 2014 to January 2017 and has a collection of useful publications and materials with concrete examples of implementation strategies.

http://garciaproject.eu/

Examples and best practice

RESCUE: REFUGEES EDUCATION SUPPORT IN MENA COUNTRIES

Theme: **Refugee mobility**
Funding: **Erasmus+**
Programme & partner countries: **Lebanon, Jordan, Iraq and five EU**
Timeframe: **2016-2019**
More information: **https://www.uni-med.net/progetti/rescue/**

UNIMED project for refugees to resume their studies through student mobility
This regional project makes it easier for refugee students coming from the Syrian conflict and located in Lebanon, Jordan and KRG (Iraq) to access higher education and the job market. It does this by setting up Refugee Student Operational Support Units, small offices whose mission is to blend specific services supporting the refugee students in resuming their academic training path. The project partnership includes universities from Lebanon, Jordan, Iraq and five European partners. It is coordinated by UNIMED, Italy:

UNI(DI)VERSITY: SOCIALLY RESPONSIBLE UNIVERSITY FOR INCLUSIVE SOCIETIES IN THE ERA OF MIGRATION

Theme: **Diversity and inclusion for migrants and refugees**
Funding: **Erasmus+ KA2 Strategic Partnerships**
Lead: **Sapienza University, UNIMED**
Programme & partner countries: **Belgium, France, Italy**
Timeframe: **2020-2021**
More information: **https://www.uni-med.net/en/projects/unidiversity/**

In a context of increased xenophobia, cultural tensions, and toxic narratives on migrants and migration, much remains to be done for universities to fully embrace a 360-degree approach to the phenomenon of migration that goes beyond immediate initiatives and builds inclusive Higher Education Institutions (HEIs) and societies, taking responsibility for the important societal challenges facing European countries. Such approach includes strategic planning for providing equitable access for migrant and refugee students and staff, and reconsidering teaching and research activities.
UNI(di)VERSITY aims to support European HEIs to uphold their role towards building inclusive societies in the era of migration, with a view to promoting the social inclusion of migrants and refugees. For this purpose, the following objectives will be pursued:

- Increase knowledge about outstanding and transferable HEI strategies and approaches towards diversity and inclusion in relation to migration
- Inspire commitment and support discussion on the role of HEIs as key actors in promoting inclusion and cultural diversity, and addressing related societal challenges
- Raise awareness among the European academic community concerning the social responsibility of HEIs on inclusion in relation to the phenomenon of migration
- Empower HEIs in the development of 360-degree institutional strategies that cover the full range of university activities (research, teaching, administration, "third mission")
- Mainstream practices and achievements in a comprehensive framework for action that would support HEIs' strategic planning in this domain across Europe

MED4JOBS

Theme: **Inclusive growth**
Funding: **UfM**
Programme & partner countries: **Euro-Mediterranean**
Start: **2013**
More information: **https://ufmsecretariat.org/project/mediterranean-initiative-for-jobs-med4jobs/**

The 'Mediterranean Initiative for Jobs (Med4Jobs)' is a cross-sectorial initiative aiming to help increase the employability of youth and women, close the gap between labour demand and supply, and foster a culture of entrepreneurship and private sector development by promoting and replicating private sector job creation projects in the Southern and Eastern Mediterranean region. Whereas growth in the Mediterranean in recent years has not enabled the creation of sufficient jobs, Med4Jobs will contribute towards bringing job creation at the centre of socio-economic development debate, notably by shedding light on employment at local/national level.

EURO-MEDITERRANEAN WOMEN'S FOUNDATION

Theme: **Network of gender equality actors**
Funding: **French Ministry of Europe and Foreign Affairs**
Programme & partner countries: **Euro-Mediterranean**
Start: **2014**
More information: **https://www.euromedwomen.foundation/**

The Euro-Mediterranean Women's Foundation is a trilingual (French, English and Arabic) online network of networks, so that all gender equality actors in the Euro-Mediterranean region can engage in dialogue and work together. The Foundation establishes links between knowledge and action. It connects people and projects to make gender equality advance by developing innovative tools to strengthen the role of women in the Euro-Mediterranean space. United, these players promote dialogue, encourage networking, foster partnerships and facilitate synergies between gender equality actors involved in improving women's living conditions.

AFEM: ASSOCIATION DES FEMMES CHEFS D'ENTERPRISE DU MAROC

Theme: **Women entrepreneurship**
Programme & partner countries: **Morocco**
Start: **2000**
More information: **https://www.facebook.com/afem.maroc/**

The AFEM is a pioneer association that aims to gather women business leaders from Morocco. The Association is represented throughout the Moroccan territory in its national office (Casablanca) and in its seven regional offices (Rabat, Fes, Marrakech, Tangier, Agadir, El Jadida and Meknes). The AFEM 's missions are:

- Promoting women's entrepreneurship
- Managing, guiding and supporting women entrepreneurs in their business development and in their competitiveness
- Encouraging the creation of businesses by women in Morocco
- Promoting the image of the woman entrepreneur in Morocco and abroad
- Representing women business leaders at decision-making levels as a unit group in relation to power networks

RAISD: RESHAPING ATTENTION AND INCLUSION STRATEGIES FOR DISTINCTIVELY VULNERABLE PEOPLE AMONG THE FORCIBLY DISPLACED

Theme: **Diversity and inclusion for migrants and refugees**
Funding: **EC, Horizon2020**
Lead: **Universidad Complutense de Madrid, UNIMED**
Programme & partner countries: **Belgium, France, Italy**
Timeframe: **2019-2022**
More information: **https://www.uni-med.net/progetti/raisd/**

Forced displacement crises overcome societies and institutions all over the world. Pushed by the urgencies rather than events, solutions are frequently reactive, partial, and disregard some groups. This project aims to identify highly Vulnerable Groups (VG) among these forcibly displaced people, analysing their specific needs, and finding suitable practices to address them. The concept of 'vulnerability context' considers the interplay between the features of these persons and their hosting communities, their interactions and experiences, and how different solutions for attention and inclusion affect them. The project works within the Responsible Research and Innovation (RRI) framework that proposes that all actors (including civil society) co-design actions, transversely integrate the gender perspective, and support sustainability.

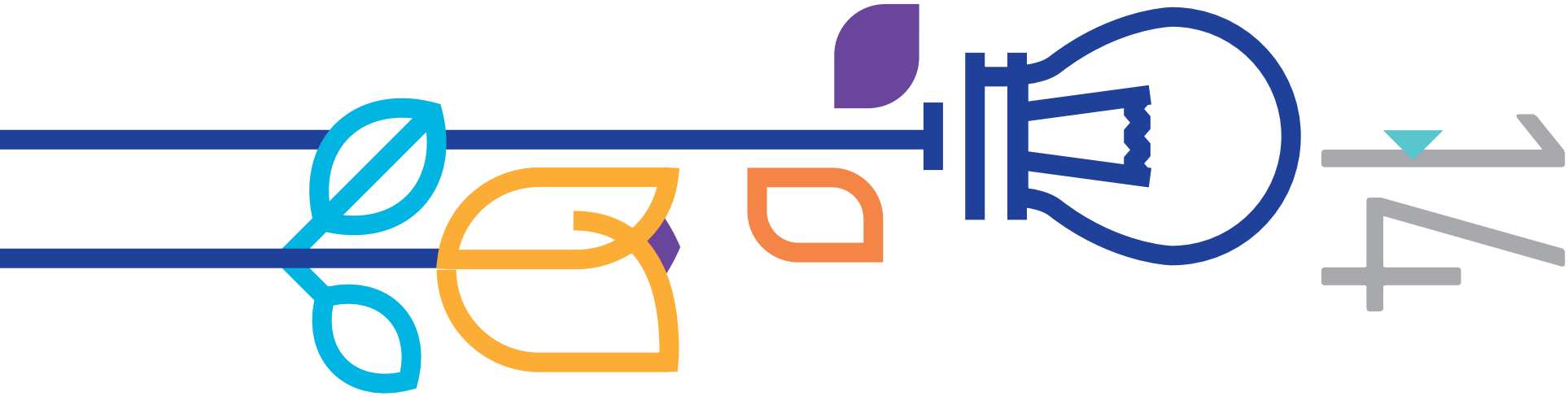
INHERE: HIGHER EDUCATION SUPPORTING REFUGEES IN EUROPE

Theme: **Diversity and inclusion for refugees**
Funding: **Erasmus+ KA2 Strategic Partnerships**
Lead: **UNIMED with UNHCR**
Programme & partner countries: **Belgium, France, Italy, Spain**
Timeframe: **2016-2018**
More information: **https://www.uni-med.net/progetti/inhere/**

Associated with increased migration flows, the social dimension of higher education is concerned with providing opportunities for refugees to participate in the European Higher Education Area (EHEA), including the integration of persons with refugee status, asylum seekers and internally displaced persons who might access to relevant mobility schemes. This project aims to respond to the refugee crisis in Europe by strengthening knowledge sharing, peer-support and academic partnership among Higher Education Institutions on initiatives and resources aimed at facilitating integration and access of refugees in European universities.

Objectives:

- Collect and analyse good practice examples of HE approaches and initiatives on refugees and displaced students
- Sensitise HE governance, facilitating communication and institutional support within and outside the university
- Provide relevant orientation and training to the university staff to empower universities so that they are able to take an active stand and further replicate successful approaches and practices
- Mainstream results, achievements and recommendations to HE institutions, HE networks and HE policymakers on the strategies that can be put in place to integrate refugees in higher education, therefore increasing the social dimension of the EHEA



REFERENCES & ACKNOWLEDGEMENTS

Glossary

Alumni
Graduates of a particular university.

Career Services
Career services offer support to students (and in some cases alumni) studying at that university. This includes help with exploring career ideas, jobs search, developing CVs, giving interviews, networking, further study and help with finding work after graduation. when you graduate. It may also include help with finding a part-time or summer job whilst you are studying. A student resource department that helps students and alumni job-search, develop resumes, give interviews and network.

Closed innovation
Closed innovation relies on the idea that internal expertise (ideas), along with an iterative process for managing that expertise, can sustainably produce new business. Closed innovation companies operate under a self-contained innovative environment, that is, information is kept within the confines of the company and is not shared with external parties.

Collaborative doctoral training
Collaborative doctoral training is a generic term to cover doctoral degrees that involve research projects in collaboration or partnership with non-higher education organisations or industry. These occur across all disciplines.

Credentialism
Overemphasis on diplomas or degrees in giving jobs or conferring social status.

Decoupling strategies
A decoupling strategy is a coping mechanism that happens when organisations decide to implement a programme without implementing expected practices that would go along with it. Decoupling is a way of reconciling conflicting institutional demands, or 'avoiding' conforming to institutional pressures by covering up 'nonconformity behind a façade of acquiescence'[129]. The concept explains how organisations deal with conflicting demands, especially when they are imposed by constituents that control critical material or symbolic resources. Decoupling might not always be deliberate or strategic[130]. Researchers have demonstrated that it can be non-intentional, can serve as a well-meant buffering mechanism, and can be motivated by one's ideology or profession[131–134].

Diversity
Diversity refers to 'individual or group-social differences among persons such as gender and gender identity, age, sexual orientation and identity, ethnic origin, cultural, political or religious affiliation, physical or mental condition and health', and across all of these, socio-economic status[122].

Employability
The International Labour Organization defines employability as related to portable competencies and qualifications that enhance an individual's capacity to make use of the education and training opportunities available in order to secure and retain decent work, to progress within the enterprise and between jobs, and to cope with changing technology and labour market conditions[17].

Entrepreneurship
Entrepreneurship is the creation or extraction of value[135,136]. With this definition, entrepreneurship is viewed as change, which may include other values than economic ones. More narrow definitions have described entrepreneurship as the process of designing, launching and running a new business, which is often initially a small business, or as the capacity and willingness to develop, organise and manage a business venture along with any of its risks to make a profit. People who create these businesses are often referred to as entrepreneurs. While definitions of entrepreneurship typically focus on the launching and running of businesses, due to the high risks involved in launching a start-up, a high percentage of start-up businesses do not survive in the long term. A somewhat broader definition of the term is sometimes used, especially in the field of economics. In this usage, an entrepreneur is an entity which has the ability to find and act upon opportunities to translate inventions or technologies into products and services.

Erasmus+
The European Union's Erasmus+ programme is a funding scheme to support activities in the fields of Education, Training, Youth and Sport. The Programme is mainly made up of three so-called 'Key Actions' (KA): (1) Learning Mobility of Individuals, (2) Cooperation for Innovation and Good Practice, and (3) Support to Policy Reforms. In terms of organisational capacity development, the actions under KA2 make it possible for organisations from different participating countries to work together, to develop, share and transfer best practices and innovative approaches in the fields of education, training and youth. Three theme areas are of particular interest:
(a) Sector Skills Alliances ensuring cooperation between education and employment in tackling skills gaps with regard to one or more occupational profiles in a specific sector
(b) Knowledge Alliances supporting cooperation between higher education institutions and enterprises
(c) Capacity Building in the field of higher education supporting cooperation with partner countries

Experiential learning
Experiential learning is learning by doing and can be undertaken through internship, field study, practicum, work placement, cooperative learning, apprenticeship, research, fellowship, clinical experience, simulations, service learning, study abroad, and volunteering.

Faculty
Academic staff including professors, both full-time and adjunct.

Fourth or 4th Industrial Revolution
The Fourth Industrial Revolution represents a fundamental change in the way we live, work and relate to one another. It is a new chapter in human development, enabled by extraordinary technology advances commensurate with those of the first, second and third industrial revolutions. It refers to the convergence of digital, biological, and physical innovations that will result in disruptive changes. These disruptions can be positive, leading to an empowering, collaborative and sustainable social and economic environment if the underlying changes that cause them are based on shared values of the common good, human dignity, and intergenerational stewardship[117].

Gender Gap
Despite women's rising education attainment, their labour force participation in the MENA region has remained considerably lower than the one of men. This gender gap has come to be known as the 'MENA paradox'. Participation in the labour force among well educated women in North Africa and the Eastern Mediterranean is constrained by adverse structural developments on the demand side such as lack of support for family leave and childcare by employers[18]. Reduced public sector employment opportunities has not been counterbalanced by an increase in jobs in the formal private sector, leading to a decrease in overall participation, and in particular, women's participation in the work force.

Gross Domestic Product
Gross Domestic Product (GDP) is the monetary value of all finished goods and services made within a country during a specific period. GDP provides an economic snapshot of a country, used to estimate the size of an economy and growth rate. GDP can be calculated in three ways, using expenditures, production, or incomes.

Innovation
One of the most referenced definitions of innovation goes back to Joseph Schumpeter[13] which includes the introduction of a good or a significant improvement of an existing good, the introduction of new methods of production (process innovation), the creation of a new market, the conquest of a new supply source and the creation of a new type of organisation (i.e. administrative innovation). Innovations thus include a level of newness. Yet, innovation is not synonymous with invention as innovation includes both aspects of creation or discovery and diffusion[14]. Pragmatic definitions define innovation as a successful implementation of creative ideas or 'as a process that provides added value and a degree of novelty to the organisation and its suppliers and customers through the development of new procedures, solutions, products and services as well as new methods of commercialisation'[15]. It is safe to say that an innovation's starting point normally is an invention followed by exploitation. However, without successful commercialisation, the invention cannot become an innovation. It is estimated that more than 60% of economic growth derives from technological progress, which has led to technology advances being closely identified with innovations[16].

Institutional Ambidexterity
While the aspirations of university-industry partnerships can be easily described, it is often challenging to establish and run these partnerships effectively, even when the resources are available. The challenge is amplified in an ecosystem where the various stakeholders operate with their own ambitions and logics. These need to be properly aligned to achieve impact and avoid frustration that derive from marked differences in culture and governance[103]. Whereas academic culture is characterised by a high degree of distributed autonomy and governance, corporate culture tends to emphasise central decision making and strategic alignment[105]. But even if the cultural divide between academia and industry runs deep, it can be overcome through strong leadership, incentives, structures, and boundary spanners that can operate in both 'worlds' (institutional ambidexterity), focusing on the possible benefits of operating across coexisting and contradictory logics[106].

Institutional logics
Institutional logics are systems of cultural elements (values, beliefs, and normative expectations) by which people, groups, and organisations make sense of and evaluate their everyday activities, and organise those activities in time and space[57].

Internationally mobile student
UNESCO defines an internationally mobile student as an individual who has physically crossed an international border between two countries with the objective to participate in educational activities in a destination country, where the destination country is different from his or her country of origin[65].

Internship
A limited period of work experience which is neither part of a regular employment relationship nor a formal apprenticeship.

Intersectoral mobility
Intersectoral mobility (ISM) refers to all possible bridges between university, industry and other sectors of employment. In a narrower sense, ISM is defined as the physical mobility of researchers between one sector (academia) and another[137]. Researcher mobility may therefore also be virtual, or involve partial mobility, for instance spending one day a week in an enterprise and four days a week carrying out PhD research at university. The mobility of researchers takes place between academia (e.g. universities, other types of higher education institutions and publicly-funded research institutes), industry (e.g. SMEs and large firms) and the public sector (e.g. national government, local authorities, and public institutions). The different types of intersectoral mobility of researchers within focus are:

a) Mobility between academia and industry
b) Mobility between academia and the public sector
c) Mobility between academia and the third sector

Intrapreneurship
Intrapreneurship, defined as organisational venture creation and strategic renewal brought about by employees, has become crucial for organisations to survive and maintain their competitive advantage. Research has demonstrated that intrapreneurship positively relates to profits and returns on sales, and has been argued to increase organisational effectiveness and public value creation.

Life Skills
These skills (sometimes known as soft skills) fall into three basic categories: **(a)** social or interpersonal skills (which may include communication, negotiation and refusal skills, assertiveness, cooperation and empathy); **(b)** cognitive skills (problem solving, understanding sequences, decision making, critical thinking, and self-evaluation); and **(c)** emotional coping skills (including positive sense of self) and self-control (managing stress, feelings and moods)[138].

Non-standard forms of employment
'Non-standard forms of employment' is an umbrella term for different employment arrangements that deviate from standard employment. They include temporary employment; part-time and on-call work; temporary agency work and other multiparty employment relationships; as well as disguised employment and dependent self-employment. Non-standard employment features prominently in crowdwork and the gig economy[73].

Open innovation
Open innovation, on the other hand, is based on the belief that knowledgeable and creative organisations and individuals outside the company can also contribute to achieving strategic goals and that sharing intellectual property both ways is useful for different parties in different ways.

Soft Skills
Soft Skills (also known as Non-Cognitive Skills) are 'patterns of thought, feelings and behaviours'[139] that are socially determined and can be developed throughout the lifetime to produce value. Soft Skills can comprise personality traits, motivations and attitudes and are vitally important for the employability and adaptability. The ILO refers to soft skills as 'core work skills'.

Third mission
Besides the two traditional missions of academia (teaching and research), the so-called 'third mission' has emerged over the past two decades. It covers: **(a)** knowledge and technology transfer; **(b)** continuing education; and **(c)** social engagement.

Third sector
Third sector organisations describe a range of organisations that are neither public sector nor private sector. It includes such organisations as associations, community organisations, registered charities, self-help groups, community groups, co-operatives and social enterprises. Third sector organisations generally are independent of government and are value-driven, i.e. they are motivated by achieving societal goals rather than profit and reinvest any surpluses generated in the pursuit of their goals.

Triple Helix
The Triple Helix Model theorises that in a knowledge-based society, boundaries between different spheres are increasingly fading, giving rise to a system of overlapping actions: **(a)** universities and research centres are the source of new knowledge and technology; **(b)** industry operates as the centre of production; and **(c)** government provides an enabling environment (e.g. providing incentives, autonomy and stability). The interactions between the three spheres provide an innovative environment where knowledge flows dynamically in all directions. And each sphere, while retaining its primary role and identity, 'takes the role of the other'[24] – for example, universities support start-up creation in incubator and accelerator projects, thus entering into the industrial sphere.

Underemployment
The condition in which people in a labour force are employed at less than full-time in regular jobs or at jobs inadequate with respect to their training or economic needs.

Waithood

Period of stagnation in the lives of young unemployed university graduates, primarily in the Middle East, North Africa (MENA) and India, where their expertise is not widely needed or applicable. Waithood is applicable only to college educated people who are not compelled to settle in blue collar jobs due to the support from family elders or resources. Due to the lack of any potential employment, waithood is also tangentially related to rising rate of belated parenthood in various developing countries, with younger people choosing to delay or being forced to delay starting their own families, likes of which were uncommon in the modern industrialized countries when they were developing.

Wicked problem

Wicked problems are socially complex, have many interdependencies and multiple causes that have no single solution, and are perceived by different stakeholders through contrasting views[3].

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