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UNIVERCITY
ACTION LAB

STATUS QUO REPORT

UCITYLAB PROJECT

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PROJECT PARTNERS



For more information about the UCITYLAB Project Good Practice Case Study Report, please contact Professor Todd Davey (todd.davey@imt-bs.eu). This document has been prepared by the authors using data that had been collected in the framework of an Erasmus+ project funded by the European Commission. The report reflects the views only of the authors and the Commission cannot be held responsible for any use, which may be made of the information contained therein.

INTRODUCTION

The Status Quo report has been prepared as part of the UCityLab project and reports on the Status Quo of the state of university-city cooperation, describing what takes place, the system and environment in which it takes place and the factors affecting it for each of the four university partners.

The report is designed to provide a detailed understanding of the context related to university-city cooperation in order to provide better planning and management of the system. A detailed literature review underpins the work, describing university-city cooperation from the perspective of existing research and literature sources, whilst the four partner status quo reports provide a practical perspective layer of university-city cooperation in the city of each university.

1. AIMS

To provide a concise report, which:

1. Provides an update on the status quo in the development of relationships between university and the city
2. Specifically, in relation to each university and their city, the research and subsequent report:
 - Identifies the Context – including the background and context in the city/region, the relevant stakeholders involved university-city collaborations (to form the urban development networks) and how the ‘ecosystem for university-city cooperation is structured
 - Identifies the System – including the inputs, activities being undertaken as well as the subsequent outputs, outcome and impacts.
 - Identifies the Factors - including the supporting mechanisms (policies, strategies and approaches) fostering university-city engagement as well as the major challenges and/or success factors in relationships

2. PROCESS

In creating the Status Quo review and report creation, the following process was undertaken:

Phase Activities

Phase 1	<ul style="list-style-type: none">▪ Extensive secondary data review (publications, reports)▪ Undertaking primary research including interviews with experts and partners (5)▪ Create the UCityLab Ecosystem Catalogue of cooperation activities, stakeholders, barriers and drivers as well as supporting mechanisms
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Phase Activities

	<ul style="list-style-type: none"> Create the tools for data collection for each city/region including report template
Phase 2	<ul style="list-style-type: none"> Each UCityLab partner reviewed their ecosystem of local activities, involved stakeholders, barriers and drivers as well as supporting mechanisms. Partners developed understanding of cooperation between their university, city and region through: <ul style="list-style-type: none"> Discussion forums Interviews Surveys Mapping the stakeholders involved in the university-city lab ecosystem Write up into a concise chapter (report). Partner report finalised
Phase 3	<ul style="list-style-type: none"> Reports from UCityLab partner edited and synthesised Finalise status quo report

3. FRAMEWORK

The following data collection framework outlines the elements that each university-city partnership reported on within their section of the report.

Element	Framework	Outputs
Descriptive	<p>HEI Name, Region/Country, Size of institution (students, academic staff), Type of institution (traditional, applied sciences, technical etc.), Research intensity</p> <p>CITY Name, Region/Country, Size of city/region/country (population and economic value), Innovation intensity, industry profile</p>	<p>I. <u>Report</u> containing a detailed university-city profile</p> <p>II. <u>Framework</u> for (a) assessing uni-city cooperation (b) mapping uni-city stakeholders</p>
Main cooperation activities	<p>Catalogue* of cooperation activities</p> <ul style="list-style-type: none"> <u>Type</u> of cooperation activities <u>Extent</u> of cooperation activities 	<p>III. Basis for the <u>UCityNetwork</u></p>
Stakeholders	Catalogue* of stakeholders (from literature/partners)	
Barriers and drivers	<p>Catalogue* of barriers and drivers</p> <ul style="list-style-type: none"> Challenges Success factors 	

Element	Framework	Outputs
Supporting mechanisms	Catalogue* of supporting mechanisms <ul style="list-style-type: none"> ▪ Policy ▪ Strategic ▪ Structural ▪ Operational 	

* The catalogue will describe activities, involved stakeholders, barriers and drivers as well as supporting mechanisms captured in the secondary research. The catalogue will be the framework for the review undertaken by the UCityLab partner.

4. REPORT STRUCTURE

The structure for the UCityLabs Status Quo report, is as follows:

1. Introduction
2. Literature review of university-city engagement
 - Background including history and relevant stakeholders
 - The system including the main cooperation activities
 - The influencing factors including supporting mechanisms as well as barriers and drivers
3. University-City reviews
 - Porto Status Quo report
 - Ljubljana Status Quo report
 - Barcelona Status Quo report
 - Paris Status Quo report

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UNIVERSITY–CITY LITERATURE REVIEW

1. INTRODUCTION

1.1 Introduction to university–city cooperation

Despite the growth in available literature addressing how universities are collaborating with external stakeholders, publications that refer to partnerships with municipalities and government agencies are far less numerous than those assessing collaboration with business. With the potential of university-city cooperation (UCC) activities being widely recognized from public and private organizations, there is a need for a more comprehensive study on that will set the foundations for further implementation of this model, allowing HEIs and local authorities to engage in more straightforward collaboration projects.

The rationale behind literature review is to address a shortage of information with regards to the interaction between universities and government agencies. Despite the collective approval of the need for closer cooperation, there is a lack of scientific research into the intricacies of these dynamics. Despite universities and government having been consistently monitored through research studies, the peculiarities of both institutions create a need for an ad-hoc approach to the description of existing collaboration activities.

UCityLab aims to understand the progress that has been made in this collaborative environment. The depiction of this status quo can provide a framework for future interventions, which can help institutions and individuals to understand the potential of UCC activities.

1.2 Aims of literature review

This literature review aims to provide a foundation for the remaining of the UCityLab project. In order to address qualitative and quantitative research stages, the analysis of recent developments in UCC can facilitate the fundamental understanding of the concept. This will involve the collection of data from scientific and grey literature, in an attempt to clarify the existing regulatory framework, activities taking place at local and regional level, as well as motivations and outcomes. Influencing factors in the form of barriers and drivers will also be assessed, aiming to create a comprehensive picture of the UCC ecosystem within the European context.

Through the background research process, it became apparent that UCC, or its individual components, has not yet been comprehensively investigated. Despite some efforts to describe specific partnerships, there is a lack of scientific production reflecting the nuances of the collaborative model. Some sections,

such as stakeholders or barriers for successful collaboration between university and government, do present enough evidence to serve as foundation for the UCC study. However, other fields, such as supporting mechanisms, have been developed through the individual observation of cases plus the extrapolation of findings from UBC studies. Despite not being specific to the interaction with local authorities, it is reasonable to assume that certain characteristics of UCC partnerships are closely related to the interaction with business.

1.3 Structure of review

This literature review focuses on the assessment of existing publications related to UCC components. Despite acknowledging the limitations of available resources to fully describe the dynamics between HEI and government, this report intends to offer an outline of the basic functions within UCC, with the following structure:

- Background research: introduction to concepts that inform the role of universities and government bodies in current society. Attention is given to how sustainability is informing both institutions in their daily activities, and how the interaction between university, innovation and society can be framed.
- Conceptual framework: depiction of the main findings from literature review, presented within a framework to facilitate their understanding. Structure includes:
 - UCC objectives and motivations
 - UCC stakeholders
 - UCC inputs
 - UCC activities
 - UCC results (outputs, outcomes and impacts)
 - UCC supporting mechanisms
 - UCC barriers and drivers

2. BACKGROUND

The role of universities within their local and regional ecosystem is becoming more important in recent years. Through their commitment to the third mission, HEIs acknowledge the potential for their intervention to deliver positive change. With increasing pressure on urban environments including issues related to overpopulation, housing provision, energy security, sustainability, mobility, digital solutions and community engagement, the nature of modern urban challenges is a multidisciplinary issue.

It is widely recognized that, in order to deliver solutions that satisfy very diverse needs, modern scientific disciplines need to understand the complexity of modern issues, making communication with other specialities a vital component of academia, research, teaching and governance services. In addition to this, the delivery of solutions by an isolated actor is no longer an option. Innovating teaching methods, ambitious research quality targets, and the democratization of public services require the

participation of as many societal stakeholders as possible. This creates a very complex ecosystem, where divergent needs and priorities are presented.

2.1 Sustainable development

The increase in the complexity of public policy issues (OECD, 2017) generates a new series of challenges that require an innovative, multidisciplinary approach. The combination of a wide range of expertise creates an opportunity for public bodies to deliver better services to citizens and contribute to the delivery of sustainable development. The issue of sustainability is regarded as an extremely complex challenge, combining matters of human well-being and environmental protection, local and global reach, present and future implications, and theoretical and practical scopes (Mitchell, 2012).

Recent years have seen the growth in awareness towards the notion of sustainable development. The original definition, presented by the Brundtland Commission (Brundtland et al., 1987), is still used as a theoretical reference for the definition of environmental values and objectives. This concept, by which **the only acceptable form of development is the one that supports the needs of present generations without compromising the natural environment for the future**, sets the overarching principle that informs modern environmental policy and, in recent years, the regulatory frameworks of most countries in the developed world.

The concept of sustainability, in the modern world, affects a wide range of areas that require action. Although it tends to be recognized as a solution to environmental issues, United Nations defined the concept as a close connection to social and economic matters. Based on these three pillars, sustainable development and the associated policies target topics as diverse as education, land use, consumption or social cohesion.

Despite the overall consensus of the scientific community with regards to the robustness and validity of the definition over 30 years later, there are significant challenges that affect the way the concept is interpreted, its integration into current policy, and the disagreements within the scientific community when discussing their understanding of the concept (Sneddon, Howarth and Norgaard, 2006). There are publications that question the dynamics between social, economic and environmental factors. Redclift (2002) argues that the excessive flexibility of the original definition allowed for economic interests to dominate the conversation, ignoring those voices that advocate for the protection of natural resources, and therefore defeating Brundtland's purpose. Pearce and Atkinson (1998) also assess the limitations of the concept in its original form, focusing on the methods to evaluate potential losses of natural capital. By monetizing these resources and allowing for mitigation through financial compensation, the system concedes the priority to economic factors, and ignoring the original objective of protection of the environment from damages related to uncontrolled economic activity.

Since 1987, the concept of sustainable development has been revamped to elaborate frameworks that allow for a more comprehensive protection of natural resources. The succession of iterations responds to the changes in societal understanding of sustainability, and to the increased awareness of the persisting damage to the environment. The former is reflected in the development of a more holistic concept of sustainable development. This is the case of the **Rio Summit in 1992**, where the international community acknowledges the need for coordinated action to achieve the global targets, and its revision in the same city in 2012, where the need to fight poverty was incorporated as a key objective for all countries.

The evolution of the concept, with the addition of more precise societal instructions, and the recognition of coordinated action as the only chance of success, culminated in the publication by of the **Sustainable Development Goals (SDGs)** (United Nations, 2015). Through the definition of 17 targets, the international community aims to set clear priorities and to identify dependences between the different topics. The acceptance of these goals is required to be executed in its totality, countries and regions have to commit to the pursuit of all the objectives that are relevant for their territory and can provide an improvement for the conditions of their communities.

The universal acceptance of SDGs favoured the adoption of what is known as Agenda 2030. Building on the commitment at state level, this declaration includes several points relevant for the interaction between universities and cities:

- Goal 4: ‘Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all’
- Goal 9: ‘Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation’
- Goal 11: ‘Make cities and human settlements inclusive, safe, resilient and sustainable’
- Goal 13: ‘Take urgent action to combat climate change and its impacts’
- Goal 17: ‘Strengthen the means of implementation and revitalize the global partnership for sustainable development’

Sustainability for higher education

The comprehensive commitment by the international community to embed the principles of sustainable development into the ethos of public and private organizations (United Nations, 2012), creates a necessity for HEIs to accelerate their transition towards a leading role within local and regional communities (Silka, 2014). The impact of universities through research, teaching and community engagement creates a considerable responsibility to integrate sustainability into their daily functions (Hernández Arámburo, Cruz González & Ceja Rivas, 2017).

Despite the movement for HEIs as anchors for sustainable development being a relatively recent concept, there is Holmberg (2014) considers the need for sustainability principles to be incorporated into the university’s core activities, not only due to environmental emergencies, but also for HEIs to remain relevant within a society that is accelerating that transition. The extent of this evolution is expected to go beyond the development of curriculum or multidisciplinary research, achieving the engagement of every member of staff in the process (Holmberg et al., 2008).

As with the majority of large organizations, there are different approaches to the implementation of comprehensive change. The application of traditional management methods appears to struggle to deliver successful, sustained and comprehensive change (Holmberg, 2014):

- A top-down demand-and-control strategy, relies on the effectiveness of their incentives to implement change. With sustainability being such a complex issue, the construction of an effective network of incentives becomes overly difficult.
- An action plan based on the allocation to a single department of the task to embed sustainability within the organization has limited effectiveness, due to the possibility of other actors remaining passive in the implementation phase, preventing the strategy from reaching its full reach.

Considering the magnitude of the challenge, this complex process can become particularly difficult in universities with higher degrees of autonomy and with large, excessively fragmented governance

structures. Despite the universal commitment to its implementation, the quality of the outcomes is still far from an acceptable standard (Holmberg and Samuelson, 2006). Researchers have investigated cases where sustainability is being consistently integrated in teaching, research and engagement activities, presenting a series of common characteristics that are considered transferrable to other institutions (Holmberg et al., 2008):

- **interactive processes and dialogue** are the best strategy to deliver change at an individual level. To facilitate full commitment by academics, researchers and other members of staff, HEIs should instigate curiosity about the concept of sustainable development, instead of establishing a rigid set of institutional mandates.
- it is beneficial to set up a **neutral platform**, recognised by the board of the institution, that will act as an intermediary and an instigator of change for all units within the HEI. This unit should focus on skills for organizational change and is also in charge of monitoring the progress of the scheme. Eventually, this platform should become a part of the permanent organization of the university.
- using frontrunners as **ambassadors of the concept** can kickstart successful change in the culture of the HEI, inspiring individuals to gain better understanding of the issue and how each department can contribute.
- **continuous formation** for lectures via workshops or conferences is required, in order to achieve permanent cultural shift.
- the **fundamentals of sustainability should be embedded in any ongoing process** of change that is taking place within the university.

Sustainability for city development

Since the definition of global objectives with regards to sustainable development, different supranational organizations, as well as domestic governments, engaged in an accelerated process to set implementation strategies. This was aiming to translate those universal concepts to the peculiarities of countries and regions, and it started by introducing modifications to the governance framework. In Europe, The Aalborg Charter (1994) presented the commitment of European countries to deliver sustainable development. It concentrates on the importance of local action, establishing self-governance as a pre-requisite. This enables towns and cities to take the initiative and, empowered by central governments, become the centre of the conversation to create sustainable communities (Institute of Economic Development, 2015).

There is global consensus on the need for supranational organizations to establish the foundations for an agile implementation of SDGs at a local level. Despite the call for cities to lead action, the strategic and regulatory framework needs to be facilitated by nations and international bodies. For European countries, the European Commission published a reflection paper called ‘A Sustainable Europe by 2030’ (European Commission, 2019), introduces recommendations for action from international level until local and regional level. To guarantee coordinated action, it establishes three enablers for the transition towards sustainability:

- An overarching EU SDGs strategy
- Continuous mainstreaming of the SDGs in all relevant EU policies
- Focus on external action while consolidating internal sustainability ambition

This paper also reflects on the current performance of the EU with regards to each of the targets. Focusing on SDG17 and the need to establish strong partnerships for global action, the document concentrates on international cooperation and the need for states to deliver joint action plans and

resource allocation. Despite not making specific mention to cooperation within the local ecosystem, the report mentions engagement with stakeholders, public-private partnerships and research and innovation as drivers for the definition of successful cooperation. Extrapolating these principles to the local and regional scale, it can be assumed that the European Commission would approve of initiatives that enable universities and cities to cooperate.

Responses to the European Commission's publication attempt to reflect certain discrepancies with regards to the interpretation of SDGs and the measures taken for European countries to deliver. The European Think Tanks Group (Voituriez et al., 2018), working on the draft rather than the final publication by the EC, praises the use of a multi-stakeholder platform to define the action plan for the EU. However, it also regrets the lack of details on implementation mechanisms. This is considered to be caused by the Commission being at the end of its mandate and constitutes, to the eyes of the Think Tank, a missed opportunity to define political methods that will complement the solid technical background and will facilitate effective transition towards sustainability in public life.

Together with the definition of global targets for sustainable development, the reality of governance has experienced a significant evolution in recent years. With the objective of delivering policy that adapts to the needs of local communities (United Nations, 2012; Aalborg Chapter, 1994), there has been an increase in responsibilities being transferred away from central government and onto local and regional authorities. This transition has been evaluated by a variety of organizations.

For the European Commission (2013), Local Authorities are key for the delivery of development that maximizes benefits for the community. The two main reasons for this shift towards local action are:

- **better participation of citizenships** in decision-making processes. Geographical proximity reinforces the perception of community, with easier identification of common priorities and challenges, and with more direct representation of interest groups.
- a majority of **services to the community being managed by local authorities**. Successive restructuration of governance has allocated a wider range of responsibilities for local and regional authorities. This includes the delivery of policy, budgetary management, environmental action, and promotion of social cohesion.

These factors, together with the inherent ability of local authorities to empower the creation of employment and economic development, justify the European Commission's call for good quality governance. The success of local and regional authorities depends on two main factors: the willingness of central governments to enable the legal and regulatory frameworks that will allow local agencies to execute, and the execution of successful local policies by public servants. Intensive interaction between local governance, public agencies, private sector and communities is considered essential for the delivery of accurate local interventions.

This need to establish successful partnerships at a local level is also reflected in other publications. Healey (1997) highlights that the delivery of efficient governance is challenged by the traditional segmentation of disciplines (i.e. sociology, economics, geography, ecology), and its application to the role of policy makers. Based on the same principle but taking into account the progress of public life in the last two decades, research led by Bowen (2017) considers that the increased complexity of objectives, as presented by SDGs, requires of comprehensive levels of collaboration within the local and regional ecosystem. Horizontal, vertical and transversal synergies have to be promoted in order to deliver successful places. The possibility of engaging with local HEIs to capitalize on the available talent is one of the main opportunities to increase local capacity

For the OECD (2007) calls for joint commitment to reach successful dialogue. From the region's perspective, the creation of a dedicated steering committee representing HEIs and local stakeholders would significantly strengthen the collaborative ecosystem. Clear leadership is considered fundamental for the definition of long-term strategies, with the associated access to funding.

2.2 Regional Innovation Systems

Scientific research on the concept of regional innovation systems (RIS) presents a direct link to previous literature on national innovation systems. This line of research has Freeman (1987), Lundvall (1988, 1992) and Nelson (1993) as its most prominent representatives. From this starting point, RIS has developed thanks to the parallelism with the tiering systems of governmental policy, the consistent identification of regional innovation value chains (Chatterton and Goddard, 2000) and the increasing relevance of regional specialisation (Gunasekara, 2006). The main objective for researchers on RIS is to provide a more comprehensive explanation of the operation and development of innovation systems at supra-national, national and sub-national levels.

Researchers establish a direct link between the development of RIS and the initial definition of *triple helix* and *engaged universities* (Caniëls and Van den Bosch 2011). While these two concepts concentrate on the role of universities in an innovation system, it can be argued that RIS presented the first introduction of universities and their role in regional economic development (Gunasekara, 2006). However, at this first stage, HEIs were still considered accessory to the functions of state and industry within the ecosystem (Etzkowitz 2002; Etzkowitz and Leydesdorff, 1999)

There has been a significant evolution in the conceptual description of RIS. From the prominence of micro-constitutional regulation for the establishment of collective order (Cooke and Morgan, 1998), researchers have moved towards a definition that prioritises the role of regional networks and systems (Gunasekara, 2006) and the development of human capital, knowledge and technology (Keane and Allison, 1999) over localised individuals and organisations. Building on successful case studies like Silicon Valley in the US and Cambridge in the UK, the concept of RIS evolves around the idea that regional systems are the mechanism to address issues of global competitiveness (Laukkanen, 2003). The role of proximity is considered capital for the creation of regional capability over institutional innovation (Abramo et al., 2012).

Caniëls and Van den Bosch (2011) describe RIS as the combination of inputs from actors, networks and intermediaries/facilitators for the delivery of synergetic cycle of learning, value creation and improvement. A variety of authors coincide in highlighting the geographical proximity of different capitals to conform a functional RIS (Cooke 2002, Morgan 1997, Lundvall and Johnson 1994). These components include:

- Social capital/network: the agglomeration of actors in a geographical space
- Strategic capital: via associative governance administration
- Contiguous human and economic capital: presence of complementary industry
- Cultural capital: presence of cultural norms of openness, including cooperation, mutual benefit and trust

RIS steers away from the entrepreneurial role of HEIs, and presents a greater focus on the potential for universities to use governance, lifelong learning and teaching cooperation to deliver positive impact at

a regional level. It evolves around the validity of a wide range of cooperation mechanisms, not only with regional businesses, but with any other stakeholders being taken into account.

The functioning of RIS presents a complex set of stakeholders with a varying range of experiences, competencies and skills. The role of each actor in the generation, distribution and valorisation of knowledge (Van Looy et al., 2004) create an intricate network of dynamics within the regional ecosystem. The university holds an important role within the project for future economic progress. In application of the stakeholder theory, a robust RIS should describe the expected role of each actor, but it is important to assess the interest of each part to design a successful stakeholder management structure.

2.3 The engaged university

Within the RIS framework, researchers have investigated the role of the university. In this structure, the HEI is involved in the economic development, embracing a proactive role that aims to answer to societal needs for the ‘learning’ region (Gunasekara, 2006). It is unclear when the concept of engaged university was first used, but there are precedents of similar dynamics that can be traced back to the land-grant universities that were developed in the US in the nineteenth century (Goldstein, 2008)

Conceptually speaking, the engaged university concentrates on the role of HEIs within the local and regional ecosystem. For Gunasekara (2006) this engagement is a combination of driving force and supporting role, facilitating the development of other stakeholders via the university’s primary activities. The need for cities and regions to become and remain competitive create a need for a constant exchange of knowledge, skills and information, situating HEIs as a fundamental role that requires initiative and vision to activate successful partnerships (Caniëls and Van den Bosch 2011). These characteristics differ from the traditional framework presented by the triple helix, with priority for the impact of universities on industry and government. The more holistic approach and attention to the development of regional growth makes the concept of engaged university better aligned with RIS.

Researchers promoting the idea of engaged university highlight how this framework enables a comprehensive delivery of the university’s ‘third mission’ at a regional level. Gunasekara (2006) compares the potential of this concept with that of the triple helix or entrepreneurial university. His publication considers that, with regards to academic entrepreneurship, the engaged university allows the HEI to achieve more substantial benefits to all stakeholders, framing their activities within the regional context and prioritising positive impact over financial return. This commitment to the third mission influences the setup of research and teaching activities, establishing strong regional connections and long-term vision that will allow for better alignment of interests and will eventually lead to a more positive impact to society at local and regional levels (Caniëls and Van den Bosch 2011).

Research by Ramaley (2005) extracts nine characteristics describing the societal component of the engaged university framework:

- civic engagement incorporated at strategic level
- continuous engagement with the community
- development of a curriculum that exposes students to community matters
- consideration of the interests of local and regional community groups in university’s actions
- community development is supported and promoted by proactive mechanisms

- successful individual empowerment to engage with the community
- efficient mechanisms to achieve interdisciplinary work
- engagement must be visible both internally and externally
- engagement activities have to be susceptible of evaluation

This systematization of the concept offers a clear structure of the requirements for a university to achieve full engagement. Some of these elements can bypass inherent weaknesses of the third mission, such as the lack of evaluation methods (Edwards and Marinelli, 2018)

This relevance of the social component of university interaction, and the possibility of delivering positive impact to enable sustainable growth within the community, makes the engaged university framework highly relevant for the study of UCC activities. Despite the economic potential of these partnerships for the HEI, the characteristics of the interaction reflect a holistic impact for local society, with knowledge being used as a tool to tackle societal challenges. Goldstein (2008) compares this perception of knowledge as a ‘public good’ with the vision by the entrepreneurial university framework and how it sees knowledge as ‘a commodity’, presenting it as a mechanism for universities to increase their revenue.

2.4 Universities and their third mission

Despite their image of traditionalist institutions, universities are in constant evolution. As well as changes in their research and teaching, recent years have shown a transition towards HEIs that aim to fulfil not only their academic mission, but also complying with a wider societal role. This movement, known as third mission, presents the university that is no longer isolated from society (Burawoy, 2011). Instead, it offers a new framework to understand the relationship between university and external stakeholders. Traditionally understood as a dichotomy between commodification and regulation of knowledge, these systems created a clear fracture between the creation of knowledge and its utilization for the public good. In answer to these weaknesses, Burawoy proposes a redefinition of the university as an actor within the national and international context, based on components of critical public sphere and deliberative democracy. The combination of both elements is expected to instigate a debate to redefine the meaning of universities within modern society.

Beyond the philosophical reasoning, the need to redefine the role of universities within modern society is widely supported (Benneworth et al., 2009). This transition should not only include components of commercialization and marketization, which are easily quantified and monitored, but also the engagement with harder-to-reach groups and non-for-profit stakeholders. The involvement with external partners should aim to be comprehensive, reaching research, teaching and service provision activities. The publication highlights the excessive institutional complexity as the main barrier for this evolution to take place, damaging the potential for small scale interventions and partnerships to take place.

The third mission evolves around the interaction within the triple helix, and highlights the need for institutions to embrace society as a fixed stakeholder that should inform strategies and activities within industry, academia and government. For HEIs, these outreach activities complement the universities’ classical educational and research activities. This renewed complexity is widely accepted as part of the university’s social responsibility. This commitment is represented by the signature by a large number

of leading HEIs of the Talloires Declaration (ULSF, 2013) which emphasizes public responsibility and activities to bridge universities and communities together (Sedlacek, 2013).

Calhoun (2006) elaborates on what the third mission means for modern universities. Capitalizing on their accumulation of knowledge, HEIs are seen as central public institutions and catalysts of critical thinking. The current challenge that is presented by societal stakeholders is how to harness that scientific production, and the talent available within the institution, to deliver knowledge that can trigger positive change for the public good. Despite significant progress with regards to its role in society, including the development of interdisciplinary fields, the improvements to the access to knowledge by a wider section of society, and the positive integration of traditionally overlooked social groups such as women and ethnic minorities, Calhoun argues that there is significant inequalities that need to be addressed.

3. SYSTEM

3.1 Objectives / motivations

One of the key objectives of the study is to assess the reasons why HEIs and government bodies are willing to engage in collaborative projects. With the UCityLab research being a pioneer in the evaluation of these activities, the description of objectives and motivators can help understand the concept, and introduce the right incentives for institutions to engage.

For HEIs, engaging in successful collaboration with government agencies aims to fulfil the university's third mission, by delivering societal impact through the result of their research and teaching activities. The expectation for this social engagement to be strengthened lies in the need for knowledge to be more equally distributed, allowing the local community to benefit from the public resources that are invested in HEIs (Calhoun, 2006). It is also a good opportunity to identify gaps in existing research, making it more relevant for the local and regional ecosystem by tackling real societal issues (Silka, 2014). UCC activities can also help universities to equip their students with soft skills, to identify the requirements of society from forthcoming graduates (Edwards and Marinelli, 2018) and to increase awareness of the university's social objectives (Adshead and Quillinan, 2017)

For local and regional government agencies, the possibility of engaging in collaborative projects with HEIs can help accessing a knowledge and research capabilities that are not part of the government's usual practice (Addie, 2017). Involving academics, researchers and students in governance activities and policy creation has the potential to provide a different approach, reflecting the divergent priorities of both organizations, and contributing to more robust outcome of public institutions activities. HEIs and government usually follow different methodologies, with municipalities pursuing efficient solutions for specific issues, whereas universities embrace a more systematic investigation process to protect the quality of the research (Van Winden, 2015).

From an environmental perspective, Garlick and Matthews (2016) consider that universities, by collaborating closely with local authorities and the community, can enhance the level of awareness and increase the overall societal care for natural resources.

3.2 Stakeholders

Due to the confluence of interests around UCC activities, it is important to assess how different actors can take part in these initiatives. Both universities and government are complex institutions on their own, with a variety of stakeholders within them. The compilation of activities and publications show the following basic structure:

- **Students:** despite being often perceived as accessory elements in the interaction between university and external stakeholders, UCC activities are heavily informed by the need to get students to engage in these multidisciplinary projects. This participation capitalizes on existing knowledge and tries to expand their perspective as well as their skillset.
- **Academics:** closely linked to the potential benefits that UCC can bring to students, they are responsible for the implementation of HEI objectives, as well as a proactive role for the discovery of potential collaboration with municipalities. They act as representatives of the university and provide effective links between their organization's vision and the local society
- **HEI managers:** their engagement reflects a leadership role within the organization, acknowledging the need to promote UCC activities and integrating these objectives within the curriculum.
- **City or regional government:** participation from government bodies appear in different forms. At an institutional level, the municipality can participate through engagement with HEIs to produce research or policy, as well as collaborative agreements for testing solutions and participation local communities and students. At a personal level, governments can play an important part through the promotion of innovation, campaigning for change and proposing a vision for future strategies (Wagner et al., 2017). They are also decisive in the allocation of resources or facilitating policy (Institute of Economic Development, 2015).
- **National government:** the increasing devolution of powers towards local and regional authorities has reduced the leadership role of central governments (Sedlacek, 2016). However, the impact of ambitious national strategies is not to be overlooked. Having recognized UCC as a desirable activity to be promoted, this should inform municipalities to draw specific lines of action within their geographic context. Central governments also have a noticeable importance in the distribution of funds and can enable successful strategies at a local level (Institute of Economic Development, 2015).
- **Local community / interest groups:** the evolution in governance model, and the transition towards a university with deep social commitment has created a new role for the local community. Participatory processes are expected in order to reflect the public opinion in social, economic and environmental matters (Healey, 1997). UCC activities should aim to interact with interest groups, ideally via direct participation mechanisms.

3.3 Conceptual framework

Thanks to its structural similarities with the UCC ecosystem, the framework introduced by Davey, Baaken and Galan (2011) as part of their State of European University-Business Cooperation (UBC) report is considered a valid foundation. After introducing minimal modifications to reflect the

peculiarities of governance bodies with respect to industry, the UCC project can benefit from this clear and well-established structure.

3.4 Inputs

UCC inputs include all the resources that are available to universities and government agencies for the completion of collaborative activities. Together with a coherent strategy and a comprehensive institutional commitment, it is necessary to allocate human, economic and physical means that will enable the execution of the desired collaborative activities (Davey et al., 2011). The accurate identification of the required input will not only allow the institution to support UCC, but can also facilitate the monitoring of previous projects, and the evolution of the effectiveness of collaborative environments within HEIs and local authorities.

Human resources

The intellectual component of UCC activities demands the intensive depletion of human resources. However, it is important to highlight that this allocation of academics, practitioners and supporting staff needs to be analysed not only from the point of view of quantity or associated cost, but also with regards to the adequacy of their expertise, their willingness to engage and the maximization of impact for future research and governance activities.

Universities contribute to UCC activities through the allocation of students as conduits of knowledge and skills (Adshead and Quillinan, 2017; Larsson and Holmberg, 2018). They are often perceived as beneficiaries of any collaborative project in which they are involved, but it is important to acknowledge their knowledge and innovative approach as an important benefit for government and local community (Garzillo and Kuhn, 2007). Students are also used as facilitators of community engagement sessions, granting them access to valuable learning experiences and liberating more senior actors to engage in leadership roles within the sessions (Bourner, 2010; Stoecker, 2001).

HEIs also provide human resources in the shape of academics and researchers as providers of scientific knowledge (Grobbelaar, 2012). On the other hand, local and regional authorities contribute with their own experts, usually public servants related to the targeted discipline, in order to represent the public interest and to aim for the most efficient delivery of results (Adshead and Quillinan, 2017). This representation of the common good is complemented by the direct engagement of civil society as identifier of relevant issues, and providers of local knowledge (Fischer, 2000)

Financial resources

As well as the allocation of appropriate human resources, universities and government need to complement this with adequate financial investment. The execution of UCC activities in the form of workshops, community engagement, research projects or educational programmes requires the delivery of funding (Grobbelaar, 2012). These financial resources are closely related to the depletion of talent, allowing academics, researchers and public servants to dedicate part of their time to collaborative projects instead of completing their originally allocated tasks. This aims to overcome the initial resistance by HEI members to engage in third mission activities, in favour of the delivery of their individual research projects.

The participation of academics in UCC activities can also help attracting investment for their own research. Municipalities can be open to provide funding (The Civitas Initiative, 2018) in order to ensure the output of the investigation is targeted to the societal challenge that affects public life.

Physical resources

UCC activities are based around close cooperation between academics, students, public servants and members of the community. In order to enable this dialogue, it is necessary for institutions to allocate physical resources in the shape of equipment and facilities that support the celebration of workshops, informative sessions, presentations etc. (Holmberg, 2014). This allocation can be permanent, for long-term activities such as the creation of collaborative centres, or temporary, in support of short-term events that are required to complete stages within larger initiatives. Physical resources are usually related to formal interactions, with informal exchange taking place without the explicit depletion of resources from either organization. Education and training programmes are usually linked to permanent facilities. It is also important to acknowledge the role of facilities in the spontaneous occurrence of UCC. Some researchers highlight the possibility of sharing a physical environment as a trigger for conversation and collaboration (Kitagawa and Lightowler, 2013). This extends to casual facility sharing, by which actors meet in a location that was not originally intended to enable UCC.

3.5 Activities

Education

Being one of the primary functions of HEIs, educational activities have traditionally been nurtured within the higher education ecosystem, exposing them to innovative methods and collaboration techniques (Edwards and Marinelli, 2018). Despite not being as documented as its UBC counterpart, collaboration between universities and municipalities in the realm of education has been developed for a long time. A variety of versions of this partnership can be defined, including curriculum design, student mobility and lifelong learning.

Joint curriculum design and delivery

Attending to the definition given in a publication led by Davey, joint curriculum design and delivery is the joint development and supply of a fixed programme of courses, modules, majors or minors, planned experiences as well as course delivery by delegates from external organisations within undergraduate, graduate or PhD programmes (Davey et al., 2011). Within the context of growing interconnection between universities, industry and government, the modification of the existing educational curriculum is an immediate manifestation of the commitment by municipalities and HEIs to deliver coordinated action.

These activities include the definition and organisation of new study programmes, in an attempt to respond to skill and training needs highlighted by local and regional authorities (Cranmer, 2006; Dixon, 1996); the provision of fully integrated training in public office for students at undergraduate or postgraduate level, via work placement and internships (Harvey, Locke and Morey, 2002); the delivery of guest lectures by representatives of external organizations, in this case the municipality (Science Business Innovation Board, 2012); joint supervision of Masters and PhD student thesis (Holmberg,

2014); further professional education for public servants (Edwards and Marinelli, 2018); organization of challenge-based co-creative events such as Hackaton (Bazen, 2018)

Student mobility

The benefits of exposing students to experience in an unfamiliar environment are well recognized by the educational community. This positive impact on their skills is also recognised by members of the industry, and is reflected in academic programmes that include this mobility as a compulsory element within the curriculum (Neill and Mulholland, 2003). The most frequent occurrence of student mobility refers to temporary or permanent movement of students from HEIs to local authorities, including interactions such as internship, apprenticeships or work placements (Cranmer, 2006). These activities can appear in the form of generic work experience modules offered to students within certain study programmes; conventional study programme with an element of work experience, either as a compulsory or optional component; and a programme that is primarily delivered within the workplace (Harvey, Locke and Morey, 2002).

In addition to this, Borrell Damian (2009) analyses the possibility for students to be hired through academics' contacts. Despite this publication being based on UBC partnerships, the premise of the scenario applies to UCC activities, following the increasingly demanding hiring requirements from government agencies.

It is also possible to understand student mobility from the public servants' perspective. In an attempt to capitalize on the available knowledge from the university, it is possible for local authorities to facilitate a temporary transfer of public servants to HEIs as students. This would respond to the identification of desired skills that can benefit the delivery of successful governance, while strengthening the contribution of the university to its third mission (Dixon, 1996).

Lifelong learning (LLL)

The concept of lifelong learning explores the potential for universities to transcend their traditional educational model and reach adult individuals that, despite being involved in stable professional activities within organizations external to the HEI, could benefit from educational programmes (Jarvis, 2004). This is closely related to the universalization of knowledge, and the commitment of modern universities to enable the local community to have easier access to the academic knowledge (Laredo, 2007).

LLL activities can take place through both formal and informal educational projects (Eurostat, 2011). Some types of LLL are the provision of adult education (Tamilina, 2012); the formation courses made available for municipalities to enhance their employees' skillset (Edwards and Marinelli, 2018); continuing education, understood as formal activities taking place after the original secondary learning activities (Jarvis, 2012).

Research

Collaborative research activities have traditionally been a preferred route for HEIs to engage with external organizations. Due to the available expertise and the systematic approach of university researchers, it was easy to transfer their knowledge to produce a direct impact on businesses (Etzkowitz, 2001). From this initial iteration, the range of activities related to research expanded, eventually

reaching collaboration with local and regional authorities trying to answer specific issues within their professional responsibilities.

Professional mobility

Within collaborative research activities, professional mobility enjoys a lesser degree of development (Davey et al., 2011). It offers the potential to develop trust and understanding between stakeholders, either on a formal or informal way. This limited occurrence constitutes a limitation to the extent of development of collaborative research.

An example of professional mobility between universities and government is the arrangement of professional secondments (Dzisah and Etzkowitz, 2008). Despite its potential to bridge the gap between research and public governance, it appears to be more frequent between industry and government. Perhaps caused by institutionalization of teaching structure, or the extra responsibilities attached to research posts, universities seem to engage in fewer cases of professional mobility.

Joint R&D

With a greater range of scenarios, joint research and development is far more common in the interaction between HEIs and municipalities. Cases include research joint ventures (Lundberg and Andresen, 2012); R&D consulting (Etzkowitz, 2001); joint publications (Meyer, 2003); provision of funding by local and regional government for academic research via grants and donations (Etzkowitz, 2003); authorization for R&D projects to use municipal spaces as testing grounds (Hall et al., 2000; Goddard, 2015).

Valorisation

As a core component of the modern university, valorisation of ideas can benefit from a collaborative approach. There is a global intent of developing the entrepreneurial aspects of academia and research, enhancing the marketability of ideas and the creation of enterprises to grow the HEI's revenue (Davey et al., 2018). The complexity of valorisation mechanisms of UCC is low compared to that in UBC activities, mainly due to monetization being secondary to teaching and research in the case of universities, and to the delivery of successful, efficient governance to support the sustainable growth of local communities in the case of municipalities (Howells, Ramlogan and Cheng Shu-Li, 2012).

Entrepreneurship

With a more limited range of action compared to that of UBC partners, municipalities and universities can engage in the creation of new ventures by academics or students with support by local authority (Bazen, 2018). The limitation of this type of activity is due to entrepreneurship being a secondary mission of both stakeholders, or a desired outcome with limited implementation to date. HEIs are increasingly embracing their role as entrepreneurs and promoters of new commercial ideas, but there are substantial limitations to the extent of this drive. Also, researchers find that institutions within the triple helix that engage in collaborative dynamics are usually not driven by commercialization of ideas (Howells, Ramlogan, and Cheng Shu-Li, 2012)

Management

The objective of strengthening cooperation between universities and government includes the possibility of exchanging expertise to optimize the management of each institution (Etzkowitz, 2003; Giovannini et al., 2015). The inclusion of cross-organizational concepts in the ethos of both partners can contribute to a better alignment of objectives and priorities, facilitating the approval, development and success of future UCC activities.

Development framework

There is an increasing awareness on the potential for universities to improve the competitiveness of cities and regions (Grobbelaar, 2012). Governments at different geographical levels seem to acknowledge this possibilities, and invite academics and researchers to participate in the decision-making process. Activities include the consultation with HEIs to inform strategies, plans and future legislation (OECD, 2017); the engagement of researchers in the definition of key issues (Goddard, 2011); the consideration of the student community as stakeholder in planning matters (Healey, 1997).

Governance

The management of specific institutions, whether public or private, has traditionally been understood as an internal subject. However, there has been a significant transition towards a more connected management model, by which external organizations are invited to participate in the definition of core strategies, as well as an input in some of their daily activities. In the case of local and regional government, a comprehensive inclusion of all societal stakeholders, including higher education bodies, is encouraged through latest iterations of modern governance (European Commission, 2015)

These UCC activities include academics being involved in decision-making process, or participating in an advisory role (Tsipouri, 2001); the engagement by city leaders in decision-making within the university (Mayntz, 2002); the development of policy that reflects a holistic understanding of societal challenges, involving community groups and HEIs (Foray, 2016).

3.6 Results

Outputs

The first manifestation of UCC activities is the production of specific outputs. These can be products, services or other elements that are created through the collaboration between universities and government. They are generally included in the formal appraisal of cooperation projects, as an intentional consequence of UCC.

For academics, the participation in UCC activities can generate new research (Goddard, 2011), scientific publications (Stoecker, 2001; Callaert et al., 2015), new teaching, communication events and business ventures (Holmberg, 2014). Some of these previous outputs can contribute to the generation of revenue (Wood, 2011).

From the students' perspective, engaging in UCC has a different set of implications. Depending on the nature of the project, these outputs can appear in the shape of data that defines potential opportunities for further research (Hedvall, 2011); the completion of publication or thesis (Larsson and Holmberg,

2018); income associated to work experience schemes, internships and scholarships (Harvey, Locke and Morey, 2002) and opportunities for the commercialization of ideas through the creation of start-ups (Holmberg, 2014). Although not very frequent, some UCC initiatives equip students with the intellectual property of their findings (Törnqvist, 2015).

Institutions can also be the recipients of outputs from collaborative activities. HEIs can discover new findings, methodologies and perspectives (van Winden, 2015); intellectual property in the form of patents (Davey et al., 2011); sponsored research agreements (The Civitas Initiative, 2018); and the production of internal management agreements (Mayntz, 2002).

Lastly, local and regional government agencies can engage in UCC activities with an interest in outputs such as the creation of specific policy (Tsipouri, 2001), the access to research findings (van Winden, 2015) and the delivery of more effective delivery of services to the local and regional community (European Commission, 2013).

Outcomes

Once the most relevant outputs from UCC activities have been described, it is interesting to understand the immediate effects that those products and services have on the different stakeholders. Outcomes are understood as the direct consequences of collaborative outputs, and can be positive or negative in nature, direct or indirect with regards to their beneficiary, and with a varied time frame for its manifestation.

For academics, UCC can enhance the quality of their scientific research (Goddard, 2011; Callaert et al., 2015); the delivery of optimized teaching techniques and innovative learning methods (Brewer, 2013; Silka, 2014); a more successful engagement with societal stakeholders (Addie, 2017) and a more pluralistic approach to societal issues that reflects the complexity of modern society (Holmberg, 2014). The success of previous UCC activities can also increase the individual interest and motivation to take part in future projects.

Students benefit from UCC activities in a variety of forms. Firstly, the engagement in these innovative collaborative projects expands their knowledge and strengthens their academic learning, complementing the content that is received through the pre-existing curriculum (Edwards and Marinelli, 2018). They also improve their understanding of the complexity of urban issues, whether related to the nature of the concept that is being considered, or the generic intricacy of modern societal challenges, in which many stakeholders are expected to be represented (Harvey, Locke and Morey, 2002; Goddard, 2015; Bazen, 2018). Access to data granted by external stakeholders such as government bodies can significantly improve their analysis skills, and improve the quality of the students' findings in their own academic work (van Winden, 2015). Lastly, the completion of certain co-creative activities and challenge-based learning is said to significantly improve the student's awareness of the entrepreneurial component that affects academic research, public governance and business activities (Holmberg, 2014).

For universities, the immediate benefits from UCC activities are mostly related to the increase in quality of their research and teaching methods. By facilitating innovative projects, academics and researchers experience the plurality that affects their field of expertise, the engagement with multiple stakeholders and the priorities that should inform their role as knowledge creators and as educators for future professionals (Goddard, 2015). This benefit is further enhanced in projects where municipalities allow researchers to use public spaces as testing grounds for their solutions. In this case, the development of concepts can not only be faster, but also more accurate (Hall et al., 2000). HEIs can also experience a greater rate of success with regards to their third mission (Etzkowitz and Leydesdorf 1999). Consistent

engagement with societal actors creates a perfect representation of the main objective of the engaged university (Gunasekara, 2006), and can trigger the production of future research that will aim to resolve real community issues (van Winden, 2015). From an organizational perspective, universities can benefit from an optimized model of governance, if the UCC allowed them to target their internal management structure through the engagement with government bodies (Mayntz, 2002)

Government agencies at local and regional level experience a diverse, if reduced, set of direct benefits from UCC activities. The delivery of new policies that respond to the relationship with universities can provide a new understanding of how scientific research can improve their governance functions (European Commission, 2013). Gaining preferential access to academic research can benefit the applicability of these solutions to governance services (Hall et al., 2000). Occasionally, this benefit is triggered through the testing phases of new technologies and services. Interaction with students and community groups offers the potential for municipalities to be exposed to innovative solutions out of their regular framework of activity, with the possibility of delivering governance that better represents the public interest and makes a more efficient use of public resources (Arbo and Benneworth, 2006; World Economic Forum, 2017).

Impacts

As well as the direct outcome of UCC activities, universities, government and other stakeholders can benefit from associated impacts (Perkmann et al., 2011). Researchers highlight that, in the long-term, there are indirect benefits for all parts of collaborative activities, including individual and organizational impacts. The combination of these two, on the basis of the university's third mission, entails a positive impact for society as a recipient of scientific findings and as a subject of governance mechanisms (Brewer, 2013).

The evaluation of impacts related to third mission activities are regarded as challenging. The lack of dedicated indicators, and the delay in the manifestation of some of these associated effects, prevent universities and government from immediately assessing the effectiveness of specific UCC activities (Edwards and Marinelli, 2018). This shortage should be addressed, in order to minimize scepticism from researchers and academics, as well as decision makers at an institutional level.

Individual

From the perspective of the HEI, UCC activities can deliver impact for academics in the shape of the improved quality of research through access to collaborative environments (Callaert et al., 2015); the adoption of topics of relevance for public sector within the educational framework and teaching methods (Small and Uttal, 2005); the renovation of research and teaching techniques, reflecting the demands of professional practice (Brewer, 2013).

In addition to this, participating in UCC can deliver benefits for students. These include the development of soft skills and leadership fundamentals (Holmberg, 2014); improved future job prospects (Hernández Arámburo, Cruz González and Ceja Rivas, A 2017; Cranmer, 2006), higher levels of motivation for learning (Ryan and Deci, 2006); and an overall awareness of the social implications of professional practice, as well as the potential for their career to tackle societal issues (Goddard, 2015; Bazen, 2018)

There are also indirect benefits for public servants, mainly in the form of access to innovative approaches to specific issues that can help professional practice and policy development (Kopelyan and

Nieth, 2018) and a better representation of community interest, experiencing a more pluralistic perspective (World Economic Forum, 2017)

Organizational

Researchers have identified a series of impacts for HEIs as an institution. These include the delivery of more relevant research (Stoecker, 2001; Goddard, 2011); better transfer of knowledge and technology to society (Hazelkorn and Gibson, 2018; Kopelyan and Nieth, 2018); an increase in relevance as stakeholder at a local/regional level (Sedlacek, 2016) (Bleiklie and Kogan, 2007); and an overall improvement in the engagement with societal actors (Goddard, 2016; Mayntz, 2002).

For local and regional authorities, taking part in UCC activities can help developing better informed decision-making processes (Hazelkorn and Gibson, 2018); the optimized return of resources and investment by applying scientific findings (European Commission, 2015); the creation of policy that reflects non-governmental groups (Garzillo and Kuhn, 2007; Adshead and Quillinan, 2017); an improvement in the data management mechanisms, and stronger links to interest groups within the local community (World Economic Forum, 2017)

Community

The effects of UCC activities reach beyond the realm of universities and government. The role of these two stakeholders are closely linked to their societal mission, acting in the public interest and delivering research, education and governance that benefits the local and regional community, addressing global challenges (Brewer, 2013)

The impact of UCC for the community includes a better organization of discussion in public forums (Burawoy, 2011; Bournier, 2010); an increase in technical capacity (The Civitas Initiative, 2018) (Institute of Economic Development, 2015); an improvement in the performance of the triple helix, which directly benefits the competitiveness of the region (Grobelaar, 2012) (Bleiklie and Kogan, 2007); and the consideration of the community as key stakeholder in the development of policy and local management methods (Adshead and Quillinan, 2017; World Economic Forum, 2017)

4. INFLUENCING FACTORS

4.1 Supporting mechanisms

When analysing the success of collaborative initiatives between universities and government, it is important to understand the relevance of supporting mechanisms. These are interventions in the form of policies, strategies, structural and operational mechanisms that enable the delivery of the university's public mission through the establishment of projects and initiatives that pursue a wider outreach from traditional teaching and research activities.

Policy

The production of regulatory framework within HEIs and municipalities can enable the implementation of successful UCC activities. This commitment to change needs to be reflected in the organization of each institution, as well as the establishment of guidelines and associated funding that will facilitate efficacy in collaborative projects.

Supporting mechanisms in the form of policy include regulation with different geographical contexts (Bass, 1998). This can appear as European support to public engagement in scientific production (Hazelkorn and Gibson, 2018); National strategies that include the promotion of cooperation and partnerships to contribute to UN Sustainable Development Goals (Giovannini, Niestroy, Nilsson et al., 2015); local and regional innovation policies that adapt to the existing ecosystem and reflect the peculiarities of government, industry and academia (Foray, 2016). The presence of city deals, by which central governments expands the city's competencies with regards to economic growth, management of public funding and support for local development, can reinforce the role of the municipality to engage in proactive UCC partnerships (Universities UK, 2016)

As well as the delivery of regulatory measures, the financial component of UCC activities needs to be addressed from a policy perspective. Example of this is the introduction of funding programmes by government bodies subject to the strengthening of HEI's service to the public good (Edwards and Marinelli, 2018).

Strategic

Researchers coincide in the importance of creating a collaborative culture within the organization in order to achieve successful outcomes. Whether it is for HEIs or government agencies, the creation of a strong vision is key for the motivation of academics, public servants and associated members of staff, and a unique opportunity for UCC to impregnate the daily activities of research, teaching and governance activities (OECD, 2017).

These strategic mechanisms include top level management committed to UCC (van Winden, 2015); the production of a documented mission by the HEI officially embracing the desire to enhance UCC production (Goddard, 2011); the establishment of an incentives structure to motivate academics to proactively engage in UCC activities; the approval of local and regional strategies by government agencies supporting dialogue between societal stakeholders (Institute of Economic Development, 2015).

These mechanisms have the potential to be further enhanced through the production of a commonly agreed agenda for universities and municipalities (van Winden, 2015; Benneworth et al., 2009; Giovannini et al., 2015)

Structural

The success of UCC activities relies on the depletion of resources from all stakeholders. The allocation of permanent physical, human and financial resources from HEIs and government bodies can enable the delivery of a stable collaboration culture (Adshead and Quillinan, 2017).

These structural elements that enable UCC activities include, from the municipality's perspective, the creation of a city department dedicated to UCC (van Winden, 2015) and the creation of adjunct positions available within the university for representatives of public bodies (Etzkowitz and Dzisah, 2008); it can

also be supported by the university through the creation of agencies dedicated to UCC such as knowledge transfer office and innovation office (Hollingshead, Weakland and Corcoran, (2014); it is possible to create a permanent collaborative arena through the establishment of a common organization with split funding to facilitate dialogue (Kopelyan and Nieth, 2018; OECD, 2017).

Operational

Despite the objective of promoting equal development of cooperation across all departments and projects within the university, there has been an unequal level of success. Within the three main activities of HEIs, research has enjoyed a stronger uptake of university engagement with municipalities. The wider range of samples, and more comprehensive assessment of the strengths, weaknesses and opportunities of this cooperation, create an opportunity to establish methodologies that can allow for this partnership to be extended into teaching and learning activities (Adshead and Quillinan, 2017)

Operational elements that can support the delivery of successful UCC activities include the creation of informal mixed working groups to tackle specific topics (van Winden, 2015), community oriented sessions for academics and public servants, including community-based research (Small and Uttal, 2005; Stoecker, 2001); mechanisms that encourage universal participation in decision-making process (Garzillo and Kuhn, 2007) and examples of individual collaboration between researchers and city departments (van Winden, 2015; Kopelyan and Nieth, 2018)

4.2 Barriers and drivers

The evolution of the social perception of public policy and the role of HEIs has created a new set of expectations from modern society. Universities are now seen as key players in the development of successful communities, not only because of their knowledge transfer activities, but also as influential part in the creation of strategy and policy that will enhance the competitiveness of cities and regions (Goddard and Kempton, 2011). Municipalities have also seen a growth in their attributions (Winston, 2002), going beyond the administration of public resources and the production of coherent policy, and embracing the role of leaders for sustainable change and mediators between all the stakeholders that participate in local and regional life (Stoker, 2017).

As previously stated, these growing responsibilities have developed the need for HEIs and government to collaborate, facilitating mutual success and enabling societal cohesion and sustainable development (United Nations, 2012; Silka, 2014). Researchers are now investigating this concept, trying to identify barriers that prevent this collaboration from taking place, and also those drivers that facilitate the success of UCC activities.

Introduction to barriers and drivers

The complexity of UCC activities creates a variety of factors that can weaken the effectiveness of partnerships. From a general perspective, experts consider the cultural divide between municipalities and HEIs to be a fundamental factor (Science Business Innovation Board, 2012). This limitation, unless treated with strong leadership and adequate incentives to change, can trigger other potential barriers.

The prospect of producing innovative teaching, research and governance methods is considered the way forward to preserve the relevance and justify the reputation of HEIs. The will to protect the university's

status, together with the inherently inquisitive nature of scientific research, could be understood as a clear path towards close collaboration with municipalities. However, researchers have unveiled a variety of challenges that threaten the delivery of such cooperation.

Drivers behind university-city collaboration

Universities are seen as engines of innovation, source of talents and economic development, and thus they are important actors for the cities. Given the multitude of benefits arising from UCC, the drivers behind the cooperative initiatives between cities and universities are manifold. Research into university-city collaboration reports that trust and adaptability are key to fruitful cooperation (Council of Europe, 2015), a finding corroborated as well when it comes to wider context of university-business cooperation delivered by Davey et al. (2018). There are several different areas of interest that can propel the cooperation between university and city, some of which are branding, infrastructure and amenities, attracting and retaining talent, science-to-society motivations, upskilling human capital and tackling societal challenges.

Branding

Universities are anchor institutions whose identity is tightly attached to their location. (Georghiou, 2019) Branding and marketing are of importance both for university and city and thus can act as a connective tissue for their cooperation. A strong city brand has a potential to provide visibility in the international sense and hence situate the universities in the given city as an attractive location for students and other stakeholders. A well-branded city offers promises to its consumers on the quality of matters such as attractive employment, good schools and development opportunities (education, training, research), good and affordable housing, good public transportation system, attractive cultural and recreational attractions, public safety, etc. Amongst these offers, education-related promises carry a great weight as education is seen as an essential part of a person's life and a founding line of a society. (Popescu, 2012). A well-branded city brings benefits to universities in that it attracts high-quality human capital (students, teaching and research staff) and effectively helps universities capitalise on their internationalisation efforts, increase and diversify their revenue streams, and increase their reputation on the international scene. Since city branding requires partnerships between stakeholders that can effectively shape, and more importantly, implement a brand strategy (Popescu, 2012), this serves as a pulling force for universities and cities to collaborate.

Infrastructure and amenities

Further driver and a meeting point for university-city collaboration relates to infrastructural matters. For instance, housing is a problematic issue in many European cities. To help provide enough good-quality accommodation, City of Hannover has joined forces with the local universities and Student Services Organisation who are campaigning for the provision of better housing for international students in the private sector (Ransom, 2017).

Collaboration between universities and cities on the matters of infrastructure is seen as a way to revitalise the cultural microcosms of the city as "universities can contribute to the cultural development by enhancing the amenities in the area through investment in capital development projects. Universities are often a key partner in the development of museums, galleries, theatre, art studios and galleries, and there may be strong links back to the research expertise of the university which helps promote the area

as a cultural centre.” (European Commission, 2011) Student populations in the cities are a magnet for urban development. According to Chatterton (2010), students have a strong influence when it comes to infrastructure and amenities as “whole swathes of city centres become dedicated to servicing students, especially in terms of retail, entertainment and leisure. Pubs, bars, nightclubs and fast-food and other retail outlets all pitch themselves at this lucrative, sizable and dependable consumer population”.

Further infrastructure-related driver that is stimulating cooperation between cities and universities is the emergence of innovation districts and industry clusters. Some of the best known examples of these include Silicon Valley, Ruta N, Route 128, etc. Cities worldwide are trying to emulate the formula so as to become new capitals of innovation, attract investment and spur economic and social development. Some of the initiatives where cities and universities are the main players include 22@Barcelona. In 2000 Barcelona City Council approved the conversion of 500 acres of land into a new knowledge- and innovation-based district divided into 4 zones: media, university, R&D and bioscience. (Garcia Hom et al., 2014).

Attracting talent

The aforementioned infrastructure and amenities play a critical role in attracting and retaining talent, as described succinctly through *the Consumption Milieu* framework devised by Romein and Maldonado (2011). Globalisation, internationalisation and urbanisation have led to cities competing among each other for scarce resources such as talented labour force, in an attempt to improve their reputation and attractiveness and generate more revenue. Attracting and retaining talent and high-quality work force is in interest of both universities and cities and an important driver for joint cooperative initiatives, as it is an essential element in boosting the economic and innovative potential of an area. (Ransom, 2017) It is precisely this topic ‘Global Cities: Connecting talent, driving change’ that was the main theme of *Going Global 2017*, a conference for leaders in international education to debate the future of further and higher education. (British Council, 2017)

One of the facets of university-city collaborations aimed at attracting and retaining foreign talent is efforts at cultural and social integration of foreigners into the host culture (van Winden, 2019). For instance, Parma university teamed with public schools to have foreign students get acquainted with the local culture, customs and people by visiting schools and interacting with people there. This approach can facilitate the sense of belonging into the foreign culture and make talented immigrants more likely to choose their host country for a long-term residence.

Attracting and retaining talent involves putting a system in place that softens bureaucratic obstacles for highly-skilled migrants. In that respect city authorities in some cases partner with universities to facilitate the process of visa allocation so as to provide support for talented immigrants to stay in the host country. (Ransom, 2017) Further linkages and award system between universities and cities in order to retain talent is achieved through placing mechanisms that facilitate employability of graduates. For instance, Danish government has introduced an incentive of 7.5% of university funding awarded on the condition of whether the graduates of the given university find an employment in Denmark. (van Winden, 2019)

Science-to-Society

Science has traditionally been seen as an esoteric area inaccessible to the wider public. However, there have been initiatives to change how science is perceived and bring its value and purpose closer to

people. Thus, science-to-society is another driver of cooperation between universities and cities. For instance, literature vastly documents cooperation between public libraries and universities in an attempt to educate wider public, popularise STEM subjects among children and pupils, as well as co-share spaces. (Van Den Hoogen and Parrott, 2013). Todaro (2005) enumerates benefits of these initiatives both for universities and public libraries. Through these types of synergies, public libraries can expand their customer base, diversify their services, motivate their staff and effectively increase visibility. Universities get a chance to expand beyond their campus. Further initiatives deployed with the aim to bring the science closer to the society takes place in numerous European cities. For instance, universities of Aachen regularly opens its doors to the citizens of Aachen to open “the black box” of what university is to many citizens. This mission includes inviting ordinary citizens to take part in lectures on topical matters such as nutrition, nuclear energy, sustainable lifestyle, etc.; campus tours where interested citizens can see what labs look like and “experimentation Helicopter” where children from primary schools can attend science classes. (van Winden, 2010) Further examples include the Lublin Festival of Science – a co-production of all universities, several cultural institutions and the city. The target groups are at high school, junior high school students and even primary school pupils and kindergarten children. Its main aim is to present the results of scientific research in an attractive way.

Upskilling human capital

The development of skills relevant for 21st century economies is another meeting point that drives cities and universities collaboration and springs them into action. Some of the strongest city-university partnerships are founded on academic programs that leverage service with human capital development (Webber, 2012).

Some of the success stories in this respect include Belgian city of Ghent, which has a strong university-city collaboration foothold as part of Ghent Entrepreneurship Ecosystem. What is envisioned with this plan and is successfully implemented through linkages between city, university and business, is producing students who are equipped with skills and knowledge to be more entrepreneurial and thus contribute to economic and social development of the city. (OECD, 2019) Further success stories of municipalities joining forces with universities to hone the skills of students include the city of Espo, which provides support for student entrepreneurship by allowing Aalto University students to develop their entrepreneurial skills “by opening doors into city organisations for testing and piloting their products as reference cases” (EUA, 2019). Another successful project targeting not only students, but adult learners as well, thereby fostering lifelong learning, is Cibernarium project. Cibernarium is established by Barcelona City Council and Barselona Activa, founded by university stakeholders, which aims at providing technological and ICT skills to citizens. Cibernarium is one of the largest tech diffusion centers in Europe used for fostering IT literacy. (Garcia Hom et al., 2014)

Tackling societal challenges

Various challenges grappling cities and wider regions can be solved by joining forces between universities and city stakeholders. (Lukov, 2015) Goddard (2009) maintains that “the engaged civic university which I propose is one which provides opportunities for the society of which it forms part. It engages as a whole with its surroundings, not piecemeal; it partners with other universities and colleges; and it is managed in a way that ensures it participates fully in the region of which it forms part. While it operates on a global scale, it realises that its location helps form its identity and provides opportunities for it to grow and help others, including individual learners, businesses and public institutions, to do so

too.” A Harvard economist Glaeser asserts that connected and adaptive cities provide a fertile soil for solving societal problems. (Glaeser, 2011).

Some of the prominent projects involve mobilising student potential to solve some of the burning issues in the today’s societies. For instance, CityStudio is a project devised as part of Campus-City Collaborative, conceptualized to directly involve undergraduate students in the process of solving the challenges of Vancouver’s pursuit of its “Greenest City” goals. (Garcia Hom et al., 2014)

Furthermore, many cities have the problem of low social mobility, whereby individuals possessing a certain (often low) socio-economic status retain this status during their lifetime. This problem is a common ground for universities to collaborate with cities as (higher) education attainment is the key variable in one’s social upward mobility.

Another relevant, society-related motivation that can play a critical role in pushing the collaboration between universities and cities in Europe is of ‘brokering’ nature. Universities are often called upon to engage more in helping in alleviate the tensions brought on by the rising prevalence of nationalism, fundamentalism and anti-integration rhetoric in Europe and worldwide. (Altbach and De Wit, 2015).

Barriers within HEIs

Firstly, following the traditional reaction shown by large, well-established organizations, there is considerable **resistance to change** from traditionalist views of the role of universities. Kerr (1963) reflects on historical scepticism towards new manifestations of the university’s powers. The evolution of demands from the job market and the growing specialization of more professional disciplines created a necessity for HEIs to expand from their traditional areas of expertise. Brewer (2013) adds that universities can perceive innovative engagement techniques as a threat to their academic excellence. The development of unconventional teaching methods, with the participation of external stakeholder, is thought to lack the consistency that is expected from prestigious institutions.

This conflict between tradition and innovation is also a manifestation of what society expects from higher education. These dynamics between universities as providers of knowledge and the society that benefits from it are subject to a variety of dichotomies, including the following (Watson, 2007):

- conservation of social tradition vs proposition of radical alternatives
- provision of expertise and workforce to support a competitive market vs protection of social education
- universities as autonomous and self-reliant institutions vs compliance with networks of accountability (particularly for HEIs receiving public funding)
- delivery of top-quality research and attraction of outstanding talent vs provision of egalitarian access to higher education
- aggressive entrepreneurial mindset to maximize the available assets vs duty of care to their members and society
- commitment to engage with local ecosystem vs ambition to produce global impact

Within this framework of conflictive trends, and considering the inherent resistance to change previously described, having a clear vision of the future of the institution can be a deciding factor to enable UCC partnerships. Universities with strong leadership and a well defined role within their local

and regional environment can deliver more agile response to these questions and a more consistent delivery of resources (Goddard, 2015).

The **traditionalism of universities** is presented as a challenging factor by a variety of authors. Edwards and Marinelli (2018) consider the conventional structure of HEIs, based on independent disciplines, to hinder the agility of the university to embrace its third mission and deliver meaningful change to society. Also, the evaluation and incentives model, traditionally linked to research outputs, and the institutional priority for income generation over public good, are considered to restrict the possibilities of universities to deliver in their commitment to support the community. This position is supported by Silka (2014), identifying systemic limitations within the educational community. As well as an obvious focus on publications, the paper considers current scientific research to be excessively fragmented, producing isolated knowledge and reducing its practical applicability. The lack of engagement with stakeholders to define research topics and design the investigation are also highlighted as limiting factors for HEI's public function.

The OECD (2007), in its investigation of the role of universities to support regional growth, identifies a series of factors that can hinder potential cooperation between HEIs and public agencies:

- Universities lack **institutional leadership** to make the necessary changes that activate successful engagement with stakeholders. This is a vital requisite for the development of engaged researchers and academics, establishing a clear vision, objectives and an appropriate evaluation and incentives structure.
- The **lack of funding for the HEI's third mission** presents a considerable barrier to the development of collaborative activities. This is partially due to the difficulty to evaluate return of investment. The lack of well-established indicators challenges the allocation of funding in a competitive environment. The long term nature of societal interventions and regional growth requires different criteria for the evaluation of efficiency. Edwards and Marinelli (2018) also identify this lack of metrics as a limiting factor for successful engagement.
- The same report also highlights the difficulties for local and regional authorities to coordinate action with research intensive universities. Due to the **geographical boundary of the public agencies' jurisdiction**, their strategies, policy making activities and societal contribution are within well-defined administrative areas. By contrast, universities tend to operate with a universal aspiration, causing a difficulty to elaborate a clear collaborative strategy that can benefit the local ecosystem. Because of this, larger universities that do not set specific commitments for their third mission at a local and regional level can miss the opportunity to engage with local government agencies. Arbo and Benneworth (2006) also consider how HEIs have historically neglected interactions with their local environment, with excessive focus on international orientation.

Barriers within municipalities

Naturally, the delivery of meaningful and consistent University-City collaboration requires the mitigation of limiting factors from each of the involved parts. Together with those challenges on the HEI's side, municipalities and regional government face their own set of difficulties.

There is a significant constraint related to the **level of autonomy of municipalities**. Depending on the country's legal framework, government agencies enjoy diverse degrees of decentralized powers,

allowing them to engage in more ambitious collaboration activities, and to allocate the necessary resources to deliver meaningful impact.

When investigating how using research and innovation can deliver more effective public policy, the European Commission (2015) presents several reasons that are thought to contribute to the scarce use of research findings. These include policy makers not being allowed the financial resources to gain access to the publications; the lack of time for practitioners to use evidence when designing interventions; and the lack of practical content within those findings.

It is important to acknowledge that the aforementioned report by the European Commission refers to the context of public bodies implementing nature-based solutions for sustainable development. Despite the ultimate goal being universally accepted by most government agencies, it is possible that studies on more generic public interventions would reflect different conclusions. However, it is reasonable to assume that the financial requirement to access university publications applies to other disciplines, reflecting an important lack of will to cooperate by HEIs. The document does insist on the need for municipalities and regional government to engage in multi-stakeholder cooperation, in order to maximize the use of research activities by local HEIs.

Later research by the OECD (2017) concentrates on potential changes and interventions that can encourage higher levels of innovation within the public sector. The report identifies components that need to be addressed to achieve this evolution:

Regulations and procedures

The notion of bureaucracy as an inhibitor of innovation within the public sector is examined from a dual perspective. The distinction is based on two different definitions of the term bureaucracy. The traditional term, understood as a set of internal rules and procedures, needs to be replaced by a wider definition, including not only the regulations but the culture, values and behaviour by public servants.

Considering this dichotomy, the report reflects on two publications (Kruiter et al., 2008; Cels et al., 2012) to affirm that the barrier is caused by a conservative interpretation of the norm. It insists on the role of bureaucracy as a culture to prevent innovative solutions from being implemented in public agencies. This passivity can be due to a personal lack of drive, or to a lack of institutional encouragement to embrace innovation. As a consequence, government bodies have to carefully design their regulations from a legal perspective, accompanied by an organizational structure that explicitly supports the implementation of change and the upholding of the values that conform the bureaucratic system (Peters, 2003)

- Rational decision making
- Integrity
- Effectiveness
- Efficiency
- Transparency
- Accountability
- Fairness

Budget

the allocation of financial resources to promote innovation is a key component of public life. Recent austerity measures highlight the role of budgetary management (Institute of Economic Development,

2015). For government bodies, the lack of vision and commitment to specific interventions can damage the support network within the organization.

The report concentrates not only on the obligation of municipalities and regional governments to invest in innovation, but also on the need to be accurate when assessing the most appropriate form of funding allocation. Depending on the type of innovation that is being promoted, and the stage of the innovation process that the project is at, the depletion of resources can follow one of the following five strategies:

- Nurturing innovation
- Promoting greater flexibility
- Scaling up
- Stimulating the adoption of innovative reforms
- Championing forward-looking management

The multiplicity of potential interventions and the close monitoring of public finances create a situation in which local and regional authorities have to carefully assess their budgetary needs, their strategy and desired outcome in terms of innovation. The lack of all these factors could damage the efficiency of depleted resources, and result in diminished levels of engagement with stakeholders.

Barriers affecting cooperation between HEIs and municipalities

As well as barriers inherent to either HEIs or public agencies, there are several factors hindering university-city cooperation developed during the communication between both actors. Van Winden (2015) explores how that dialogue can generate friction that threatens the success of the initiative. Firstly, the **different approaches** that university and municipality tend to have when tackling specific questions. The pragmatism of public servants is often in strong contrast with the systematicity and thoroughness of academics and researchers. As a consequence of this, and related to the nature of their activity, both parts have a very **different risk tolerance**. The municipality tries to minimize uncertainty and the potential loss of resources, whereas the scientific community embraces the possibility of failing to achieve its objective.

Secondly, the **operational timescale** of HEIs and public agencies can be a cause of friction. Local and regional government tend to operate in shorter terms, often linked to legal requirements related to the accountability of public services. On the other hand, research projects tend to have a longer time frame, traditionally awarded to protect the quality of research and the meticulous nature of the procedures. Consequently, the success of collaborative projects between public servants and representatives of academia can be limited by the expectations of results within specific timescales.

Thirdly, van Winden highlights the potential **lack of information** on each other's activities, procedures and constraints. If public servants are unaware of the university's expertise, and researchers ignore the political and administrative ecosystem, the possibility of achieving successful collaboration will depend on the ability of both stakeholders to establish clear communication channels.

It is also important to acknowledge the **potential detachment of growing universities** from its local and regional environment. The expansion of HEIs can shift institutional priorities from the collaboration with local stakeholders to the ambition of becoming a reference at international level. This change can damage the relationship with the municipality, now relegated to a secondary role in the university's network of partners. Kopelyan and Nieth (2018) builds on the experience from Twente University, and the perception by local stakeholders that the HEI had deliberately detached itself to focus on its

international activity. This paper recognizes the need for specific strategies for local and regional collaboration, to avoid the possibility of university and municipality drifting away from one another. The use of dedicated intermediaries that encourage constant communication is also recommended.

These barriers between HEI and municipality can be partially overcome through the establishment of consistent communication channels (Goddard and Kempton, 2011). Cooperation between stakeholders should be conceived as a permanent partnership that evolves through the proposition of different projects, instead of being created for the completion of one specific activity. By achieving this comprehensive engagement, universities can become anchors for innovation within their local and regional environment, attracting the interest of local authorities to participate in successive projects that will help tackling different societal challenges (Brewer, 2013).

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Porto Business School

STATUS QUO REPORT

Port – Portugal

EXECUTIVE SUMMARY

This report aims at analysing the Porto ecosystem when it comes to university-cities collaborations.

To do so, first Porto Business School and University of Porto were described. Porto Business School is known for its major role on the formation and research in the areas of business and management, having a unique DNA that only grew stronger with the cooperation with the University of Porto. There has always been a strong cooperation between these entities and the city of Porto, resulting in the constant improvement of the city's growth as a reference point and the development of its students as knowledge enhancers, preparing them for the future. Some specific collaborations were described as examples.

Secondly, an analysis of the Regional Smart Specialization Strategy was conducted, to conclude that there is a parallelism between the regional strategy and the university-city collaborations (UCC) regarding priority areas and goals (to boost innovation and to improve the quality of live in the area).

Lastly and to have a more detailed vision on the ecosystem of Porto, this study has focused on the main stakeholders' groups involved, input utilised into the system, the activities that took place, the outputs derived from these collaborations, their impacts, the supporting mechanisms and the barriers and drivers that affect the process.

This status-quo report is one of the tasks of the UniverCity Action Lab project, focusing on the assessment of the state of the art of Porto concerning its collaborations with the different Higher Education Institutions (HEI), more specifically Porto Business School and University of Porto.

1.CONTEXT

1.1 Background / story

Porto Business School (Associação Porto Business School (PBS – U. Porto) is a private, non-profit institution that benefits from administrative and financial autonomy within the University of Porto, Portugal.

Its unique DNA derives from the basis of its foundation and its 30-year history.

Porto Business School was imagined and founded by a group of companies as an executive business school to train management professionals and middle management and C-suite executives from those companies. A few years later, the University of Porto joined the group of “shareholders” and Porto Business School became **academically and scientifically affiliated to the University of Porto**, with a very flexible and unique governance model: a General Assembly gathers all “shareholders”; a Supervisory Board that is composed by 50% of members from the associated companies and by 50% of members from the University of Porto; an Executive Board that reports to the Supervisory Board (with total independence from the Rector of the University of Porto); and an Academic Council that is 100% composed by members of the University of Porto.

Its mission is to improve the quality of management through advanced education at postgraduate level, custom programs for organizations, start-up acceleration projects, corporate partnerships, applied research and consultancy. The focus is on post-graduate and post-experience education. The portfolio of activities includes: **MBA programs** (20% of revenues), Specialized long **Post-Graduate programs** (30%), short **executive programs** (15%), **custom programs** and consulting (25%), other business (10%).

The number of new students in post-graduate programs in 2018 was around 500, and the number of participants in executive programs and custom programs was around 600 and 2200, respectively.

Porto Business School has a faculty with a wide experience in teaching and researching, derived from the University of Porto, joined by two other faculty categories: **managers** and staff with academic training and solid business career and **Professors from foreign Universities**. This connection to foreign counterpart schools ensures a high level of internationalization for its activities.

The non-academic staff includes 44 people in different administrative and support functions, whereas the faculty includes more than 400 (the majority from University of Porto, adjunct or visiting).

Porto Business School also counts on the **support of a set of companies and other reference institutions** with a decisive participation upon the constitution of the management bodies of the School and which also ensure an effective connection of the School to the Portuguese business universe. The participation of the companies in the governance model of Porto Business School has a much superior expression to that observed on any other Portuguese Business School.

Porto Business School has a special high-level intelligence unit – the **Center for Business Innovation** (CBI) -, which focuses directly on the production of business intelligence. CBI focuses on 3 areas: entrepreneurship, education and research. Open innovation initiatives and projects, and new and

innovative executive education programs are designed based on the newest trends and what's next for organizations and individuals.

Its activities include a broad range of projects: from **applied research** in diverse areas, **intelligence gathering** (surveys, benchmarking), **EU projects**, training programs, consulting and **business acceleration projects**. Center for Business Innovation at Porto Business School has **direct affiliations** with the IMD World Competitiveness Center, the Business Council for Sustainable Development (BCSD), and with Innovation Acceleration Group (IAG) at the Haas Business School, University of California at Berkeley.

Therefore, PBS, and CBI in particular, is highly experienced in forecasting market's trends, opportunities and threats, in a wide variety of areas of study (education, social sciences, marketing, biology, health, smart cities), in order to better foresee the challenges a company will face. Through benchmarking, business model design, economic viability evaluation, sustainability analysis, social impact assessment, and others, support in the assessment of business feasibility is provided.

Porto Business School is, therefore, the business school of the University of Porto.

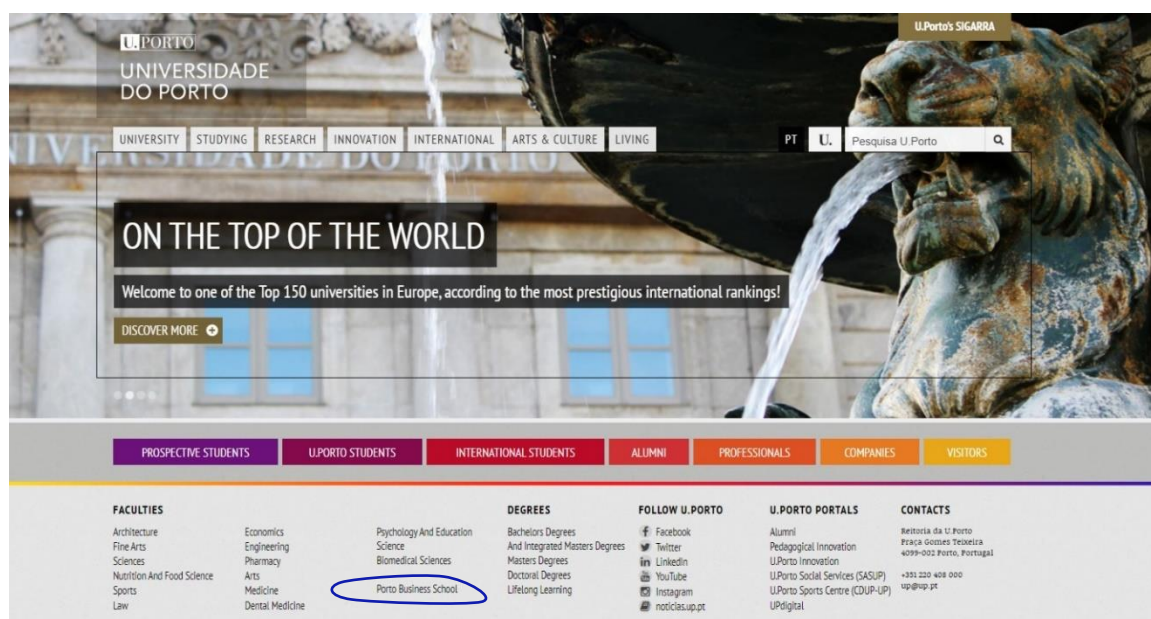
Founded in 1911, the University of Porto (U.Porto) is a benchmark institution for Higher Education and Scientific Research in Portugal and one of the top 200 European Universities according to the most relevant international ranking systems.

The U.Porto combines high quality education focused on individual vocations and talents as well as market needs with the claim to being the greatest birthplace of science in Portugal. It is committed to converting into social assets the talent and innovation from its 14 faculties, one business school and over 50 research centres. The U.Porto has the richest academic community in Portugal and brings together the country's highest ranked students, a highly qualified scientific and teaching staff and a growing number of international students, teachers and researchers. Its fully equipped campus embedded within the city guarantees an optimal academic, scientific, and also social and cultural experience.

Being open to the community and business is the main trademark of the U.Porto. The University is itself an important driving force for economic, social, cultural and scientific development in Northern Portugal and in the country as a whole. The U.Porto creates leaders, promotes innovators and encourages entrepreneurs. In short, it trains people who can make a difference in their communities.

Currently, the U.Porto is the most international of Portugal's universities thanks to its active cooperation with hundreds of higher education institutions worldwide. The ambition now is to establish the U.Porto as one of the top 100 universities in the world by 2020 (Universidade do Porto, 2019)¹.

Figure 1. Structure of University of Porto



1.2 University–city collaboration/ history of co–creation projects

“Those who love the city of Porto, must love the Football Club, as well as the Porto University, the hospitals of Porto. They must love Porto’s institutions”. Rui Moreira, Mayor of Porto.

At the University of Porto, scientific community is encouraged to dialogue/cooperate with companies and other organisations in finding appropriate solutions to the problems they face on their daily lives. Indeed, researchers have a major role to play in what is today one of the great purposes of the University: the social enhancement of the knowledge produced in the R&D+i centres and its transfer to economic and social agents - the driver of innovation and change.

Collaboration with companies brings benefits to U.Porto and all those who work there, since it is a source of inspiration for applied research with commercial potential. It informs the university about the latest trends, problems and needs of society. It exposes U.Porto to other ways of thinking and working. It challenges it to materialize ideas, technologies, know-how and R&D results in new processes, products and services. It gives rise to new sources of research funding. Not to mention that it brings employability opportunities to the students and researchers (Universidade do Porto, 2019)².

In fact, the majority of U.Porto’s faculties provides consultancy services in its domain of expertise.

U.Porto Inovação, U.Porto’s knowledge transfer office, is one of the structures that support the researchers in their relationship with companies. U.Porto Inovação instigates collaborative projects with companies, protects and commercializes U.Porto’s R&D results, and supports the generation of new businesses/ new companies) based on U.Porto’s community and knowledge.

In recent years, the scientific community's connection with business has been facilitated through initiatives such as the A2B (A stands for Academy, B for Business) sessions, where researchers and entrepreneurs have the opportunity to share skills and to study forms of collaboration to meet companies' R&D+i needs (Universidade do Porto, 2019)³.

Examples of University of Porto collaborations:

U.Porto – CIIMAR

CIIMAR (Interdisciplinary Centre of Marine and Environmental Research) is a leading research and advanced training institution of the University of Porto, working at the frontier of Ocean Knowledge and Innovation. CIIMAR fosters an integrated approach to Ocean and coastal areas promoting the understanding and knowledge of Biological, Physical and Chemical dynamics of these environments and the impact of natural and human activities, aiming to unravel the links between these processes, grasp Ocean and ecosystems functioning and responses to Global Changes.

CIIMAR uses knowledge-based approaches to promote the natural capital and the sustained management of marine resources through monitoring of ecosystems health, optimization of aquaculture, and biotechnological exploitation of the resources for environmental and human health applications.

CIIMAR provides innovative solutions and products responding to current economic and societal challenges, including new drugs and marine products for industrial and medicinal needs, water quality, sustainable fisheries, preparedness for and mitigation of oil spills and other emergent contaminants, environmental monitoring & risk assessment, preservation of ecosystems services, ocean & coastal management and Ocean Literacy (CIIMAR, 2019)⁴.

U.Porto – U.Dream

U.Dream is a self-sustaining social project promoted by students who believe they can change the world through paying attention to others. This is done daily by accompanying and fulfilling the dreams of children and families in difficult situations, together with the local community through urban intervention campaigns, and alongside the youngest, in secondary schools through motivational lectures. They also have the business component that allows them to be self-supporting and of course, the Academy, which empowers them on a human and technical level.

U.Dream (UD) was born in the Faculty of Economics of Porto, designed and conceived by young students who one day have asked themselves the following question: what am I giving to the world?

In that sense, UD was created in order to transform the intervening parties into better human beings. UD was the first Junior Social Enterprise in the country, characterized by combining and expanding two worlds - business and social (U.Dream, 2019)⁵.

FMUP&ICBAS - Hospital S. João & Hospital Sto. António

The two public Faculties of Medicine of Porto - FMUP and ICBAS - collaborate directly with the two main hospitals: Hospital de S. João (HSJ) and Hospital de Sto. António.

In addition to staff and common areas, this collaboration has numerous advantages for both parties: faculties are given the opportunity to conduct clinical research and translation; on the other hand, hospitals increase their level of excellence due to this collaboration. "FMUP elects HSJ as a Nuclear Hospital for teaching, recognizes it as a partner in research projects and commits itself to participating

in the Assistance developed there. Hospital S. João recognizes FMUP as a partner in these activities and elects it as a preferred partner in teaching and research.” (Protocolo de Colaboração da Universidade do Porto e Hospital S. João, 2008)⁶.

FAUP (CEAU) - companies

Architecture and Urbanism Study Center (CEAU) is integrated since 2004 within the Faculty of Architecture of the University of Porto (FAUP). It promotes and frames artistic, scientific and technological development activities in the areas of architecture, construction, urban planning, among others. Its action includes supporting and providing scientific services to external companies, in cooperation with the FAUP Study Center (CEFA) (Consultoria e Estudos, 2019)⁷.

FCNAUP – International Congress “Food in Disability”

Congresso Internacional “Alimentação na(s) Deficiência(s)” (International Congress “Food in Disability”) was supported by General Direction for Health, Portuguese Nutrition Association, Order of Nutritionists and FCNAUP (Faculty of Nutrition and Food Sciences). This event followed the project that the Porto Association of Cerebral Palsy is developing under the theme of "Food in Disability", under the National Program for the Promotion of Healthy Eating. The meeting has brought together a large group of experts for two days, enabling a comprehensive approach to all issues related to the diet of persons with disabilities.

The main objective was to improve the technical capacities of health professionals (therapists, psychologists, nurses, doctors, etc.), the skills of other technicians who contact directly or indirectly with disabilities, as well as the independence of people with disabilities. Representatives of the Portuguese-speaking African Countries (PALOP) have attended the congress, allowing an exchange of experiences. Besides the congress, the initiative involves training sessions, awareness actions, and the launch of a website and a cookbook, among other activities (Nutrimento, 2019)⁸.

FDUP- CCDRN

A Protocol of Cooperation between the Law School of Porto University (FDUP) and the Northern Regional Coordination and Development Commission (CCDRN) was established on environmental policy and spatial planning.

It includes the organization of postgraduate courses, conferences and seminars, the exchange of data and scientific and didactic material and the conduction of studies. The Protocol also comprises internships with recent graduates in law from FDUP, with a duration of one year, for the instruction, analysis and monitoring of administrative offense proceedings (Protocolos (Detalhes), 2019)⁹.

FDUP – National and local institutions

As part of its mission, the U.Porto Faculty of Law (FDUP) assists national and local entities and institutions in the scientific evaluation of prevention / intervention programs in the areas of security and criminal prevention, supported by rigorous diagnoses, and in scientific and technical knowledge (Consultoria e Estudos, 2019)¹⁰.

FEP-AIESEC

AIESEC is a global platform for young people to explore and develop their leadership potential. It is a non-political, independent, not-for-profit organisation run by students and recent graduates of institutions of higher education. Its members are interested in world issues, leadership and management. AIESEC does not discriminate on the basis of ethnicity, gender, sexual orientation, religion or national/social origin. AIESEC provides, cross-cultural any internships, and volunteer exchange globalist experiences. The organization focuses on empowering young people to make a progressive social impact.

FEP is AIESEC's local committee in Portugal (AIESEC, 2019)¹¹.

FEP- FEP FIRST CONNECTION

FEP First Connection is an association based at the Faculty of Economics of Porto (FEP), whose main mission is to bring the academic world closer to the business world.

The aim is that the students of the Academy of Porto get to know the different sectors of activity and companies in loco.

In addition, these young college students will get closer to business reality, preparing themselves for the growing competition that characterizes the labour market, while creating their own professional network (FEP First Connection, 2019)¹².

FMDUP- DENTISTRY CONSULTATIONS

As a way to improve the skills of their students, the Faculty of Dental Medicine of Porto provides the population with the opportunity to have dental consultations at reduced prices which may vary depending on the specialty chosen. In addition to consultations, the faculty also provides specialized care in the field of prosthesis, surgery, implantology, endodontics and orthodontics.

All the procedures are supervised by teachers that ensure the safety of all appointments by helping students solve everyday problems (Consultas, 2019)¹³.

FPCEUP- Counselling and Therapy

The Faculty of Psychology and Educational Sciences of the University of Porto has the mission of providing and scattering services to the community in the area of applied psychology, as well as applied research and postgraduate training. Its duties include providing psychological counselling to individuals of all age groups (Children/Adolescents, Adults and the Elderly), as well as a Psychological Counselling Service on Addictive Behaviours, an Office of Studies and Assistance to Offenders and Victims, a Psychological Assessment Unit, among others (Serviço de Consulta Psicológica, 2019)¹⁴.

FEUP- LGP Program (“Linking Great Partners”)

The LGP Program takes place within the class of Project Management Laboratory, in the Integrated Master in Informatics Engineering and the Multimedia Master of the Faculty of Engineering of the University of Porto, in collaboration with the Project/Internship of the Communication Design Degree of the Faculty of Fine Arts of Porto.

Real solutions for real companies are developed in this program, so they have the possibility to define projects to be executed by students, following their evolution. To this end, students are organized into teams of 10 elements, each responsible for completing a software project. These teams are then organized into virtual companies, developing a corporate entity and marketing strategy.

These projects take place in school time, being the final result presented in an event specially organized for the purpose. For students, this is a great way to put into practice the knowledge gained in the course, while for companies it's an opportunity for teams of young engineers to develop solutions for their projects (Projetos em Empresa, 2019)¹⁵.

FLUP-Municipal Chambers

Faculty of Arts of Porto University has collaboration protocols with several Municipal Chambers of Porto district, namely Vila Nova de Gaia, Valongo and Baião. These protocols refer to the opportunity for the students to have practical experiences, teaching at schools in those regions.

Examples of Porto Business School collaborations:

PBS-Associação Porto Digital

Porto Business School and Associação Porto Digital, within its program ScaleUp Porto., are both part of the vibrant entrepreneurial ecosystem of the city of Porto and regularly collaborate in the creation of entrepreneurship and innovation programs, as well as several internationalization projects.

PBS- U.Porto Spin-off Circle

U. Porto Spin-off Circle is a club of companies that emerged from the University of Porto's entrepreneurship and innovation ecosystem. Several companies that are part of the group hold the brand “U. Porto Spin-off”, which recognizes them as having emerged in this context of Research & Development and Innovation. In other words, “The Circle” is a unique initiative that brings together U. Porto's spin-offs in forums where the main challenges faced by companies in the most dynamic global value chains are discussed. In this way, U. Porto facilitates the exchange of experiences and the improvement of processes and business, developing, alongside the companies, its innovation ecosystem.

In the context of its participation in “The Circle”, Porto Business School will contribute to the dynamization and empowerment of the ecosystem, ensuring privileged and / or exclusive access of “The Circle” members to content, knowledge, training and partners developed by Center for Business innovation.

This contribution will focus on 4 key areas:

- Business Intelligence: Trendspotting, Foresight and Insights
- Qualification
- Internationalization
- Community Activation

PBS-Junior Achievement Portugal (JAP)

Junior Achievement Portugal is a non-profit organization, constituted in November 2005. It is a Portuguese counterpart of Junior Achievement, the world's largest and oldest entrepreneurship education organization. JA works with local businesses, schools, and organizations to deliver experiential learning programs on the topics of work readiness, financial literacy, and entrepreneurship to students from ages 5 to 25.

Porto Business School collaboration with JAP comes mainly by two means: helping to raise volunteers and providing non-monetary support such as a plafond for attending courses and offering rooms for meetings and new projects.

PBS-Bagos d'ouro

Bagos d'ouro is a Private Institution of Private Solidarity (IPSS) exclusively private initiative. It was born in 2010 with the mission of promoting the education of needy children and young people of the Douro region as a way for social inclusion in the territory.

With a long-term commitment and a proximity strategy, they have developed a personalized work with each child/younger they support, seeking to follow their educational, social and family path until the integration into the working life.

They operate in 6 municipalities (Alijó, Armamar, Murça, Sabrosa, São João da Pesqueira and Tabuaço), working with over 150 children and young people and their families, totalling around 300 people.

Porto Business School collaboration with Bagos d'ouro, similarly with JAP, refers to helping to raise volunteers and providing non-monetary support. Besides, they are invited to participate on Alumni Day with a stand. PBS also provides monetary supports, such as on Alumni Day, when part of the profit with the lunch goes to the institution, for each answer to the quality survey about PBS long-term programs, Bagas d'ouro receives 1€ and in Concerto dos Reis, where the school asks for donations to the IPSS.

1.3 Objectives / motivations

There are different types of motivations that can be pointed out when it comes to Porto situation (Trencher, Yarime & Kharrazi, 2013)¹⁶:

- Missional motivation when there is a specific purpose such as a funded project, event, etc. (FCNAUP – International Congress “Food in Disability”, FEUP- LGP Program)
- Scientific/scholarly motivation since there is a clear advantage in working with external partners and testing scientific knowledge in real world settings (FDUP- CCDRN, FEP- FEP FIRST CONNECTION, FMDUP- DENTISTRY CONSULTATIONS, FPCEUP- Counselling and Therapy, FEUP- LGP Program)
- Social contribution motivation (U.Porto – U.Dream, FMDUP- DENTISTRY CONSULTATIONS, FPCEUP- Counselling and Therapy, PBS-Junior Achievement Portugal (JAP), PBS-Bagos d'ouro)

- Strategic motivation when there are synergies to take advantage of (U.Porto-CIIMAR, FMUP&ICBAS - Hospital S. João & Hospital Sto. António, FAUP (CEAU) – companies, FEP-AIESEC, FMDUP- DENTISTRY CONSULTATIONS, FPCEUP- Counselling and Therapy, FLUP-Municipal Chambers, PBS-Associação Porto Digital, PBS- U.Porto Spin-off Circle)
- Entrepreneurial motivation (PBS-Associação Porto Digital, PBS- U.Porto Spin-off Circle)

There are motivations that are shared among several stakeholders. The first is the deployment of **city-scale test beds** in order to perform urban experimentation and testing. All stakeholders benefit from this due to various reasons. Administration improves the regional life's quality, public and private organizations will have new business opportunities, students and professors will be exposed to interactive learning opportunities, researchers and research centers will have innovation hubs, citizens and NGO's will have new services/ products available. In the same line of thought, all stakeholders profit from the **ambition and strategy for a city to become smart**.

Table 1. Objectives/ motivations

OBJECTIVES / MOTIVATIONS	STAKEHOLDERS						
	GOVERN MENTAL ORGANIZ ATIONS ¹	PUBLIC ORGANIZ ATIONS	PRIVATE COMPANI ES	STUDENT S, PROFESS ORS AND RESEARC HERS	RESEARC H CENTRES	CITIZENS (END- USERS)	NGO's
<i>Improvement of regional life's quality</i>	X	X	X	X	X	X	X
<i>New business opportunities</i>		X	X				
<i>New insights for research</i>				X	X		
<i>Exposure to interactive learning opportunities</i>				X			
<i>Provision of a valued service</i>		X	X				
<i>Attraction of new consumers</i>		X	X				
<i>Demonstration of technologies and solutions at a city-wide level and real-life urban scenario</i>				X	X		

¹ Governmental organizations are understood as city council, urban departments, chamber of commerce, etc.

<i>Raising of international awareness</i>	x			x	x		
<i>Provision of unsolved problems to stimulate new products or services to solve them</i>	x					x	x
<i>Address societal challenges and issues</i>	x	x	x	x	x	x	x
<i>Positively impact society</i>	x	x	x	x	x	x	x

On the other hand, there are specific objectives related to particular collaborations, for example decarbonizing the city, decreasing energy consumption, having a more comfortable and sustainable mobility, among others.

1.4 Context

Porto & Matosinhos

Nowadays, Portugal hosts many innovative companies that are developing new, innovative technologies impacting our world. Portugal is ranked as one of the 13 most innovative countries in the world, according to the Consumer Technology Association (CTA) International Innovation Scorecard.

Porto is the second biggest Portuguese city and its Metropolitan Area comprehends a total of 1.7 million people.

Porto has become an aggregator of innovation and entrepreneurship, in which a continuous emphasis on knowledge, training and qualification is fundamental.

The service industry is the biggest player in the economy of Porto and represents almost 50% of the jobs and 59% of the turnover of the city. However, the most famous industry in Porto is, without a doubt, the Port Wine. Visitors from all over the world come to Porto to visit the Porto Wine Cellars in Vila Nova de Gaia, or to go up and down the Douro River on a cruise. Various studies indicate that there are currently tens of thousands of people working in the production and sale of Port, including farmers, producers and merchants. It is a dynamic sector of the economy, responsible for thousands of jobs (Porto's Industry, 2019)¹⁷.

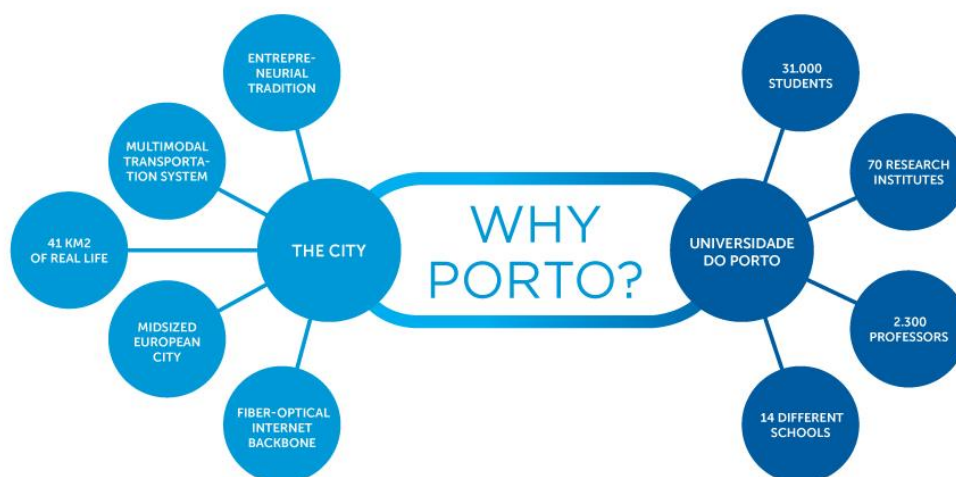
Porto is also a city that is also very rich in architecture, with many famous buildings made of granite, a stone with substantial impact on Porto's economy and industry due to the companies in the district of Porto that export granite to all over the world.

The textile industry also occupies an important place in the economy of Porto.

Here the world's largest cork producer can be found, Corticeira Amorim, which is also the most international Portuguese company.

In the past few years, Porto, like the rest of Portugal, has benefited from a significantly improved job market as well as strengthened fiscal and net trading positions, supported by export revenues continuing to grow significantly.

Figure 2. Why Porto? (Future cities, 2019)¹⁸



Matosinhos is a city and a municipality in the northern Porto with 173.753 inhabitants in 2017. Situated on the Atlantic coastal strip, Matosinhos is the 8th most populated municipality in the country (third in the metropolitan area), concentrating 11% of the metropolitan population in 3,9% of the surface area of the metropolitan region.

The main problem of Matosinhos is the lack of attractive tourist places for the cruise passengers who ignore and “jump” the city in favour of Porto and other regional places. So, the challenge is to upgrade the attractiveness of the city through the revitalization of the commercial infrastructure and restaurants, and the creation of cultural facilities and urban services in the deprived areas.

Regional Smart Specialisation Strategy

Porto belongs to the North Region (Norte), being included in “Norte 2020” programs. After an analysis of the regional context and potential for innovation, and the establishment of an overall vision for Norte’s future, the following priority areas have been selected (Monteiro, Santos, Guimarães & Silva, 2018)¹⁹:

Table 2. Regional Specialization Strategy

PRIORITY AREAS	DEFINITION
Health and life sciences	Consolidate and promote interactions between the regional research capabilities (namely on tissue engineering, cancer, neurosciences and surgical techniques) and companies in the health industries and general services (pharmaceuticals, medical devices, provision of health services, health tourism, and wellness and cosmetics).

<i>Culture, creativity and fashion</i>	Exploring the potential of creative industries (especially in the areas of design and architecture), new materials and innovative production technologies, creating new competitive advantages in sectors linked to the production of consumer goods with a strong design component (design based consumer goods), namely in traditional industries such as textiles and clothing, footwear, accessories, furniture, jewellery, etc.
<i>Marine technologies and economy</i>	Development of links between the engineering areas (civil, mechanics, naval, robotics, energy, life sciences, ICT, new materials), natural resources of the sea (wind, waves, algae, beaches) and existing or emerging economic activities (shipbuilding, offshore construction, nautical tourism, fishing and aquiculture, bio-fuels, etc.).
<i>Human capital and specialised services</i>	Promotion of ICT skills (namely in the development of multimedia applications and systems for programming and engineering) for the development of e-government solutions, dematerialisation of processes and, in association with professional retraining, leveraging trends for nearshore outsourcing (engineering, shared service and contact centres).
<i>Mobility industries and environment</i>	Creating value from accumulated scientific expertise in the areas of production technologies and materials, underpinned by supply contracts with important aeronautics international firms, upgrading the automotive components and moulds production industries to supply more sophisticated clients (e.g. aeronautics).
<i>Advanced manufacturing systems</i>	Development of clusters associated to key enabling technologies, such as advanced manufacturing systems, nanotechnologies, materials and ICT, by combining the existent scientific and technological capacities and infrastructures with the presence of advanced users sectors, in order to strengthening the existing business structure (in the case of production technologies and ICT) or the creation of new companies (especially in the field of nanotechnology and the production of new materials).
<i>Food and environmental systems</i>	Linking the regional agricultural potential in high added value products (wine, olive oil, nuts, etc.) with the scientific and technological knowledge (oenology, engineering, biology, biotechnology, etc.) and the existent industrial knowledge (milk and dairy products, viticulture, etc.) for the development of associated products, namely functional food and local gastronomy, aiming towards more dynamic demand segments.
<i>Symbolic capital, technology and tourism</i>	Creating value from cultural and intensive resources in the territory, taking advantage of the scientific and technological capacities, namely in the areas of management, marketing and ICT, and the relevant tourism offer, promoting routes and itineraries as a way to take advantage of the main infrastructures for visitors.

As can be seen from the table, there is a **parallelism** between the priority areas of the regional strategy and the university-city collaborations themes. This focus on the regional competitive areas is not unplanned, there is indeed a concern of the university to contribute to the smart specialization of the region.

1.5 Stakeholders

Table 3. Stakeholders

STAKEHOLDERS	ROLE
<i>Governmental organizations (city council, urban departments, chamber of commerce...)</i>	<p>Being responsible for the funded programs (Portugal2020, Norte2020, etc.)</p> <p>Offering of internship programs</p> <p>Requesting of customized training courses</p> <p>Establishing of partnerships with universities</p> <p>Enabling access to their own research centres and library</p>
<i>Public organizations</i>	<p>Providing material and equipment</p> <p>Enabling access to the facilities</p> <p>Enabling access to private information</p>
<i>Students, professors and researchers from universities and polytechnics</i>	<p>Participating in various activities such as training programs, internships, research projects (including thesis)</p> <p>Participating in several events (opinion and knowledge sharing)</p> <p>Creating of joint initiatives</p> <p>Providing consultancy services</p>
<i>Research centres</i>	<p>Providing material and equipment</p> <p>Enabling access to the facilities</p>
<i>Private companies</i>	<p>Providing material and equipment</p> <p>Enabling access to the facilities</p> <p>Enabling access to private information</p> <p>Offering sponsorships</p>
<i>Citizens (end-users)</i>	<p>Participating in the prototyping and testing</p> <p>Providing feedback</p>

2. SYSTEM

To visualise the whole system framework, please refer to the Annex.

2.1 Input

This section describes the resources utilized to undertake university-city collaboration activities. There are 4 main categories of resources that should be pointed out, namely human, financial, physical and intangible.

- Human: citizens, students, professors, researchers, strategic individuals (Porto Mayor, representatives of urban units)
- Financial: sponsorships, funding (structural programs, private funds)
- Physical: technological infrastructure, equipment, material, facilities
- Intangible: knowledge, skills, experience, political will, technology

2.2 Activities

University-city collaborations include several activities, which can be segmented in different categories. Please refer to the Annex to have a clear understanding about those categories.

Table 4. Activities

ACTIVITIES	STAKEHOLDERS INVOLVED	EXTENT
<u>Joint curriculum design and delivery</u> <ul style="list-style-type: none">• Internships• Multidisciplinary research and development• Consultancy services• Joint initiatives• Projects (funded or not)	Governmental organizations; Public organizations; Students, professors and researchers; Research centres; Private companies.	National, regional and local; Growing tendency; Well developed; Frequent.
<u>Student mobility</u> <ul style="list-style-type: none">• Internships• Joint initiatives• Projects (funded or not)	Students; Governmental organizations; Public organizations; Research centres; Private companies.	National, international; Poorly developed; Occasional.
<u>Lifelong learning</u> <ul style="list-style-type: none">• Training courses	Governmental organizations; Public organizations; Students, professors; Citizens; Private companies.	Regional and local; Growing tendency; Well developed; Frequent.
<u>Joint research</u>	Governmental organizations;	Regional and local;

<ul style="list-style-type: none"> • Development, testing and experimentation of innovative and integrated technological solutions at a city-scale • Proof-of-concept testing and demonstration • Technology transfer from academia to business • New services exploitation • Promotion of user involvement 	Public organizations; Students, professors and researchers; Citizens; Research centres; Private companies.	In development; Becoming increasingly frequent.
<u>Professional mobility</u> <ul style="list-style-type: none"> • Joint initiatives • Projects (funded or not) 	Governmental organizations; Public organizations; Citizens; Research centres; Private companies.	National, international; Poorly developed; Occasional.
<u>Commercialization of research finds</u> <ul style="list-style-type: none"> • New services exploitation • Technology commercialization (research findings, thesis findings) 	Students, professors and researchers; Research centres.	International, national, regional and local. Poorly developed; Occasional.
<u>Entrepreneurship</u> <ul style="list-style-type: none"> • Spin-offs • Promotion of user involvement • Promotion entrepreneurship and new businesses creation (development of new products and services) 	Students, professors and researchers.	National, regional and local; Well developed; Frequent.
<u>Governance</u> <ul style="list-style-type: none"> • Students as part of the academic board • City leaders and private companies' representatives involved in HEI decision making (Porto Business School as a great example²) 	Governmental organizations; Public organizations; Students, professors and researchers; Private companies.	Local; Poorly developed; Frequent.
<u>Shared services</u> <ul style="list-style-type: none"> • Events • Consultancy services • Material, equipment and facilities sharing • Collaboration protocols 	Governmental organizations; Public organizations; Students, professors and researchers; Research centres; Private companies.	National, regional and local; Well developed; Frequent.
<u>Sponsorship</u> <ul style="list-style-type: none"> • Events • Consultancy services 	Students, professors and researchers; Research centres; Private companies.	National, regional and local; Well developed; Occasional.

² Please refer to the “background” section

2.3 Outputs

Some of the outputs resulting from the activities include:

- Living Labs (Porto Living Lab, Matosinhos Living Lab)
- Spin-offs (Bright, Insignals neurotech, Ergoform, Wisify, Ecoinside, CREA, bandora, bullet solutions, invisible cloud, rheINforce, Mitotag, Smartex, Snood, Oko, OPT, Codavel, Addvolt, Mub Cargo, Ground Control Studios, Summary, Last2tocket, Learn Brighth, LTPlabs, shopai, hype labs, mobility now, helppier, visblue, casas em movimento, Veniam, Healthy Systems, MetaBlue, among others)
- New products, services and technologies (for example optical fiber network, expansion of the Wi-Fi network, bus free WiFi service, auto sustainable lamps that measure carbon emissions, pavement that reduces vehicle speed without drivers' intervention and houses that move along with the sun and store energy through solar panels on the roof)
- Increase of national and international awareness in the smart cities domains
- New training courses
- Access to resources
- Projects
- Scientific publications
- Innovative solution for local problems
- Better reputation for the University in terms of social engagement

2.4 Impacts

Some of the longer-term impacts resulting from the outputs include:

- Placement not only of the University of Porto but also of the city of Porto on the map of smart cities in Europe and worldwide
- Improvement of job prospects of students due to the acquisition of practical knowledge and experience, and to the development of soft skills
- Improvement of the practical implications of the research conducted within HEI
- Accessing problem-solving capabilities (governmental organizations, NGO's, public and private companies)
- Increasing of productivity due to the synergies exploited (all get this benefit)
- Increasing connectivity between citizen and all agents

3. FACTORS

3.1 Supporting mechanisms

Supporting mechanisms are measures and/or methods that enable the pursuit of university-city collaborations, namely the achievement of their objectives and results. There are several supporting mechanisms that can be identified in the Porto's case, specifically:

- PORTUGAL 2020 (national), NORTE2020 (regional) and European Structural Funds
- Incentives (from universities, companies, government and citizens) that positively support innovation
- University of Porto strategy supporting university-city collaborations
- Accessible recruiting policy concerning internships
- Alumni networks
- Career offices at faculties
- Networking sessions for academics to interact with people from public bodies
- Invitation of managers from the business world to teach at HEI

3.2 Barriers and drivers

Barriers

Some of the barriers experienced in executing the activities include:

- High bureaucracy (both for the university and the city)
- Slow decision taking by some stakeholders
- Struggle in mobilizing the citizens for projects
- Lack of citizen/ HEI participation in municipal collective decisions
- Conflicting interests/ values
- Lack of HEI funding for the university-city collaboration
- Insufficient work time allocated by the university for these collaborations
- Struggling in reaching the high-level members (both sides)
- Struggling in knowing who is responsible for what (both sides)
- Encouragement does not come from the top
- Governance bodies lack awareness of university research activities
- Some HEI perception of innovative teaching / research methods as non-consistent to academic standards
- Growth of HEI cause a detachment from Porto ("tendency to think globally")

Drivers

Some of the facilitators driving the activities include:

- The support and interaction of several organizations, namely municipalities, knowledge centres, companies, entrepreneurs and citizens
- Culture of openness and responsiveness
- the will for students to have place-based, real-world problem solving and engaged research

- Increasing of societal needs' awareness by the students
- Political will and support from the Municipality of Porto
- Availability of infrastructures in the city of Porto
- Mutual commitment and trust

3.3 Challenges

Some of the key challenges of undertaking university-city cooperation include:

- High dependence of foreign investments
- Risk of delays in the installation of technological solutions
- Restrictive legislation
- General Data Protection Regulation (GDPR)

3.4 Key success factors

“Civil society took matters into its own hands. We saw the rise of a strong, entrepreneurial tech-based ecosystem and of hi-tech manufacturing. Our universities improved – this is the best educated generation [that this country has ever seen]. [Also] we’ve had a mayor since 2013 who is a politically [independent] businessman. So, it has been a perfect storm for the past five years” Rui Coutinho, executive director of the Center for Business Innovation at Porto Business School

- Porto is experiencing a boom when it comes to new businesses, entrepreneurship, innovation, research, among others as Portugal rebounds from the economic crisis
- Low labour costs
- A need to differentiate the facilities among themselves

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The background features a large orange shape on the left and bottom, and a blue line forming a frame on the right and top. The text is centered within the orange area.

University of Ljubljana STATUS QUO REPORT

Ljubljana – Slovenia

1.CONTEXT

1.1 Background / story

This report focuses on university-city cooperation (UCC) in Ljubljana. **Ljubljana is one of 26 municipalities in the Ljubljana Urban Region (LUR) with most acquired knowledge and human potential in Slovenia.** The region hosts companies' headquarters employing a significant share of the Slovenian population and generating over a third of the Slovenian gross domestic product. Therefore, LUR is the economically most developed region in the country (COL). Ljubljana is the capital of Slovenia and is the country's most important political, administrative and cultural centre as well as the headquarters of all of the important state institutions - Slovenian Parliament, Government of the Republic of Slovenia, government Ministries, embassies and other important Slovenian and foreign organisations, including the EU Agency for the Cooperation of Energy Regulators (since 2011). Ljubljana is run by the municipality public administration – the **City of Ljubljana (COL)**, which is also one of the key stakeholders in the UCC network.

Ljubljana also hosts **the largest Slovenian university – University of Ljubljana (UL)**, established in 1919. UL comprises of 26 full members (faculties and academies) and 3 associate members. The University headquarters (Rectorate) is located in the historical centre of the city, while the faculties and academies are dispersed across the city on several separate locations, with one faculty located at the coastal town of Portorož. The individual faculties have a level of autonomy in management, budget spending, and curricula – each faculty has its own dean and senate etc.

The cooperation between UL and the “city” is characterised by immense diversity in the type, extent, frequency and duration of cooperation activities. Due to the size of the UL and its fragmentation – organisational and spatial – the activities are difficult to capture and document. This is exacerbated by the fact that there is no single entity within the UL structure that would systematically track and document cooperation activities between the individual Faculties or their Departments and the city public administration bodies or other relevant city stakeholders.

There are several **designated offices, bodies, strategies and policies within UL, which promote and support cooperation of UL members with industry and societal organisations.** These can include the city administration, government bodies, NGOs, and businesses in general, but they are not specifically or exclusively oriented towards UCC. These bodies are also not systematically documenting and analysing the UCC activities taking place in practice, as they are integrated within the wider field of university cooperation with external organisations (industry and society). Cooperation activities are partially overseen and documented by research or research & development (R&D) offices or institutes, located at individual Faculties – however, these only includes information on research projects that were commissioned, funded by, or carried out in cooperation with external bodies (incl. city stakeholders). All other activities, such as cooperation within education, valorisation and management, are more or less in the domain of individual university staff, i.e. are not documented or systematically analysed. Likewise, cooperation with UL is not systematically placed within COL

structure, for instance, while the cooperation activities are dispersed between individual units of the city administration.

Therefore, due to the size and organisational and spatial characteristics of the UL, complexity of the urban public system, dispersion of data, and the limited scope of this research and report, **the captured data is necessarily incomplete**. A wider research would be needed to provide a more thorough portrait of the university-city cooperation (UCC) in Ljubljana. Nevertheless, drawing on an analysis of available documents and sources, interviews with selected personnel and a focus group discussion, this study provides an overview of key UCC stakeholders, mapping the UCC infrastructure, the different organisational units and institutions and their roles in establishing and driving UCC in Ljubljana, as well as captures and analyses a selection of UCC activities taking place. As such, it provides a starting point for further explorations of UCC and a baseline for initiating new cooperation activities or strengthening the UCC infrastructure.

The image and the two tables below provide a brief overview of the municipality of Ljubljana and its placement within the wider Ljubljana Urban Region (LUR).



Image 1: Geographic position of Slovenia, Ljubljana Urban Region, and its municipalities (source: RDA LUR 2014)

Table: Ljubljana Urban Region (LUR) Factsheet

CATEGORY	DATA
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SIZE	2,555 km ² 12,6 % of Slovenian territory
ADMINISTRATIVE UNITS	26 municipalities
POPULATION	542,447 inhabitants over a quarter of the total Slovenian population
ECONOMY	LUR generates 36,5 % of the total Slovenian GDP Highest GDP per capita in Slovenia 79,6 % services 19,5 % industry 0,9 % agriculture
EDUCATION	LUR has the highest share of population with post-secondary or higher education (29.1%), which significantly surpasses the Slovenian average (22.4%)

Table: Ljubljana city factsheet

CATEGORY	DATA
SIZE	274.99 km ² (source: GURS) Administratively divided into 17 districts
POPULATION	292,988 inhabitants (source: SURS, 1.1.2019) Population density per km ² : 1,065.4 (source: SURS, 1.1.2019)
ECONOMY	Number of companies: 41,708 (source: SURS, 2017) Number of economically active population: 266,795 (source: SURS, 2017) Number of unemployed December 2018: 12,081 (source: ZRSZ) Average monthly net salary in Ljubljana in 2018: €1,231.47 (source: SURS, 2018)

1.2 Context

In this report, we are focusing on **an analysis of cooperation between the largest university in Slovenia, University of Ljubljana (UL) and Ljubljana's city stakeholders**. The latter refers to the City of Ljubljana (COL) family, relevant regional or government structures and initiatives, which support or are relevant to UCC activities, as well as selected key civil society organisations that play an

important part in identification of urban challenges, research and implementation of cooperation activities.

The municipality of **Ljubljana** is situated within the Ljubljana Urban Region, which overlaps with the Central Slovenian statistical region (NUTS) and is located in the centre of Slovenia. The municipality of Ljubljana is one of the 212 Slovenian municipalities and the largest of the 11 that were granted the status of city municipality. In accordance with the statute, **the City of Ljubljana (COL) governing bodies** include: City Council, Mayor and Supervisory Board. Other COL bodies are the City Election Committee, COL City Administration (7 offices, 10 departments) and Internal Audit Office. Ljubljana is further divided into **17 districts** that are also important authorities in the structure of COL. The **local public sector** (extended COL family) also includes public companies, public institutions and a public fund, all founded or co-founded by COL, or in which COL is a partner (see: <https://www.ljubljana.si/en/municipality/one-big-city-family/>).

University of Ljubljana is a public institution whose legal founder is the Republic of Slovenia, but it has a special status among public institutions, since the Slovenian Constitution and the Higher Education Act stipulate that public universities are autonomous in organizational and academic terms when carrying out their mission. However, this concept is not precisely defined in legislation, so that in practice their autonomy is limited in several ways, for example by placing academic staff within the civil service system.

Table : University of Ljubljana factsheet (Source : [University of Ljubljana](https://www.ljubljana.si/en/university/factsheet/))

CATEGORY	DATA
MEMBERS	26 full members (23 Faculties, 3 Academies) 3 associated members (National University Library, University of Ljubljana Central Technical Library, Institute for Innovation and Development of University of Ljubljana)
NUMBER OF STAFF	6.093 30% of all registered researchers in Slovenia
NUMBER OF STUDENTS	37.874 (Slovenian) 2.389 (foreign)
PROJECTS	458 European projects 168 research programmes 48 applied projects 168 basic projects 660 projects with the industry/users of knowledge

University of Ljubljana does not have a single dedicated university campus within the city – instead, the individual members are scattered around the city, while one of the faculties (Faculty of Maritime Studies and Transport) is located at the coastal town of Portorož.

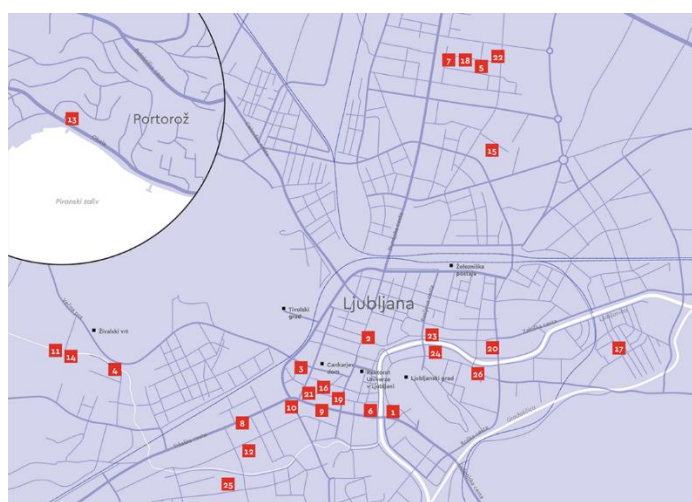


Image: University of Ljubljana full members and their location (source: [University in Numbers](#))

1.3 Stakeholders

All of the above-mentioned organisations and their individual organisational units have the potential to play a role in the UCC infrastructure. The majority of the city administration units, as well as public institutions and companies have in some way cooperated with individual UL Faculties or researchers.

The table below provides a list of key stakeholder groups in the university-city cooperation (UCC) in Ljubljana and briefly describes their role.

Table: Key stakeholder groups in Ljubljana University-City Cooperation

STAKEHOLDER GROUP	STAKEHOLDER	ROLE
<i>STUDENTS</i>	University of Ljubljana students	<p>Participating in research projects, commissioned by COL</p> <p>Carrying out their own (degree) research projects, focusing on city challenges</p> <p>Participating in various activities, such as: training programmes, skill development, study practice programme at different city stakeholder organisations</p>
<i>ACADEMICS</i>	University of Ljubljana academics (teaching staff, researchers)	<p>Initiating cooperation with COL in research projects, or other joint activities (events, symposia, science communication)</p> <p>Providing expertise through own participation in research projects</p> <p>Inviting COL experts to participate in study programme activities (invited guest lectures,</p>

		<p>study visits to COL and its extended family members)</p> <p>Engaging students in study practice activities, student research projects</p>
<i>HEI MANAGEMENT and ADMINISTRATION</i>	<p>University of Ljubljana management (UL HQ)</p> <p>Individual Faculty or Academy management (26 organisational units: Faculty Deans, Heads of Departments within individual Faculties)</p>	<p>Strategic and structural support to cooperation between University (Faculty/Academia) and external stakeholders</p> <p>Administrative support (application procedures in calls for research funding, public tenders, project administration and reporting)</p>
<i>CITY GOVERNMENT</i>	<p>City of Ljubljana (COL)</p> <p>Mayor</p> <p>Council</p> <p>City Administration</p>	<p>Strategic, financial, and structural support to cooperation with UL</p> <p>Managing legal relations with UL (property, spatial acts ...)</p> <p>Public calls and tenders (research projects, cultural activities ...)</p> <p>Identification of needs, and initiation of cooperation with UL researchers and students</p> <p>Owns, has funded, or co-funded key public institutions, which (can) cooperate with UL in research or other UCC activities</p>
<i>PUBLIC COMPANIES AND INSTITUTIONS</i>	<p>Public utilities companies (waste management, water and sanitation, energy etc.)</p> <p>Public institutions (spatial policies, sports, youth centres, educational institutions)</p>	<p>Users of knowledge, generated at UL</p> <p>Providers of data and knowledge for academic research</p> <p>Potential employers of UL graduates</p> <p>Participating in R&D projects</p>
<i>REGIONAL ORGANISATIONS</i>	<p>Regional Development Agency of the Ljubljana Urban Region (RRA LUR)</p>	<p>Encouraging connecting and developing partnership networks among various stakeholders whose activities bolster the region's sustainable development</p> <p>Initiating research & innovation activities in the larger urban region</p>

<i>GOVERNMENT OF SLOVENIA</i>	Government of Slovenia, its ministries (especially Ministry of Education, Science and Sports), and individual bodies (e.g. The Public Scholarship, Development, Disability and Maintenance Fund of the Republic of Slovenia)	Policy support to UCC Financial support to UCC (research funding, project funding)
<i>NATIONAL ORGANISATIONS</i>	Relevant research and development organisations on national level, such as the Urban Planning Institute of the Republic of Slovenia	Participating in research Knowledge transfer Bridging between university, other research organisations, and local stakeholders, incl. city authorities
<i>CIVIL SOCIETY ORGANISATIONS</i>	Various NGOs, active in the field of urban challenges (e.g. IPoP - Institute for Spatial Policies, which is also the national URBACT point; Focus Association for Sustainable Development)	Identification of relevant city challenges Bridging between research & applied practice Bridging between academia and city Participation in R&D projects, cooperation with UL and COL Potential employers of UL students

2. SYSTEM

This section describes the resources utilised to undertake UCC activities and the regional innovation system in which university-city cooperation takes place. Within this analysis, we first look into the series of **inputs**, which enable specific the implementation of a diverse set of university-city **activities**, which are described in continuation. The **outputs** of these activities are the immediate results and have the potential to result in a set of longer-term **impacts** for the students, academics, university, city, region or nation.

2.1 Inputs

University of Ljubljana (UL)

UL does not have a dedicated office for UCC, however, there are a number of units and offices, dedicated to knowledge transfer, some of which are also featured on the [UL website](#). These organisational units **promote and support different types of cooperation with a number of external stakeholders** (companies, government, local government, civil society organisations etc.). In many of the UCC activities, however, the key resource for initiating and sustaining cooperation are UL academic staff (individual teachers and researchers), who engage city stakeholders as guest lecturers, participants at events, or seek support for promoting their own or students' research projects and findings.

Knowledge Transfer Office (identification of potential innovations, advising on patentability, advising on strategy of legal protection of intellectual property, providing legal assistance in drafting R&D contracts etc.)

Ljubljana University Incubator (promotion of entrepreneurship among students and academic workers, comprehensive support to start-ups)

IRI UL – Institute for Innovation and Development of UL (promotes the creation, transfer, dissemination and use of knowledge, facilitates integration of the innovation triangle: research-education-innovation).

Social Entrepreneurship Centre at UL (develops research, education, consulting and other support activities in social entrepreneurship, connects researchers, educators and students from different areas with the economy and non-governmental sector)

UL Career Centres (functioning at all 26 UL members, offering a wide array of activities, various events, to connect with potential employers and to gain additional skills to enhance employability of UL students)

UL Centre for Extracurricular Activities (regulating, approving and publishing calls for extracurricular student activities within UL in the fields of sports, culture and arts, volunteering, social activities, health and environmental protection, as well as in research, science and projects that are not among the mandatory components of the curriculum. Students can apply ECTS credits points obtained from extracurricular activity to a limit of 5 % of the external electives in the study program.)

City Of Ljubljana (COL)

Like UL, COL does not have a specific office or position dedicated to initiating and sustaining UCC activities. However, a number of COL units, individual offices and departments, cooperate with the University of Ljubljana.

- Research needs are identified within individual units and published through public calls and tenders, to which UL members and researchers can apply.
- COL also awards 74 scholarships per year for talented students residing in Ljubljana.
- COL has founded, co-founded, is the majority or co-owner of a number of organizations, which function (or have the potential to function) as intermediaries in UCC and UBC (see next subsection).

- COL units cooperate with individual researchers, Faculties, or Departments of UL on a more informal level, in the form of providing research topics, research data, etc. for UL researchers, or on the basis of which students conduct research and produce thematically relevant theses (urban governance).

Within COL, organisational units/offices that are particularly (but not exclusively, as there is a number of other units that regularly cooperate with UL in different activities) relevant for UCC are the following:

Office for Development Projects and Investments – tasked, among other issues, to lead, organise and co-ordinate work on COL's development projects, to prepare professional bases and to co-ordinate work in the field of planning and executing MOL's development in connection with the Ljubljana Urban Region Regional Development Agency. This Office publishes an annual call for co-financing scientific or professional publications and scientific or professional symposia, dealing with the issue of environment and life in Ljubljana, its development, history and other topics relevant to the promotion of Ljubljana. Publications can include scientific monographs, book publications of research assignments and projects co-financed by MOL, as well as thematic issues of scientific periodicals that address MOL issues or translations, which may be important in transferring experiences of other cities to Ljubljana's development. In 2018, COL has co-funded 10 such publications (12.000,00 EUR) and 7 symposiums (7.000,00 EUR).

Department of Urban Planning – the Head of the Department of Urban Planning (Mitja Gajšek) is one of the founders of the Ljubljana Forum, an annual gathering that combines knowledge and experience of city governance and defines key areas, visions and strategies of the future development of cities. It functions as a platform of various stakeholders that are important for bringing about prosperity of cities.

Research, development, and innovation organisations

There are several organisations that were co-founded by UL, COL or other city stakeholders, or they are their active members. These organisations have the capacity to and also in practice support UCC or UBC, although UCC is not their exclusive purpose.

RRA LUR - Regional Development Agency of the Ljubljana Urban Region (RRA LUR) is a public institute, founded by COL. It unites 26 municipalities and communities, in which it supports sustainably oriented business, infrastructural, social, cultural and creative activities. At the same time, it encourages connecting and developing partnership networks among various stakeholders whose activities bolster the region's sustainable development. UL is a member of RRA LUR's programme committee.

Technology Park Ljubljana - the largest innovation ecosystem for commercialization of knowledge and technology in SE Europe. In order to develop Ljubljana and the wider region into an innovative capital, TP LJ together with the founders of the company, majority owner of which is the COL, strive to be a catalyst for cooperation between the private sector (entrepreneurs, start-ups, scale-ups, SMEs, multinationals), the research and education sectors (universities, faculties, institutes) and government sectors (local, regional, state and EU levels).

SIS EGIZ - Slovenian Innovation Hub (SIH) acts as the European Economic Interest Grouping, connecting academic excellence and creative minds for innovative ideas in business, science and Slovenian society. UL and COL are among founding members.

Government funding

Government funding is of crucial relevance for many of the R&D projects, pilot projects, regional development projects that are related to city challenges and connect UL and city stakeholders into partnerships.

Two funding schemes stand out in particular as opportunities for UCC cooperation with the involvement of students. Both schemes are education programmes of the Government of Slovenia, co-funded by the Slovenian Ministry of Education, Science and Sports and the European Social Fund.

PKP scheme - The Creative Path to Knowledge (Po kreativni poti do znanja – PKP) supports integration of HEIs with industry, other organisations, and the local and regional environment. The current programme (2016-2020) value is 10.625.000,00 EUR and aims to involve at least 2700 undergraduate and graduate students and 1400 non-academic experts. The programme co-finances projects that are carried out in groups of 4 to 8 students under the mentorship of the pedagogical and industry/non-academic mentors, and encourages the exchange of knowledge, experience and good practices. The projects can last from 3 to 5 months, in which the students use their knowledge and skills to tackle the challenges of the industry, gaining new knowledge and competences. While the leading external partner needs to be a private entity, the second (optional) external partner may be a civil society organisation or public institution.

ŠIPK scheme - Student Innovation Projects for Social Benefit (ŠIPK) is a program that links HEIs with non-economic organizations (associations, institutes ...). The programme value is 3.914.131,50 EUR (2018-2020). The projects involve students, higher education teachers and experts from the local environment. They thus develop good practices and innovative forms of learning to develop competencies and practical experience. ŠIPK enables co-financing of projects that are carried out in groups of 6 to 10 students led by a pedagogical mentor and expert associate from the local environment. Projects can last from 3 to 5 months. Within selected projects, students explore various creative and innovative solutions to the challenges of the non-economic and non-profit sector.

Funding of basic and applied research programmes and projects (ARRS – Research Agency of the Republic of Slovenia) - While the majority of the projects financed through ARRS are basic research projects, there is a smaller number of applied projects, in which external partner organisations participate as research partners and stakeholders and may involve public institutions, NGOs, or public companies, as long as they have an officially registered research and development team/group (COL itself does not have a registered research group, but many institutions founded or co-founded by COL do, as do a number of public institutes and NGOs).

Corporate scholarships – RRA LUR (regional development agency) offers co-funding for corporate scholarships in the Ljubljana urban region, partially financed by the European Social Fund. The purpose of the corporate scholarships is to link employers and students; long-term human resources planning enables businesses to become actively involved with education and development of future employees thus contributing to the long-term development of the company. The scholarship recipient is usually required to continue and complete education and to commence employment with this employer after graduation for a certain time – usually for the same number of years as was the duration of scholarship. However, corporate scholarships may only be offered by private companies and individual employers, while public institutions are not part of this scheme, with the exception of public health institutions.

Funding for Researchers at the Beginning of their Career – Funded by the Slovenian Ministry of Higher Education, Science, and Sport, partially financed by the EU (ERDF), the purpose of which is to establish

a link between the research and entrepreneurial environment, where the connecting link will be the researcher at the beginning of his/her career. The call for proposals is published biannually and open to partnerships between an individual researcher, a research organisation, and an industry/business partner. It is meant a lever for greater cohesion and cooperation between research organizations and the economy and, as a consequence, to encourage increased private sector investment in research, development and innovation. The topics of the research activities are relevant to the issues of sustainability and should focus on: 1. Smart cities and communities, 2. Smart buildings and a timber chain home, 3. Networks for transition to a circular economy, 4. Sustainable food production, 5. Sustainable tourism, 6. Factories of the future, 7. Health – Medicine, 8. Mobility, 9. Development of materials as end products.

In addition, *UL Career Centres* have received funding (2015-2020) in the value of max. 2.842.248,66 EUR from Government of Slovenia (20%) and European Social Fund (80%) to support their development. Although COL experts and civil society organisations' practitioners do participate in these programmes, the vast majority of activities is dedicated to promoting employability in the private sector (businesses and industry), since public institutions (like COL) are generally not seen as a large employer.

2.2 Activities

This section describes the key UCC activities undertaken to bring the intended outcomes. Due to the diversity in type, content, extent etc. of UCC activities, in which UL and city stakeholders are involved, this list is not exhaustive. The activities are listed in subchapters, based on their primary field of engagement between UCC stakeholders: education, research, professional mobility, valorisation, and management.

Education

PKP and ŠIPK projects – Students from different study programs explore different solutions to the challenges of the industry and the local and social environment with the help of pedagogical mentors and working mentors (professionals from companies and organizations) with innovative and interdisciplinary approach. The main purpose of the projects is that the students gain the opportunity to participate in projects with companies (PKP projects), cooperate with the public and non-profit sector at the local level (ŠIPK projects), thus developing professional competences and acquiring practical knowledge and valuable experience.

Guest lectures – There are numerous examples of guest lectures both by experts and practitioners from COL and the extended COL family at UL and vice versa, where practitioners and academics participate at events, symposia and conferences, or at individual courses at UL members, or through UL Career Centres. However, these are usually organised on a personal basis and are not systematically regulated or tracked. The intensity of UCC cooperation in this field also depends on the nature of individual study programmes – e.g. cooperation is stronger in study fields that are closely related to city management and urban challenges. Also, individual Faculties or their departments establish ongoing relations with particular city stakeholder, e.g. Faculty of Sports UL with the Department of Sports COL or Javni zavod Šport Ljubljana (public institution founded by COL).

Extracurricular Activities at UL – even though the extracurricular activities at UL are mainly dedicated to sport, arts, culture, volunteering etc., students nevertheless also have the opportunity to participate in

research, science and other projects that are not among the mandatory components of the curriculum, these are activities that are regulated/accredited by the UL's Centre for Extracurricular Activities. Students can also apply ECTS credits points obtained from extracurricular activity to a limit of 5 % of the external electives in the study program.

Extracurricular Course offered by IRI UL: Real-Life Learning Lab – 120 hrs course, based on experiential and problem-based learning and teaching approach where interdisciplinary groups of students solve real-life problems and challenges of Slovene industry and society in general. Development and implementation of research and development projects and real-life case studies that are practically oriented involving relevant needs of industry and society. Students work is supervised and led by pedagogical staff (pedagogical mentors) from different faculties of the University of Ljubljana and professionals from external partner organisations (working mentors).

Lifelong Learning Programmes – workshops, seminars, trainings, conferences, courses and other forms of learning programmes are offered by UL members for diverse target groups. The content of the programmes is related to the thematic fields, offered at each individual Faculty, where some of the programmes have higher relevance and potentially more interest for the city government and urban challenges. For instance, UL Faculty of Administration runs the Consulting and Training Centre ([SIC](#)), where they offer training programmes, counselling, seminars and organise events related to administration (Slovenian Administration Events). The details of these programmes are in discretion of individual UL members and are not systematically analysed across UL. In 2018, there were 15.500 attendees at these programmes ([University in Numbers 2017](#)).

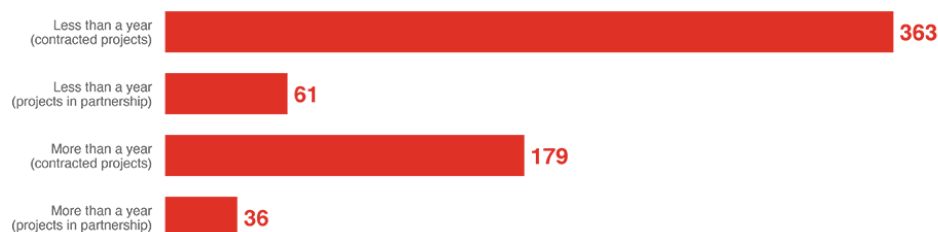
Student mobility: Student internships/work practice – student internships are part of the formal curriculum and function as temporary work placements in companies, public institutions, other research organisations etc. The duration and extent of these placements are defined specifically for each study programme. UL members or their departments have a designated Work practice coordinator. Some Faculties offer a selection of external organisations, with which they already have a signed agreement, while the students may also find work placements of their own choice. The students carry out internships at a number of city stakeholder organisations, including city administration, public companies, and other public institutions, depending on their relevance for their particular field of study.

Research

R&D projects are the most frequent and well-developed form of UCC cooperation in University of Ljubljana's case study. In a 2018 UL publication, analysing University outputs for the year 2017, it is stated that “connections of science with the economic and non-economic sector are supported on all levels which are being developed at the University of Ljubljana scientifically, and research and expert-wise” ([University in Numbers 2017](#)). This is namely achieved through development-research and expertise-filled work, employment of graduates, through encouragement of entrepreneurship, counselling and participation of experts from practical fields in educational and research work, with lifelong learning programmes, training and perfecting programmes and courses.

As an example of the extent of UBC/UCC cooperation at UL, the data for 2017 shows that there were **639 projects** conducted, connecting UL and the economy (which means external stakeholders in a wider sense, economic and non-economic, thus including city stakeholders – public organisations, NGOs etc.). These exceeded 8 million euros in annual value. In addition, **99 Creative Path to Knowledge (PKP)** projects were implemented, while **694 experts from economic and non-economic**

sectors participated in UBC/UCC activities in 2017. The table below is an analysis of the type and duration of projects in cooperation with the economic sector.



Projects with economic sector in 2017 ([University in Numbers 2017](#))

UCC cooperation in research and R&D projects is therefore widely practiced across UL, however, it is not individually and systematically tracked and analysed, i.e. is featured within and is part of the wider “cooperation with the economic and non-economic sectors”. Below we list the five key routes through which UL and city stakeholders (COL, other COL-(co-)founded institutions, regional and national development and innovation organisations, businesses and industry, NGOs, civil society organisations etc.) cooperate in research projects.

Research and applied projects funded by the Slovenian Research Agency (ARRS) - as an independent public funding organisation, ARRS performs tasks relating to the National Research and Development Programme and creation of the European Research Area. While the majority of the projects financed through ARRS are basic research projects, there is a smaller number of applied projects, in which external partner organisations participate as research partners and stakeholders and may involve public institutions, NGOs, or public companies, as long as they have an officially registered research and development team/group (COL itself does not have a registered research group, but many institutions founded or co-founded by COL do, as do a number of public institutes and NGOs).

Regional Development Agency activities – RRA LUR was founded by COL. UL is a member of its council and its initiatives have been included in the work programme. However, projects are funded through the government development programme and need to be approved by the responsible ministry. UL participates in individual projects of RRA LUR, depending on the topic of research (urban development and sustainability).

COL public calls and tenders – when a research need is identified at a certain COL unit/department and approved by COL, a public call is issued to which UL members or individual researchers may apply. However, as COL budget is restricted, the capacity for ongoing research is somewhat limited. There are a number of examples of this kind of contractual research, which feeds into COL strategic documents. As an example:

- Office for Youth of the City of Ljubljana cooperated with the Faculty of Social Sciences researchers and students, who carried out research work related to the issues key to COL Strategy for Youth 2016-2025, publishing also a booklet of their research findings. In addition, the Office commissioned a research on Long-term monitoring of the implementation of the COL Strategy for Youth 2016-2025, which was carried out by Faculty of Social Sciences researcher.

In specific fields, most relevant to city administration and management, COL regularly cooperates with HEI in the form of providing research topics, or challenges, on the basis of which a number of BA and master theses are completed.

- An example is COL's Municipal Police Department's cooperation with the Faculty of Criminal Justice and Security (member of University of Maribor, but located in Ljubljana) – based on the suggestion of COL, one of the MA theses focused on an analysis of the role of the local communities in ensuring road safety, in the example of Ljubljana.

International research projects (H2020 etc.) – public companies, institutes, NGOs and UL members can participate as partners in international R&D consortia. UL is very active in international R&D and educational programmes, and creates almost half of the research results of Slovenia. In 2017, UL altogether cooperated in 444 EU projects, among them in 70 Horizon 2020 projects.

Informal cooperation in research – External city stakeholders often participate in UL researchers' projects on a less formal, non-contractual basis. COL, for instance, provides publicly accessible data, or participates in/contributes to organising project activities (providing facilities for events, attending project events as speakers etc.). This kind of cooperation is generally initiated by the researchers themselves. Additionally, COL and other public institutions often participate in supporting PhD researchers, or MA student researchers as stakeholders, providing access to data and research participants. The extent and frequency of this kind of cooperation is higher at certain Departments or Faculties within UL, which work on topics that are closely related to city challenges, urban infrastructure, urban planning, or other issues related to city management, e.g. Faculty of Architecture, Faculty of Social Work, Faculty of Civil and Geodetic Engineering etc.).

Professional mobility

Mobility between sectors is not systemically regulated. Individual researchers move to different city administration posts, but keep their connection with the university, as this is enabled by the system (with a reduced number of working hours at the UL member, for instance). A prominent example is Prof Dr Janez Koželj, who is a Full Professor at the UL's Faculty of Architecture and is also one of the four Deputy Mayors of Ljubljana. As the first urban planner in the current mayor's first mandate, he outlined a vision for the long-term development of Ljubljana by 2025, on the basis of which the Municipal Spatial Plan of the City of Ljubljana was adopted.

Valorisation

Commercialisation of research findings - UL's Knowledge Transfer Office is responsible for identification of potential innovations, advising on patentability, advising on strategy of legal protection of intellectual property, providing legal assistance in drafting R&D contracts etc. – however, this is primarily intended for private sector, as they have the capacity to invest in or buy R&D outcomes.

Entrepreneurship - UL employees and graduates may establish private companies, while legislation does not allow UL itself to do the same. Researchers, students, and graduates are supported in entrepreneurial ventures by the city's ecosystem for development of entrepreneurship, which includes several key organisations. On UL level, these are the Slovenian Innovation Hub, UL Career Centres, Institute for Innovation and Development (IRI UL) and Ljubljana University Incubator. In addition, Technology Park, [ABC Accelerator](#) and the ABC Hub are supporting the creation of the ecosystem in Slovenia, by offering diverse programmes and premises to innovative start-ups.

Management

Property management – UL and COL interact and cooperate on a regular basis in the field of property management. COL office for property management is in regular contact with UL and is committed to contributing to alleviating UL's spatial problems (see e.g. [Implementation Plan for The Sustainable Urban Strategy of COL 2014-2020](#)).

Management/advisory boards – UL employees are members of management or advisory boards in a number of organisations that are part of the UCC system or have an integrative, intermediary role as UCC catalysts, such as RRA LUR.

2.3 Outputs

This section provides a systematised overview of the products, services or other properties that are delivered as a direct result of the UCC activities, while a number of these outputs have already been mentioned and described above. We look at outputs on individual, as well as organisational levels.

Academics' and student outputs

New relationships – cooperation between University and city stakeholders on an individual level results in the formation of new relationships, which – once successfully established – are then often sustained through continuing cooperation in new joint activities. For example, UL researchers that have successfully carried out research projects, initiated or funded by COL, often continue their relationship with the concrete COL office. One example is the above described cooperation between a Faculty of Social Sciences researcher (and students), who carried out research work related to the issues key to COL Youth Strategy 2016-2025, which then expanded to their participation in the long-term monitoring of the strategy implementation. Another example is the cooperation between IRI UL and COL's Energy manager's office, which was initiated by IRI UL's participation in energy audits of COL-owned public buildings, and later continued with a joint Horizon 2020 project application.

New knowledge and experience – UCC is the catalyst for producing increments to new knowledge and experience. Research projects, initiated by or implemented in partnership with city stakeholders do not only provide results in terms of inputs to development initiatives, city policies or strategies, but also influence the formation of new theoretical and methodological outputs of academics and students – these eventually feed into academic publications, student theses etc. Other UCC activities, such as programmes offered by UL Career centres in cooperation with external experts, directly contribute to new, practical, knowledge. UCC also creates new knowledge for city stakeholders (as individuals), e.g. in the form of Lifelong Learning Programmes, delivered by UL - in 2018, for instance, there were 15.500 attendees at these programmes ([University in Numbers 2017](#)).

HEIs outputs

Student projects – A prominent (although not the only) example of UCC and UBC student projects outputs are the above described PKP and ŠIPK projects - in 2018, UL implemented 80 PKP projects with a total value of 1,445,609 euros, including 126 companies and organizations, and 579 students. UL also carried out 52 ŠIPK projects totalling € 769,124.00, and involving 60 organizations and 468 students.

Other examples include outputs of research projects, initiated by COL and resulting in a line of studies or student theses (BA, MSc/MA, PhD) on specific topics, relevant both to the research initiator (e.g. a specific COL office) and the research partner (a specific UL member – faculty or department). For example, the Faculty of Architecture at the University of Ljubljana annually produces about 700 study projects. As a rule, they are all placed in a concrete space and deal with specific spatial problems, with a significant share of projects place within the City of Ljubljana, and are strongly involved in current issues of spatial development and related social issues, often with the support of COL (e.g. as data providers, challenge identifiers, or supporting with events – for instance, COL hosted the Faculty’s exhibition [Place Ljubljana!](#) in 2018).

Scientific publications – A large number of cooperation activities between University and city stakeholders result in scientific publications. In particular, this is an essential and required element in research projects, co-funded through the Slovenian research agency (ARRS) or European research and innovation funds (e.g. Horizon 2020).

Municipality

Policy or policy content adapted to the findings of targeted research – individual UL members and UL researchers are often part of research teams that provide inputs to COL policies in specific areas of city management. An example is the Transport policy of the City of Ljubljana, including the [Comprehensive Transport Strategy](#), which builds upon it, and is a strategic document emphasising measures for the promotion of sustainable mobility in Ljubljana, and to which the Faculty of Civil and Geodetic Engineering has actively contributed.

Development of action plans and strategies – research commissioned/funded/initiated by COL and conducted by UL researchers and also students, results in concrete inputs to COL’s strategies and action plans. One such example is the above-mentioned COL Strategy for Youth 2016-2025.

Innovative solutions for local problems – through R&D projects, cooperation between UL researchers and various city stakeholders provided a number of innovative solutions for specific local challenges.

2.4 Impacts

This chapter focuses on the social, economic, civic and/or regional changes that occurred a result of the UCC activities for individuals, organisations and societies. The overview looks at individual impacts, organisational impacts, and community impacts of UCC activities.

Level	Impact	Description
<i>Individual</i>	Academic impacts	Improve future job prospects of students, improve reputation, unlocks personal potential, exposes gaps in knowledge, increases scientific productivity.
	Student impacts	Provides additional motivation, increases practical skills knowledge and experience, increases employability employment opportunities,

		development of soft skills and leadership fundamentals.
<i>Organisational</i>	HEIs	Improve the relevance of research conducted within the HEI, transfer of knowledge and technology to society. Increase in relevance of education and research at a local/regional level, enhanced engagement with societal actors.
	Governance impacts	Accessing new discoveries, accessing problem-solving capabilities, , development of better informed decision-making process, optimization of resources and investment, better policy creation that reflects non-governmental groups.
<i>Community</i>	Industry, science, society, business	Creates jobs and stimulates economic growth, increases living standards, productivity and social cohesion, addresses global challenges, organizes discussion in public forums, increase in technical capacity, improvement of triple helix collaboration.

3. FACTORS

3.1 Supporting mechanisms

This section provides an overview of policy, strategic, and structural mechanisms, which support UCC and the UCC activities implemented in cooperation between UL and external city stakeholders. There is no strategic or policy document focusing solely on UCC, however, cooperation between university and city stakeholders (COL, regional organisations, public research and development organisations etc.) is recognised as important and is specifically mentioned in a number of documents.

Policy

Vision of Ljubljana 2025 – formed in 2007 by COL, the vision highlights the spatial and social values that the city has since been following. The document specifically mentions that “The development of Ljubljana University will follow the model of the university within the city. Meetings between students and their professors of various profiles will improve the standards of studies and the academic dynamic of the capital.”

The Regional Development Programme of the Ljubljana Urban Region 2014–2020 (RRA LUR) - Regional Economic Competitiveness Growth is among the three development priorities that have been formulated. Innovation, Creativity and Knowledge for a Competitive Economy is one of its programmes, with the task of strengthening the scientific-development entrepreneurial centres, the

purpose of which is the promotion of cooperation between science and the economy on the level of the new product and services development process and efficient transfer of knowledge and scientific findings into the economy.

Strategic

Resolution on Slovenia's Research and Innovation Strategy 2011-2020 – deals with setting up and managing the Slovenian innovation ecosystem, quality of public sector research, and transfer of knowledge.

Sustainable Urban Strategy of COL 2014–2020 and the Implementation Plan for The Sustainable Urban Strategy of COL 2014-2020 (COL) – specifically mentions that the City of Ljubljana is “aware of its responsibility as the most important urban centre in the country, and at the same time, its competences and capacities. As an important centre of innovation and economic excellence it also wants to promote economic currents in the region, the country and beyond. Such activities are possible only in close cooperation with the University of Ljubljana.”

University of Ljubljana Strategy 2012–2020 (UL) – states in introduction that “The UL cooperates with organizations from economy and service in public and private sector, with state organizations, local communities, and civil society. With this cooperation [it] accelerates the use of own research and educational achievements and contributes to the social development. With active responses to events in the environment represents the critical conscience of the society.” The “Use of knowledge - third dimension of the university” is listed as the third strategic priority in the UL strategy.

STRUCTURAL

Structural elements, which support UCC system and activities being implemented, in particular include the existing **UL offices and centres, dedicated to cooperation with external stakeholders**: this includes the UL Knowledge Transfer Office, Ljubljana University Incubator, Institute for Innovation and Development, UL Career Centres etc. (see the System chapter, Input section for further details). The role of these bodies is crucial for the development and sustaining the existing cooperation activities. However, UCC is in these cases integrated within the wider framework of cooperation with external partners, labelled as “the economy and society”. To a large extent, this includes cooperation between University and industry or businesses and is therefore not exclusively oriented towards city stakeholders (although a number of businesses could also be considered as city stakeholders). Nevertheless, the existence of these offices provides a structural framework for initiating and developing UCC activities.

In addition, an important role in Ljubljana’s UCC framework are the **research and development organisations**, which function as a catalyst and intermediary between the academic world (UL) and city stakeholders (such as COL). A number of them have either been founded or co-founded by COL and UL, or both of them are their members, along with a number of other key actors in the UCC network (COL-owned public enterprises, industry and business representatives, as well as NGOs). Among these organisations are the Regional Development Agency (RRA LUR), the Technology Park, and the Slovenian Innovation Hub (see the System chapter, Input section for a more detailed description of their role and activities).

3.2 Barriers and drivers

In this section, we look at the temporary conditions that affect the UCC process. These are those factors that can have a positive or negative influence on the UCC in Ljubljana, but could be modified in the short or medium term. The chapter includes an overview of key barriers, drivers, as well as motivators that are currently the engine of UCC system in Ljubljana.

Barriers

Some of the barriers inhibiting the activities include:

- UCC is not systemically placed at either university or city levels: there is no strategic or policy document that would provide an operational plan for developing UCC.
- There is no single contact point for initiating UCC cooperation activities, neither at UL, nor at COL (or its extended family).
- Lack of funding at UL level for UCC system and UCC activities specifically (generally undifferentiated within the wider UBC umbrella).
- There is a number of UCC being implemented, but they are not specifically recorded at the UL level – i.e. are not systematically tracked, analysed, and in turn further developed or strategically supported (as above, they are “hidden” within the wider field of University’s “cooperation with economy and society”).
- Cooperation with external partners is teaching & learning is often perceived as extra work by the academic staff.
- Insufficient Government support and funding.

Facilitators

The main facilitators driving the activities include:

- Existence of mutual commitment as expressed through e.g. cooperation in R&D institutions, such as RRA LUR or Slovenian Innovation Hub and their key documents e.g. Regional Development Programme of the Ljubljana Urban Region (RRA LUR).
- Existence of funding for certain cooperation activities, albeit limited (as in the case of ŠIPK and PKP students’ projects) or insecure (e.g. regional development projects).
- UL and COL cooperate regularly on managerial levels in some domains, e.g. in the spatial development area, where UL’s Investments Office is in continuous contact with COL, which has to provide building permits etc.
- Existence of a number of units within UL that support cooperation with external partners/stakeholders, among them also IRI UL as an independent institute and an intermediary organisation, engaging university researchers into R&D needs of the industry and society, developing and managing interdisciplinary projects.
- Interest of the University in knowledge transfer and cooperation with external partners – the folder “Cooperation with Economy and Society” features prominently on the UL website.

Motivators

The primary motivation for university-city cooperation include:

- To obtain funding – in a number of cases, research, R&D projects or pilots that are commissioned by external stakeholders (e.g. COL) are an opportunity for extra funding.
- To improve the reputation of the university.
- To use the university's research - the "Use of knowledge - third dimension of the university" is listed as the third strategic priority in the UL Strategy 2012-2020 (see above – Strategic factors).
- Cooperation with city stakeholders improves the university's teaching (the learning experience and skills of students) and graduate employability – e.g. through programmes such as PKP and ŠIPK, students gain the experience of working on projects in multi-disciplinary teams and with external stakeholders; programmes offered by career centres provide business-, industry-, and society-relevant knowledge and allow students to come in contact with potential employers already during their studies.
- The COL cooperates with UL to produce more accurate, relevant, sustainable policies (access to knowledge and research results).

3.3 Challenges

The key challenges for initiating, sustaining, and overall supporting and developing university-city cooperation in Ljubljana, are the following:

- Funding is often limited in duration (e.g. ŠIPK, PKP), or dependent on availability of national funding and success of funding applications.
- COL has limited resources in general, including human resources, but most importantly, there is a lack of sufficient funding for frequent, larger scale cooperation with UL in research or other UCC activities. As a rule of thumb, COL can identify the need for a larger-scale and long-term research project and suggest its implementation, but the decisive factor is approval on national level or through national development funding.
- UL is a relatively large university, with 26 members that are scattered around the city and function with a relatively high level of autonomy, hence the dispersion of interests, motivation, and priorities, as well as very practical challenges of spatial distance.

3.4 Key success factors

The key factors that contribute to the successful implementation of UCC activities are the following:

- UL is the largest Slovenian HEI and an important agent in the urban development network, engaging in numerous city activities.
- Personal engagement of individual staff and researchers at UL and at COL.
- A wide network of public R&D institutions and a strong network of NGOs in which UL and its researchers are also active, that can bridge between UL and city administration and leadership as identifiers of challenges, initiators of cooperation, and active participants in research and development projects.
- Availability of funding and co-funding by the EU institutions (European Social Fund, R&I funds such as Horizon 2020 etc.).

- UL headquarters is located in the vicinity of COL, while several other UL members are also in proximity.
- Ljubljana is a relatively small capital and access to information or contacts are easy to obtain and are often on a personal level, due to proximity, existing long-term cooperation and personal relationships between individuals, who are active in the specific fields of urban challenges, city management, and development.



Universitat Autònoma de Barcelona STATUS QUO REPORT

Barcelona – Spain

1.CONTEXT

1.1 Background

The alignment of the **Universitat Autònoma De Barcelona (UAB) activities with the local and the regional urban development and innovation agendas has followed a roadmap initiated a decade ago**. The transformation of the UAB from a traditional university to being the core of an innovation ecosystem comes from the awarding of the Campus of International Excellence to UAB by the Spanish ministry of Science back in 2009. The project implied, for the first time, to strengthen the collaboration among all the research and innovation stakeholders of the campus, the economic and social agents, and the local governments. That meant the first step of a future association of the stakeholders and an excellent starting point to create a future common strategy that paved the path for the UAB future activities within de S3 programme.

The breaking point to transform the UAB from a transactional university, based in the traditional roles of teaching and research, to a transformational one, aimed to make purposive interventions on behalf of the regional growth, was the **implementation of the European Smart Specialisation Strategy in Catalonia, 2013**. By taking part in it, the Catalan Universities developed, for the first time, a strategic vision of the region and its key sectors and stakeholders in order to develop a complete regional strategy programme.

In October 2013 the UAB developed its own S3 strategy plan, following the Catalan S3 proposal³ and incorporating the capacities of the members of the UAB Sphere to be transformed in value to the society. The analysis to determine which research capacities of the UAB Sphere aggregation are aligned with the Catalan prioritized economic sectors produced four main areas: Food, Sustainable Energy, Health (E-Health and Mental Health, specifically) and Industry based on Experience (Cultural Tourism through Cultural Heritage, and Design). A wide range of biotechnology applications, as well as on nanotechnology, ICT and materials application were identified as a Key Enabling Technologies in which the UAB Sphere had a leading potential.

10 different instruments of the Catalan S3 plan were identified as action axes in which the UAB Sphere plays and will play a relevant role. Support to emerging clusters, shared innovation infrastructures, the valorisation of the research results and the collaborative research at national and international level, the promotion of entrepreneurship among researchers and students, talent attraction, the consolidation of the collaboration with the territory agents and the creation of a new strategic partnership between stakeholders around a given economic and social challenge.

The distinctive contribution of UAB within the R3 development of our region is the alignment of all the members of the UAB Sphere, **UAB is in a unique position to engage in dialogue with the other two parts of the quadruple helix, the regional and local government**, the economic sector and the citizenship, with shared and clear objectives on sustainable and smart growth. This dialogue, guided by

³ <http://catalunya2020.gencat.cat/ca/ris3cat>

the general philosophy of the Smart Specialisation Strategy of the EC, and the more specific programme of the Catalan government, was a completely innovative initiative in a country with no previous experience of developing a common strategy on research, innovation and economic development.

1.2 Context

HEI The Universitat Autònoma de Barcelona ⁴ is a non-profit higher education and research institution acting at home and abroad, founded in 1968 that counts with 25.600 bachelor students and 3.800 research and teaching staff. Among its principal activities are 85 bachelor's degree courses, 130 official master's degrees, 79 PhD programs, and 771 continuing education programs. In addition, it has 4.600 ph. students and 802 thesis read in 2017; 5.786 publications, and is the 1st University in Spain in patent applications to the EPO. In research, outstanding **position among Spanish universities in world rankings** such as the QS World University Rankings (QS WUR), the Times Higher Education World University Rankings (THE WUR) and the Academic Ranking of World Universities (ARWU)⁵

CITY The UAB considers as its urban area the county of Valles Occidental⁶, which has a huge industrial tradition and still a great economic importance in the Catalan region, as it represents the 11% of the Catalan GDP and the **3% of the Spanish GDP**. Nowadays, the Valles Occidental economy shows an intense and fast transformation from industry to services economy. Its excellent geographic location in the metropolitan area of Barcelona, the growth of the population (around 917.000 inhabitants) and good level of training, the importance of small and medium-sized businesses (26.793 registered companies in 2018), deeply rooted in the territory, an entrepreneurial tradition and remarkable business dynamism makes the Valles Occidental one of the economic motors of the country.

The **UAB Sphere** ⁷, launched in 2009 is a research Network that comprises **the 58 UAB departments, 6 research Institutes, 2 technological parks, 1 Synchrotron facility, 34 research institutes and centers, and 5 university hospitals** affiliated to the Universitat Autònoma de Barcelona. The UAB Sphere is a partnership in which the university has taken on a central role and has stimulated the search for synergies, the optimization of resources and, in short, the exploration for new frameworks of collaboration in research and knowledge transfer. UAB Sphere's aim is to create a veritable ecosystem of knowledge by consolidating the role of this research network as an economic and social motor within Catalonia.

The **HUBB30** was launched in 2018 as an **open innovation network and initiative of territorial competitiveness**. B30 highway covers a route of 50km, between Vallès Occidental and Vallès Oriental, a surface area of 485km², a population of 1,018,166, a total of 30,173 companies and 387,478 jobs with 195 industrial estates. **The Hub** ⁸ is a **community of companies, R&D&I institutions, administrations and citizens, an ecosystem of co-ideation and co-creation**, a space of

⁴ <https://www.uab.cat/>

⁵ <https://www.uab.cat/web/about-the-uab/the-uab/the-uab-in-the-rankings-1345667138662.html>

⁶ <http://www.ccvoc.cat/>

⁷ <https://www.uab.cat/web/about-the-uab/uab-cie-sphere/uab-cie-sphere-surroundings-1345667138446.html>

⁸ <http://hubb30.cat/en>

confluence between challenges and innovative answers, an **environment that facilitates innovation** through the joint offer of services, resources and experts. Universitat Autònoma de Barcelona, the Association B30, the UAB Research Park and the Technological Park EURECAT founded it. The Consell Comarcal of Vallès Occidental, The Polytechnical University of Catalonia, EsadeCreapolis, ACCIO, Sant Cugat Guild Association, and the Alba Synchrotron had adhered the agreement.

1.3 Stakeholders

Governmental organisations

- Regional Government – Economic Department of Generalitat de Catalunya, in charge of FEDER and Innovation Programmes ⁹. The Department of the Regional Government in charge of Economy and Innovation.
- ACCIO (the Economic Agency of the Government of Catalonia) ¹⁰. The regional agency for the competitiveness of the Catalan companies. Acts as a **boundary spanner** between companies and university and companies of the region.
- Municipalities: Sabadell, Sant Cugat, Sant Quirze del Vallès, Cerdanyola del Vallès, Castellar del Vallès, Barberà del Vallès, Rubí (see link in footnote núm 9).
- Supra-municipalities local government: Consell Comarcal del Vallès Occidental ¹¹ has a role to coordinate policies and provide services for the citizens of the county. Diputació de Barcelona ¹² promotes the progress of the province, giving assistance and cooperating with the municipalities of the province of Barcelona.

Public Companies:

- Consorci de Residus del Vallès¹³, provides services to the Valles Occidental municipalities for waste management.
- Promoció Econòmica de Sabadell ¹⁴, promotes the employment and entrepreneurship in Sabadell.

Research Centres and Technological Parks:

- Alba Synchrotron ¹⁵, large scientific facility
- Barcelona Synchrotron Park ¹⁶, incubator and accelerator park

⁹ <http://economia.gencat.cat/ca/inici/>

¹⁰ <http://www.accio.gencat.cat/ca/inici/>

¹¹ <http://www.ccvoc.cat/>

¹² <https://www.diba.cat/>

¹³ <http://www.residusvalles.cat/>

¹⁴ <http://www.vaporllonch.net/>

¹⁵ <https://www.cells.es/en>

¹⁶ <https://www.barcelonasynchrotronpark.com/>

- UAB Research Park (PRUAB) ¹⁷ promotes the knowledge transfer of the UAB and acts as a **boundary spanner** between UAB research groups and companies.
- EURECAT ¹⁸ applied Research and Development, technological consultancy
- LEITAT¹⁹ applied Research and Development, technological consultancy
- Technological Park of Vallès²⁰ offers land for new companies
- EsadeCreapolis²¹ , innovation in business management

Civil Society:

- Associació B30 ²²
- Fundació Bosch i Cardellach ²³
- Fundació Autònoma Solidària ²⁴
- Fundació La Caixa²⁵

Companies

- Catalonia Clusters²⁶ (accredited by the regional government). UAB is founding member of the Mental Health Cluster, that acts also as a **boundary spanner** between the university and the different catalan stakeholders in mental health.
- PIMEC (SMEs Catalan Association) ²⁷
- UAB EBTs and Spin-off, located in PRUAB ²⁸

Others

- UAB Students Associations²⁹
- Valles Occidental teaching centers and institutes ³⁰

2. SYSTEM

¹⁷ <https://www.uab.cat/web/parc-de-recerca-1345468452273.html>

¹⁸ <https://eurecat.org/>

¹⁹ <https://www.leitat.org/english/>

²⁰ <https://ptv.es/en/>

²¹ <https://www.esadecreapolis.com/>

²² <https://ambitb30.org/>

²³ <http://www.fbc.cat/ca/>

²⁴ <https://www.uab.cat/web/fundacio-autonoma-solidaria-1345747946886.html>

²⁵ <https://obrasociallacaixa.org/es/>

²⁶ <https://www.clusters.cat/>

²⁷ <https://www.pimec.org/en>

²⁸ <https://www.uab.cat/web/entitats/empreses-1345676360560.html>

²⁹ <https://www.uab.cat/web/viure-el-campus/participacio-estudiantil/eldirectori/>

³⁰ <https://serveiseducatiu.xtec.cat/vallesoccidental1/comunitat/centres-educatiu/>

2.1 Inputs

Inputs that go into creating the university-city system include:

- Highly motivated individuals in the strategic units of the University, committed to the public engagement.
- Good reputation of the UAB within the region.
- Strong aggregation of research centers, universities, technological parks, companies and innovation centers in general in the region.
- High research level in multiple scientific areas and good level in knowledge transfer.
- Great city managers with a strong commitment to the innovation in their municipalities.
- Funding basically by the Structural Programs through the regional government.

2.2 Activities

Resulting from the inputs, a number of activities take place:

Type of cooperation activities

- Discussion forums, participation platforms, in which the relevant stakeholders can debate current challenges and future projects. An example includes: Cultural Heritage Fridays: <http://blogs.uab.cat/corep/category/divendres-del-patrimoni/>
- Annual CORE Congresses on Mental Health, with the presence of the 5 affiliated hospitals: <https://www.uab.cat/web/research/cores-uab/core-in-mental-health/core-mental-health-seminars-1345704393307.html>
- Coffees in Education and Employment: <https://www.uab.cat/doc/AEP>
- Seminars in Urban Innovation: <https://igop.uab.cat/wp-content/uploads/2015/11/Jornada-CORE-2015-IGOP.pdf>
- Digital Humanities Research Platform: <https://www.uab.cat/web/investigat/cores-uab/core-en-patrimoni-cultural/presentacio-1345748761921.html>
- Joint research and or innovation ventures: <https://hubb30.cat/ca>
- Institutional agreements: about 20 collaboration agreements per year with external stakeholders (research centers, municipalities, regional agencies, universities, foundations, associations, clusters, hospitals, technological parks etc). R+D Agreements: 23 million euros in collaborative and applied research and services with companies and other private and public entities.
- Regional/local funded joint projects including:
 - FEDER Un Ecosistema Innovador i Empenedor
 - PECT: Valles Industrial
- Training activities within the UAB Labs on specific needs. Digital and green skills: <https://digital4circular.com/>
- Digital badges on new capabilities for a new curriculum:
 - <http://top.uab.cat/>
- Challenges management, challenges platforms:
 - Online platform for social challenges, open to everybody:

- <https://unicorn.uab.cat/web/universitat-autonoma-de-barcelona/>
- Co-creation processes:
 - Co-creation process to envisage the Uab Open Labs:
 - <https://www.uab.cat/web/investigacio/cores-uab/las-cores-uab/los-uab-open-labs-1345742564637.html>.
- Extent of cooperation activities tends to be regional and local

One of the lessons learnt from the Smart Specialization Strategies program is that innovative organisms should think globally and act locally. UAB is one of the first universities in Spain in getting EU Funding and in scientific international collaboration ³¹. Historically, UAB did not base its strategy on the economic needs of the region (understood from the community point of view of Catalonia), nor from its most immediate territory (the Vallès Occidental), but rather in the criterion of achieving maximum excellence in the Scientific, training and transfer levels at an international level. In fact, on 2008 study of the impact of the transfer of knowledge from the UAB to its immediate productive environment (the territorial area of the B30 freeway), shows that this was rather modest. The report maintained, "the UAB has not been a strategic factor in the economic development of its environment "(Solà, Sàez i Termes, 2008). The year 2009 meant a change in trend. The call for Campus of International Excellence of the Ministry of Science specifically contemplated territorial integration as one of the priority axes of Spanish universities. In fact, the UAB awarded project had as a strong regional dimension, consolidating the aggregation of the research centres present at the UAB Campus with technology parks, companies and local councils, creating a true pole of knowledge and innovation, to act as a motor of socio-economic development. The Campus d'Excel·lència International project meant a major change in the mentality of the governing teams and in the vision of the university as an integral and fundamental part bigger picture. In 2018 the figures of the Research and Development Agreements with external companies show the change:

Agreements ³²	R+D Agreements	%
Agreements with Catalan public and private entities	259	62,71%
Agreements with non Catalan public and private entities	154	37,29%
TOTAL	413	100%

In addition, it is worth to note that practically all the activities mentioned before are local or regional dimensioned.

³¹ <https://www.leidenranking.com/>

³² Unitat de Gestió de Dades – UAB Research Office, october 2019

2.3 Outputs

Some of the outputs resulting from the activities include:

- New spaces for co-working, prototyping and experiment open to the academic community and to the regional network.
- New sources for municipalities, other local government and entities, for discussing, develop and implement solutions to their challenges.
- New prospective for academics to develop and implement their research to solve local problems.

2.4 Impacts

Some of the longer-term impacts resulting from the outputs include:

- Increased presence of the University in local and regional policy making
- Social and global challenges addressed by the University problem-solving oriented strategy
- Better skills for students, therefore better employability
- Better prospective for research entrepreneurs
- Better reputation for the University in terms of social engagement
- Improvement in the dialogue between the quadruple helix agents.

3. FACTORS

3.1 Supporting mechanisms

Policy

- Smart Specialization Strategy of the Catalan Government 2016-2020
- UAB Director Plan 2018-2030
- Strategic Plan of the Research Area 2016-2020

Strategic and structural

- Creation of the Strategic Development Unit, in charge of the relationship with the regional stakeholders, the Strategic Research Networks (CORES) and the UAB Open Labs.
- Creation of the Strategic Projects Unit, in charge of the implementation of the institutional innovation projects, such as CEI, Cofund, Seerri, Euraxess.
- Creation of the UAB OpenLabs Network, composed by the UAB Labs in cooperation with the Labs of the territory via collaborative agreements and joint activities plan.

- Operational
- Courses
- Entrepreneurial activities

3.2 Barriers and drivers

Barriers

Some of the barriers inhibiting the activities include:

- Political instability in the Catalan government and in some municipalities
- Lack of own HEI funding for the innovation staff in the University and their activities.
- Resistance to mindset change in some university groups, not focused in the 3rd mission
- Insufficient work time allocated by the university for academic's UCC activities
- Scarce funding for innovation premises, equipment, and joint projects.
- Huge bureaucracy in terms of project management

Drivers

The main facilitators driving the activities include:

- Social orientation of the university, with an increasing interest in transferring knowledge for the public interest.
- Shared social values between the university and regional and local governments. Mutual commitment and trust.
- Stakeholder's awareness of their role in the system and the need to work together in common challenges/practices.
- After 6 years of S3, increasing common language in the quadruple helix: Between the university, the regional and local governments, the civil society, and the economic sector.

Motivators

The primary motivations for university-city cooperation include:

- To contribute to address societal challenges and positively influence the society, as a part of the University Responsibility of the Catalan Public Universities.
- Use the research outputs in practice and gain new research insights thanks to the closeness to the territory stakeholders.
- Improve the UAB student's employability, through innovative skills training, new types of courses, the new Core on Education and Employability and the role of the UABOpenLabs.

3.3 Challenges

Key challenges to the success of the cooperation include:

- To spread the amount of activities carried out in this area in an efficient way
- To overcome the bureaucratic hurdles to manage different projects and actions.
- To gather relevant data to measure the projects and actions in terms of social impact.

3.4 Key success factors

Factors that are important for the success of the cooperation include:

- Strong aggregation of research and innovation centers
- Catalan tradition of cooperation between institutions
- Openness to European mindsets and policies

School

Institut Mines Telecom Business School STATUS QUO REPORT

Evry Courcouronnes
Paris – France

1. CONTEXT

1.1 Background / story

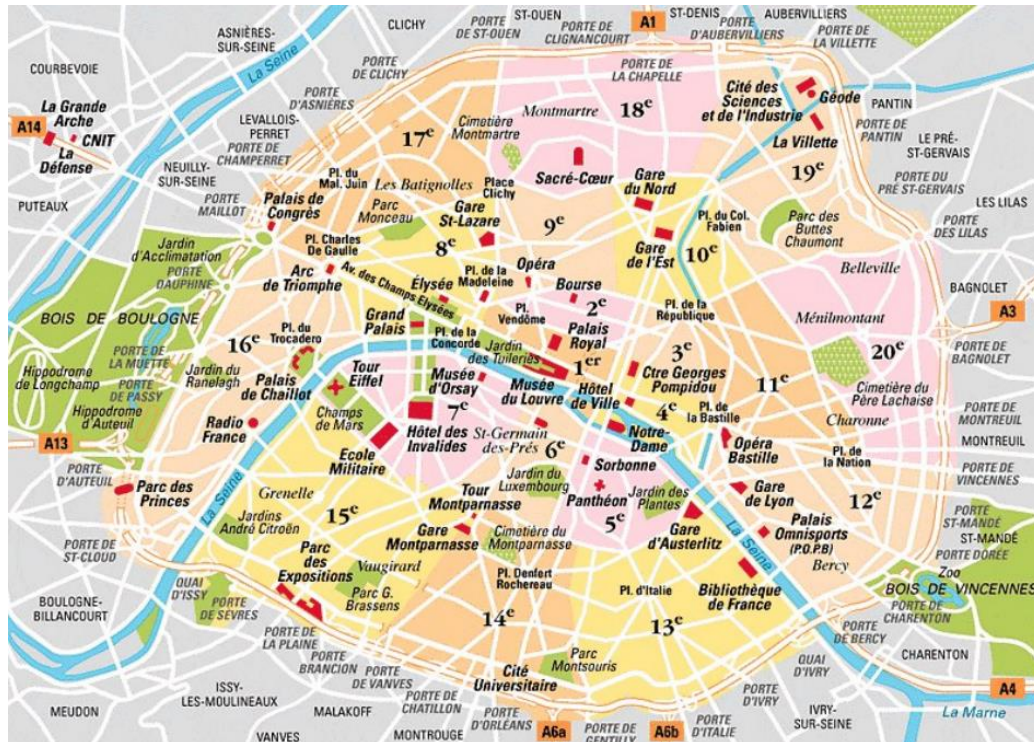
In order to describe the background to Institut Mines-Télécom Business School, this report will present the current state of affairs when it comes to university-city collaboration (UCC) in Paris, France as well as having a specific focus on the Essonne region and City of Evry Courcouronnes. Paris, the capital of France, takes up the central position in the rich agricultural region, namely Paris Basin. It is situated within one of the 18 French regions, namely Île-de-France (also known as Paris Region). The City of Paris claims the area of 2,300 square km and the population of 2,265,886. Together with the rest of the cities, Paris Region is the most densely populated region in France (over 12,000,000 inhabitants). Paris is densely populated and currently 10% of the Paris area is undergoing urban development (Urban Learning, 2019). It is the county's economic, political, cultural, and commercial engine. The economy is predominantly based in the tertiary sector, which accounts for 87% of added value generated in the Paris Region. It is 10 points above the average for other regions (75%), which is largely due to the presence of major company headquarters and the scale of both the financial and business services sectors (Grand Paris, 2019).

France is divided into 18 regions (headed by a regional council); 96 *arrondissements* or departments (headed by a general council and its president) and 36,000 communes (headed by a municipal council and a mayor). The City of Paris has been a commune (municipality) since 1834, as well as an arrondissement since 1790. The City of Paris is further divided into twenty administrative districts, called municipal arrondissements, for the purpose of taxing and policing. The First district is the centre of the city and other districts follow in a spiral, clock-wise fashion. This division dates back to the French Revolution when Paris was divided into 12 arrondissements in 1795 with 8 new arrondissements being added later in 1860. The arrondissements are not all the same size and the populations are quite different. While the 1st arrondissement is home to just 17,000 residents, the 15th has 240,000 people calling the area home. While the biggest in area is the 16th, which measures 7.8 km² (16.3km² including the Bois de Boulogne), and the smallest is the 2nd at just under 1km². Each of the Paris arrondissements has its own town hall and elected council. The councils then, in turn, elect the mayor of the arrondissement. A selection of members from every arrondissement form the Council of Paris, which is led by the mayor of Paris.

With the highest GDP in the European Union (EU28), Paris is the first innovation hub in Europe, claiming the highest R&D spending (€19.8b) and the highest number of people working in R&D. It is recognised on an international level when it comes to science, innovation, and education, and it boasts world-class infrastructure with the most efficient

transport system, number one road network, and second largest European river port. With 23.1% of total jobs in the EU and office space of 53.1 million m², Paris is the 5th wealthiest population in the EU (Paris Region Institute, 2018).

Figure 1. Map of Paris Districts



Source: ParisMap 360

However, Paris is not free from challenges. Pressures from globalisation, demographic change, and technological disruption left its mark on the city. Compared to other peer-city regions, Paris growth is not following the similar upward curve. In a composite economic performance index, Paris ranks fifth compared to its eight global peers (Brookings, 2016).

1.2 Context

Higher Education Landscape

Generally speaking, there are several types of higher education institutions (les enseignements supérieurs) in France. There are universities, grands établissements publics (major public institutions), grandes écoles (elite schools), administrative public institutions, and private higher institutions or schools. There are 20 universities in the Paris region (75 in the entire country). Universities are obliged to accept anyone who passes the French *baccalauréat* examination – some 30% of secondary students. This state of affairs often results in overcrowding, under-funding, and lowering of academic standards. Grandes écoles and écoles supérieures are university colleges specialising in professional training, to which entrance is achieved through a competitive examination (concours). Before being eligible for a

grande école, students must spend two years at a special preparatory school (Classes Préparatoires aux Grandes Écoles/CPGE). Grandes écoles are outside the university system and are controlled by the ministry to which their speciality is linked. The state spends around €40,000 educating a student at a *grande école*, compared with just €12,000 at a university. Only 1% of *grandes écoles* students come from a working class background compared with around 15% in universities. Administrative public institutions prepare students for careers in national public service.

Paris is home to some of the best HEIs in France (See Table 1). As such, these institutions are equipped with some of the best infrastructure, generate diverse funding, boast some of the most innovative and resourceful researchers, and educate some of the brightest minds. Therefore, they have a strong potential to contribute and give back to society.

Table 1. Ranking of French Universities (THE)

France Rank 2020	World Rank 2020	University	City/Town
1	=45	Paris Sciences et Lettres – PSL Research University Paris	Paris
2	=80	Sorbonne University	Paris
3	93	École Polytechnique	Paris
4	130	University of Paris	Paris
5	188	Télécom Paris	Paris
=6	201–250	École Normale Supérieure de Lyon	Lyon
=6	201–250	Paris-Sud University	Paris
8	251–300	École des Ponts ParisTech	Paris

Main Urban Challenges in Paris

When it comes to predominant urban, societal challenges facing Paris and the Paris Grand Region, there are several important issues to underline.

Growing inequality – This pertains to social, economic, cultural, and territorial inequalities. As prices rise (transport, housing, loan repayment, etc.), the overall poverty rate in Île-de-France

reached 15.9% in 2015, up from 12.3% nine years earlier. The poorest areas are seeing a concentration of underqualified workers, often immigrants, with higher rates of unemployment, and a growing number of single-parent households, all of which are contributed to stigmatisation and deteriorating economic conditions (Paris Region Institute, 2019). The poorest areas of Paris have an alarmingly high youth unemployment rate (40%) (Bosetti, 2019), and homelessness is quite high with over 3,000 Parisians not accessing housing (URBACT, 2019).

Growing terrorism threat – The security and safety of citizens has been one of the major concerns of the 21st century in Europe. This is even more present in Paris, which was a target of several terrorist attacks. In addition to tremendous human and psychological tolls inflicted by the acts of terror, there are also major economic and political repercussions associated with terrorism. The retail and hospitality sectors suffered in the aftermath of terrorist events: international hotel arrivals in Île-de-France were 22% lower in December 2015, compared to December 2014. Furthermore, the main risk to security in Paris is the potential loss of social cohesion, which can result in intercultural and inter-religious tensions and clashes (Paris Resilience Strategy, 2018).

Climate change-related threats (e.g. excessive heat and flooding) – The temperatures in Paris are predicted to rise by 2°C to 4°C in the following years. This poses risks and threats from phenomena such as heatwaves, droughts, flooding, thunderstorms, and water scarcity. In just the summer of 2019, heatwaves claimed over 1,500 lives with record temperatures reaching 46°C. The adverse temperatures have led to catastrophic droughts in two thirds of France with 41 arrondissements claiming a serious crisis in water supply systems. On the other side of the climate pendulum, severe floods and overflows of the Seine River posed risks for many citizens in Paris in 2016, with cross-region power outages, halt of public transport, and thousands of people being evacuated from their homes (OECD, 2018).

Air pollution – Next to tobacco and alcohol, air pollution is one of the key health risks for Parisians, as it poses risks to respiratory tract, cardiovascular system, and eyes, as well as exacerbating asthma problems. According to a campaign “Stoppollution”, living in Paris during the peak of pollution is equivalent to breathing the smoke of eight cigarettes a day in a room of 20 square meters (Smedley, 2019). Going beyond individual threats, air pollution creates economic loss as well. Those include increased building maintenance, economic loss linked to absenteeism and productivity loss, and environmental damage that are difficult to reverse, which remains poorly researched and rarely quantified (Paris Resilience Strategy, 2018). The World Health Organisation set forth the safety limit at 20mcg/m³ (standard unit of measurement for "classic" contaminants such as SO₂, oxides of nitrogen, particles, etc.), but in cities such as Paris, the annual average is 38 mcg/m³ (Trnka, 2017). Each year, 70% of Parisians are exposed to poor air quality, causing 6,500 premature deaths and costs up to €1.7 billion (Paris Resilience Strategy, 2018).

1.3 Stakeholders

Universities in Paris

A majority of top-ranked HEIs in France are concentrated in Paris, and as such, these institutions are equipped with some of the best infrastructure, generate diverse funding, boast some of the most innovative and resourceful researchers, and educate some of the brightest minds. Therefore, they have a strong potential to contribute and give back to society. At the same time, through UCC, HEIs are given another path for innovative solutions, more funding, and prestige.

Institut Mines-Telecom (IMT)

IMT is the leading group of French grandes écoles in Information Technology and Management with 8 engineering schools in telecommunications and ICT: IMT Atlantique, Telecom Paristech, Telecom SudParis, IMT Lille-Douai, IMT Mines Ales, IMT Mines Albi, IMT Business School and Mines St Etienne. Each year Institut Mines-Telecom's schools graduate 850 engineers and 150 managers from their combined enrollment of 5,500 students, including more than 700 doctoral candidates and 790 in master's degree programmes. The schools offer 20 different Master of Science programmes taught wholly or partly in English.

The following are some of Institut Mines-Telecom assets that make the group unique in France: 1) Multicultural environment: 38% of Institut Telecom's students are from outside France. There are 60 nationalities represented in the schools; 2) Strong alumni networks that jumpstart careers by providing ready to access career information and facilitating professional contacts; 3) High level quality of research: it is prominent in European research circles (third among French Institutions); 4) Intense support for business creation through four incubators that have spawned more than 260 firms and created 1,000 jobs in nine years; 5) Close and varied relations with enterprises through degree programmes, continuing education, research, and its academic excellence scholarship programme.

Equipped with all of the necessary resources, IMT has been taking a central role in projects related to tackling societal challenges. To take one example, IMT took part in and led 25 Horizon 2020 projects aimed at solving some of the major social problems pertaining to inclusive, innovative, and reflective societies. Focusing on secure, clean, and efficient energy; smart, green, and integrated transport: climate action, environment, resource efficiency, and raw materials; and health, demographic change, and wellbeing.

Council of Paris

The Council of Paris is a body responsible for governing the City of Paris. It possesses the powers of both a Paris Municipal Council (conseil municipal) and those of a General Council (conseil généraux). The council consists of representatives from each arrondissement and is led by the mayor. The General Council discusses and passes laws on matters that concern the

department. It is administratively responsible for departmental employees and land, manages subsidized housing, public transport, and school subsidies, and contributes to public facilities. The Municipal Council manages the smallest French territorial community with legal and financial autonomy, the commune.

The Mayor

The Mayor of Paris is a main figure in the city administration who provides dynamism, vision, and directions for new endeavors. Under the leadership of the current Paris Mayor, Anne Hidalgo (since 2014), the city has encouraged liveliness and nurtured enterprise in the city's overlooked spaces. Hidalgo has been actively encouraging the reinvention of the City of Paris as a thriving centre for civic and social innovation. New spaces for (civic) innovation have been enabled and funded; one notable example is *Station F* – the world's largest start-up incubator (3,000 workplaces) where there is a constant stream of new ideas aiming to strengthen the position of Paris as one of the most resilient and innovative cities worldwide (Bosetti, 2018).

Living labs

Living labs highlight the importance of addressing some prevailing social problems and solving them through a multi-stakeholder approach. In this way, this discourse is setting a fertile ground for forms of UCC to crop up. They are also often one of the partners in projects where the city and HEIs are participating. Living labs in Paris form a vibrant network which helps address a multitude of social problems in a creative, innovative, and participatory manner. In Paris, there are currently over 15 living labs covering the topics of health & wellbeing, smart cities, energy, social inclusion & innovation, government, education, etc. (ENOLL, 2018).

2. SYSTEM

2.1 Inputs

In order to reach satisfactory levels of UCC, certain “ingredients” need to be mixed into the system. In the case of Paris, there are several existing ones that are worth mentioning here.

Firstly, the **vision** is necessary to set the parameters of how UCC will be executed. While there are no specific strategies targeting UCC only, there are other strategies that, along with others or indirectly, envision UCC. In the case of Paris, there are the Paris Resilience Strategy (more details below), Local Urban Plan, Circular Economy Roadmap/Plan, Paris, Smart and Sustainable City, Paris Strategy Against Social Exclusion, and several others. Putting the vision in place via a strategy demonstrates that there is dedication towards the cause. If there is

dedication in paper form, what follows is dedication in the form of **funding**, which would enable the materialisation of the envisioned goals and targets. In 2013, the French nation spent €28.7 billion on higher education, an increase of 1.2% in comparison with 2012 (at constant prices, i.e. adjusted for inflation) (Ministry of Higher Education, Research and Innovation).

Apart from funding, **human resources** are put in place in Paris that have a potential to accelerate UCC. There is a contact person in the city administration responsible for university relations. Furthermore, a new position that emerged after the Paris Resilience Strategy is the Chief Resilience Officer (CRO) who is in charge of pushing forward the action plan of the strategy. Interestingly, the current CRO is a former deputy mayor in charge of university relations and thus has first-hand experience in working with universities.

2.2 Activities

Education

Though at a slow pace, the awareness of civic engagement and societal challenges is growing at some HEIs in Paris. Thus, some of them are trying to embed these in the education of their students.

Some good examples include Sciences Po, which created the “Civic Engagement Program” and made it compulsory for all undergraduate students during their 3-year study programme. The programme offers students an opportunity to learn about citizenship and social responsibility from both conceptual and empirical perspectives by connecting social sciences and humanities coursework with concrete civic actions on the ground. This programme also envisions student **professional mobility** through a Civic Internship programme where students are able to learn through a work opportunity for 4-6 weeks at a public or private non-profit institution. Furthermore, in the second year, students are expected to design a solidarity-based project either at an organisation or within the university (Sciences Po, 2018). Another initiative that sets the terrain for UCC in education is the Civic Media Hub at the American University of Paris. It is a collaborative space of expression on issues connected to participatory politics and participatory culture, civic initiatives, social media and activism, intercultural relations, and democracy. Joining forces with different societal stakeholders, students and faculty create projects to help solve various themed problems in Paris. Furthermore, the Hub takes an active participation in **curriculum development** to embed the idea of solidarity and social responsibility at the HEI (AUP, 2018). Another good example of UCC in education is the summer programme delivered by HEC Paris, which deals with inclusive and social business strategies. The programme is rooted in current economic realities and focuses on issues such as poverty, and works sometimes in collaboration with public authorities in Paris (HEC Paris, 2019).

Generally speaking, there are some good attempts to foster UCC via education, but these initiatives are not very frequent and are limited to only some HEIs or to only some programmes.

More effort and action is needed to make UCC in education more of a mainstream phenomenon in the majority of HEIs.

Research

Compared to education, research appears to be enjoying more active levels of cooperation between universities and the City of Paris. UCC in the Paris Region has been materialised in several forms when it comes to research. More specifically, it is universities and research centres that provide services such as research consulting and joint R&D to the city in order to create innovative urban solutions to the problems present in the given city. Very often, these collaborations are not only limited to university and city authorities, but also incorporate the expertise of other stakeholders, such as NGOs, companies, public institutions, etc. These collaborations are not very frequent, but there are a few good practice cases that can act as a good role model for others to emulate. The following are some of the best practices in research that emerged through UCC.

OASIS - *School yards: Openness, Adaptation, Sensitisation, Innovation and Social ties: Design and transformation of local urban areas adapted to climate change, working jointly with users* – This project tackles the challenge brought on by climate change. In cities as dense as Paris, with limited green spaces (only 5.8m² of green spaces per capita) coupled with increasing temperatures and heatwaves, Paris is in need of designing more “breathing” and green areas and facilities, particularly for the most vulnerable population. In an attempt to procure the solution, the project OASIS has transformed 10 schoolyards into cool islands through innovative techniques, nature based solutions, and an integrated approach. The project is a joint undertaking between the City of Paris, 2 HEIs (ESIEE and LIEPP both of Sciences Po), another educational organisation (LIGUE), an environment public service provider (CAUE de Paris), and a meteorological and climatological institute (Meteo France) (Urban Innovative Actions, 2018). Research duties of ESIEE, for instance, include microclimatic and thermal evaluation as part of the project, using measurements carried out "in situ", before and after the work (ESIEE, 2018). The work of LIEPP would involve a social impact assessment, looking at the social impact of the use of these playgrounds by children and outsiders, as well as their awareness of climate change issues (Sciences Po, 2018).

Another inspiring UCC-based project that leverages research capacities of HEIs is **CoRDEES**: *Co-Responsibility in District Energy Efficiency & Sustainability*. With the rise of the urban population in Paris there is a growing concern over the increase in energy consumption (increase by 30% by 2030). By creating a new energy ecosystem at Clichy Batignolles, a 54 hectare eco-district under construction, and adopting a multi-stakeholder approach, this ambitious project aims to attain its energy efficiency goal of 50 kW/h per square meter and 90 % less of CO₂ emissions. The UCC synergy consists of the City of Paris, the private companies Une autre ville (UAV) and EMBIX, the public/private company Paris Batignolles Amenagement (PBA), and the research centre ARMINES. ARMINES’ contribution, which is the Centre for Energy Efficiency of Systems (CES), is to develop a methodology toolkit for

evaluating the energy performance of new districts. It will propose new performance criteria on energy consumption, local renewable energy production, and greenhouse gas emissions. These criteria will make it possible to compare the Clichy Batignolles district with other French or European eco-neighbourhoods, ensuring the multiplication and replicability of the results (CES, 2017).

2.3 Outputs

The tangible outputs arising from UCC in Paris come in various shapes and forms. On the part of HEIs, this is usually related to developing a new methodology that would help approach a certain social problem from a different and more comprehensive vantage point. To illustrate this with some examples, in the OASIS project mentioned earlier, the output produced by ESIEE involves a **methodology** that aims to analyse soil behaviour as accurately as possible and to strengthen scientific knowledge in this field. Moreover, another HEI partner on the project aims to create a Social Impact Assessment, namely grids of indicators constructed from a set of direct observations and interviews, which will make it possible to grasp the social impact of the use of the playgrounds by children and by outsiders, as well as their awareness of climate change issues. Within the CoRDEES project, ARMINES developed a methodology for evaluating the energy performance of new districts. New and more innovative **infrastructure** is another relevant output emerging from UCC in Paris. With the OASIS project, it is a re-invention of schoolyards so that they have more green spaces. **Digitalisation and modernisation** through various tools is another important outcome of the UCC. For instance, Librete Living lab together with students of the Paris Institute of Political Studies is actively discussing the possibilities of government innovation through hosting a conference series on GovTech. The aim is to modernise public services through co-creation with citizens.

2.4 Impacts

Depending on the type and nature of the partnership between the city and university, the impacts arising from UCC can be quite diverse. They can bring about more **solidarity and social cohesion** by combating inequalities and social exclusion. This is tackled by the project “La Nuit Solidaire” where around 2,000 civil servants and other citizens counted the number of homeless people sleeping without shelter in Paris. To facilitate civic responsibility and foster understanding, the project also envisioned, through education, to address the reality of homelessness, combat stereotypes and preconceived notions, promote projects aligned with municipal priorities, and provide training on homelessness and skills useful when serving the citizens (URBACT, 2019). Further relevant impact pertains to **environment nurturing** and focusing on preventing the damage brought on by climate change. Projects such as OASIS contribute to greener spaces by tearing down asphalt areas and replacing them with trees and grass. This arrangement also provides respite for children during periods of excessive

heatwaves that are predicted to occur in the future. Further impacts certainly pertain to **economic and innovative capacities**. By taking the best from both worlds, some projects were able to come up with rather innovative solutions, which in turn boosted the economic growth. The impact related to **participatory management and governance** models is also an important offshoot of UCC. By mobilising various stakeholders in an attempt to find the best solution, a new form of urban governance emerged where citizens are active co-creators of the spaces they occupy and services they receive. This impact is precisely envisioned by the Paris Resilience Strategy (discussed below).

3. FACTORS

3.1 Supporting mechanisms

Policy and Strategy Mechanisms

Supranational-level policies and initiatives have been put in place to foster the urban development of EU cities through collaborative actions between city authorities, university, and research bodies. In that manner these initiatives are fulfilling more overarching agendas put forth by the EU bodies. One of those initiatives includes **Urban Innovative Action (UIA)** – an initiative of the European Union that provides urban areas throughout Europe with resources to test new and unproven solutions to address urban challenges. This undertaking is funded through the European Regional Development Fund (ERDF). Based on article 8 of ERDF, the initiative has a total ERDF budget of €372 million for 2014-2020. The beneficiaries of the UIA Initiative are urban authorities. However, given the complexity of the urban challenges, they cannot act alone. A multi-stakeholder approach is necessary to solve some complex challenges and these stakeholders include agencies, organisations, private sector, research institutions, [and] NGOs... (UIA, 2017). The initiative provides co-financing (up to 80%) for EU cities with over 50,000 inhabitants.

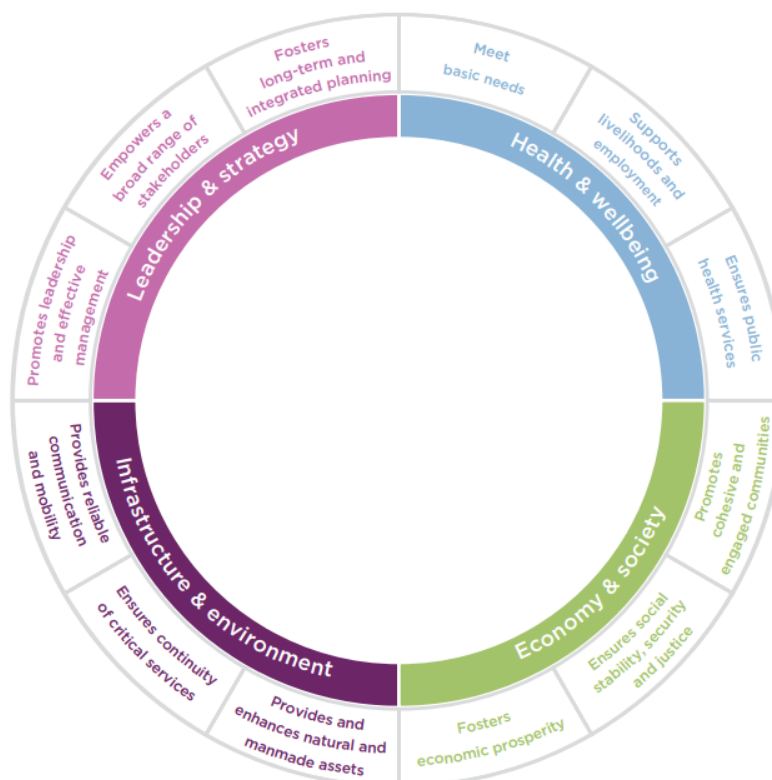
Another similar programme funded also through ERDF is **URBACT**. URBACT seeks to enable cities to work together and develop integrated solutions to common urban challenges by networking, learning from one another's experiences, drawing lessons, and identifying good practices to improve urban policies. URBACT 2014-2020 is the third edition of the programme and its main objectives are policy-related (policy delivery capacity, design, and implementation). Its main methods of achieving such goals are knowledge exchange and network mobilisation. There are three interventions within the programme: transnational exchanges, capacity-building, and capitalisation & dissemination (URBACT, 2017).

Policies on the national level are equally important in driving UCC. In the last few years, the City of Paris has put in place several policy and strategic documents that would help the city

reinvent itself as a greener, smarter, and more sustainable city with inclusive policies that will in the long run contribute to a more equitable and circular economy. Only with a clearly outlined and enunciated vision is it possible to create action plans and concrete steps that would enable Paris to reach these goals. Furthermore, these goals cannot be achieved without the active collaboration between cities, HEIs, and research centres in Paris, among others. In this frame of thinking the following policy and strategy documents have been imperative in the Paris urban and civic context, as well as providing a springboard for UCC.

Driven by the motto “buffeted but not sunk”, the **Paris Resilience Strategy** is a major plan to create a resilient Paris. The strategy was approved by the Council in September 2017, and is drafted and embedded in *100 Resilient Cities*, a non-profit network started by the Rockefeller Foundation. Using the Resilience Framework, the strategy plans to tackle the issues related to climate change, air pollution, inequality, terrorism threats, river-related threats, and governance in an attempt to reinvent Paris and empower its citizens. The aim is that in the long run, Paris can become more inclusive, integrated, reflective, resourceful, and flexible. One of the key phenomena pointed out in the strategy is the multi-stakeholder governance model, stating “governance, which is our ability to organise ourselves collectively with all stakeholders and to create new partnerships, particularly beyond the municipality, is key to the resilience of Paris.” (Hidalgo, 2017).

Figure 2. Urban Resilience Framework



This is an obvious sign that there is a clear commitment to include, among others, HEIs in the process of urban development and challenge resolution. The Strategy outlines 3 Pillars of Action where Pillar 1 is related to mobilising joint efforts to create an inclusive and cohesive city. The strategy further elaborates that the “the approach must be inclusive because resilience only works if everyone participates: public institutions, private stakeholders, associations, inhabitants, researchers, and other city users.” (Paris Resilience Strategy 2017).

Further strategy documents published by the City of Paris also envision an active participation of HEIs. One of them is the White Paper on the circular economy of Greater Paris that proposes 65 initiatives. As part of the pillar “innovate and experiment”, the strategy plans to engage with researchers and scientists to discover new knowledge and methods. One of the action plans within the pillar has planned to create a specific academic research chair who would have long-term funding and would operate based on strong partnerships with companies, universities, engineering and business schools, and existing research institutions (White Paper on the circular economy of Greater Paris, 2017).

Structural and Operational Mechanisms

Concrete steps that would foster UCC and that come out of the Paris Resilience Strategy are: 8 **workshops** including 800 stakeholders, some of whom are HEI representatives, in order to foster knowledge exchange and join forces in solving the prevailing urban challenges. Further operational aspects of UCC include the recruitment of PhD students by the City of Paris to create specific tools and generate knowledge on certain unexplored urban phenomena. For instance, the Paris Resilience Strategy, as part of Pillar 2’s action line, envisages the recruitment of PhD students to carry out a 3D mapping of the city’s underground, including sewers, as well as to develop and acquire new measurement tools in this area (Paris Resilience Strategy, 2017).

A **research, training, and resource centre** is an infrastructural mechanism envisioned through the Paris Resilience Strategy, which will be committed to developing research programmes around this strategy and urban resilience, supporting the design of dedicated training courses, and developing MOOCs (online training open to all) on resilience-related issues. It will support the creation of specialised Master courses and training courses for staff members of local authorities, as well as private sector and not-for-profit organisations. These courses will be delivered as part of the Paris arrondissements’ (district) Initiative and Consultation Committees and prepared in collaboration with the local municipalities (Paris Resilience Strategy, 2017).

3.2 Barriers and drivers

Drivers

Following the desk research findings and interviews with Paris stakeholders, there are some emerging drivers that help facilitate UCC. One of the common ones highlighted includes the **existence of funding**. HEIs in Paris are always finding new ways to generate more revenue. One driver that stimulates HEIs to reach out and collaborate with the city is that they can allocate funds through these projects. This driver was also identified among the top 5 drivers of university-business cooperation in France (Davey et al., 2018). Furthermore, HEIs in Paris, as well as elsewhere, are trying to find different avenues of increasing their own visibility and **improving their reputation** in the network shared amongst other HEIs. Collaborations with the city in solving pressing issues is definitely a way for HEIs to better establish themselves on the HEI map. **Access to new opportunities** is another driver pointed out by some of the respondents. HEIs, being innovation engines, are constantly on the lookout for new and fresh ideas to improve their research or education, or make any other significant discoveries. Collaborations with cities to tackle social challenges is certainly a rich well of opportunities and ideas that HEIs can tap into in order to create benefits for different aspects of their HEI. Further drivers can be encapsulated as **joint missions**, or as one respondent emphasized, “we are stronger together”. Indeed, as outlined in previous chapters, the complexity and gravity of many societal challenges demand for various pockets of knowledge coming from different stakeholders to be united in order to come up with a viable solution.

Barriers

There is a multitude of barriers that preclude UCC from becoming more all-encompassing in Paris. It is still quite a novel approach and it will probably take more time and effort for it to become more omnipresent and mainstream. Analysing the literature and interviews, some of the dominant barriers to UCC have emerged. Being a novel idea, UCC is identified by some stakeholders that it **is not particularly a priority** for either of the two parties. Both, HEIs and the City of Paris, have their entrenched ways of going about their work and traditionally, this entails different ways of operating that do not put UCC in the focus or make it a necessity. As one of the respondents claim, “it is nice to have”. Another barrier, accentuated by Paris respondents, is the **competition between HEIs**. A large number of HEIs in Paris results in the situation that not all of them can be acknowledged by city authorities, and it is usually the most prestigious ones that garner the most attention. This is connected to another barrier, namely **lack of time and resources** to engage in UCC on both sides. Both, the city and HEIs, are burdened with various other activities and demands, leaving scarce resources to engage one with another. Even though there is a contact person assigned to the city to deal with universities, some respondents still claim that they **do not have the knowledge or “strategic contacts”** that would enable them to reach out for the purposes of forging a partnership. This signals the

need to make the contact person more visible and modalities of partnerships more open and transparent for all HEI parties.

3.3 Challenges

While there are several success stories of UCC in Paris, this phenomenon of city-university dialogue is still in its budding phase and it will take time to become more entrenched. While there are strategies and plans put in place that clearly call for a multi-stakeholder approach to solving burning urban challenges, there is a need for a more fine-tuned strategy that would clearly tackle the matter of UCC, create the clear framework of cooperation, and outline action paths with dedicated funding streams.

Infrastructure and knowledge on how to engage with the City of Paris is lacking at universities. To foster more fruitful, better organized, and systematic partnerships between a city and university, it is necessary to provide dedicated space to build that partnership within the university. For instance, an example to emulate is the Office of Civic and Community Engagement (CCE) at the University of Miami, which fosters university-community collaboration by engaging the university's academic resources in the enrichment of civic and community life in the local, national, and global communities (University of Miami, 2019).

APPENDIX: Catalogue of university–city cooperation

Specific information for report

The study focuses on the interaction defined as UCC (University-City Cooperation). Please note that, due to the complex structure of public administration, this type of exchange can also be referred to as University-Region or University-Government.

Section	Question	Definition	Elements	Sub-elements	Detail
STAKEHOLDERS	Which are the main stakeholder groups involved in this case? Which roles each of the stakeholder groups have?	Stakeholders involved in the case and briefly described their roles (focusing on the most important ones and their responsibilities)			<ul style="list-style-type: none">• Students• Academics• HEI managers• City or regional government• National or international government• Local community / interest groups• Businesses

Section	Question	Definition	Elements	Sub-elements	Detail
INPUT	Which are the resources put into the system?	Resources utilised to undertake UCC activities	Human	<ul style="list-style-type: none"> Students as conduits of knowledge and skill Researchers as providers of scientific knowledge Researcher quality and quantity Lecturers as knowledge providers Students as facilitators of community engagement sessions City managers as leaders Civil society as identifier of relevant issues 	
			Financial	<ul style="list-style-type: none"> Funding by government, business or HEIs 	
			Physical	<ul style="list-style-type: none"> Material, equipment, facilities (etc.) 	
ACTIVITIES	Which are the activities taking place?	UCC actions undertaken to bring about the intended outcomes	Education	<ul style="list-style-type: none"> Joint curriculum design and delivery 	Cooperation in curriculum development and <i>delivery</i> including student projects in cooperation with public bodies, development of a fixed programme of courses modules majors or minors, definition and organisation of new study programmes, planned experiences in public office for students, professional courses on a fee-basis to respond to the particular skill and training needs of city government, guest lectures by city representatives, training of postgraduates and internships at public office e.g., joint supervision of PhDs, temporary exchange of personnel, training of employees provided by the university, curriculum-integrated work placement program , curriculum evaluation, further professional education, training of employees, adoption of sustainability principles within the curriculum, creation of new learning environment including challenge labs.
				<ul style="list-style-type: none"> Student mobility 	Mobility of students including temporary or permanent movement of students from HEIs to

Section	Question	Definition	Elements	Sub-elements	Detail
					local authorities, internships or apprenticeships as part of formal education , co-operative student work placements in the public sector, temporary movement of decision makers to HEIs in a student role, doctoral studies hosted inside collaborative labs, hiring of students through the academics contact and work placement in doctoral research.
				<ul style="list-style-type: none"> Lifelong learning 	Lifelong learning including the provision of adult education, university academics delivery formation courses for municipalities, non-academic ‘in-residence’ professionals from local communities, continuing education, collaborative doctoral education, and professors of practice.
			Research	<ul style="list-style-type: none"> Joint research 	<i>Collaboration in research</i> between universities and public bodies documented as contract research, R&D consulting, research joint ventures, cooperative research projects , joint publications, research grants and donations, informal information exchange and co-financing a PhD student and industrial PhD.
				<ul style="list-style-type: none"> Professional mobility 	<i>Professional / academic mobility</i> between universities and public bodies documented as temporary movement of teaching staff or researchers from HEIs to governance, sabbatical periods for professors, professional secondments, adjunct professorships for professional from public office within the university, employees managers and researchers from municipalities to HEIs.

Section	Question	Definition	Elements	Sub-elements	Detail
			Valorisation	<ul style="list-style-type: none"> Commercialisation of research findings 	<i>Commercialisation of research</i> findings including disclosures of inventions, patenting, sales and licenses.
				<ul style="list-style-type: none"> Entrepreneurship 	Entrepreneurship including creation of new ventures (spin-outs) by researchers based upon their research, creation of new ventures (spin-outs) by researchers not based upon their research, creation of new ventures by students and co-creation of firms by academia and with support by city.
			Management	<ul style="list-style-type: none"> <i>Governance</i> 	Academics involved in firm decision-making or sitting on the boards of public bodies, city leaders involved in HEI decision-making or sitting on the boards of universities, city's leaders involved in university decision-making involved at a faculty management level, hierarchic structures and models of governance, policy communities, advisory roles and regional leadership.
				<ul style="list-style-type: none"> Development framework 	HEIs to be consulted in local and regional development strategies, engagement of researchers in the definition of key issues and issue problem solving and resolution. Student community to act as stakeholder in planning matters.
				<ul style="list-style-type: none"> Shared services 	Association contract, university-city research consortia, university-city cooperative research institutes / centres, specialist research centres, shared human resources, innovation/incubation centres, creation of electronic networks and equipment and resource sharing.

Section	Question	Definition	Elements	Sub-elements	Detail
				<ul style="list-style-type: none"> Sponsorship 	General sponsorship, course sponsorship sponsored or adjunct professorships / sponsor a university chair in an area of interest, informal exchange forums and workshops, scholarships and postgraduate linkages.
OUTPUTS	Which are the concrete outputs derived from the case?	Direct products, services or other properties that are delivered as a direct result of the activity	Individual	<ul style="list-style-type: none"> Academics and student outputs 	New relationships, knowledge / experience, increments to knowledge, access to in-kind resources,
			Organisational	<ul style="list-style-type: none"> HEIs and governance outputs 	Student projects, scientific publications, lines of PhD research, new mechanisms for public administration.
				<ul style="list-style-type: none"> Municipalities 	Policies or policy content adapted to the findings of targeted research, development of action plans and strategy, innovative solutions for local problems.
IMPACTS	Which are the changes that occurred a result of the activity for individuals, organisations and societies?	Social, economic, civic and/or regional consequences or changes resulting, intended or unintended.	Individual	<ul style="list-style-type: none"> Academic impacts 	Improve future job prospects of students, improve reputation, unlocks personal potential, exposes gaps in knowledge, increases scientific productivity.
				<ul style="list-style-type: none"> Student impacts 	Provides additional motivation, increases practical skills knowledge and experience, increases employability employment opportunities, development of soft skills and leadership fundamentals.
			Organisational	<ul style="list-style-type: none"> HEIs 	Improve the relevance of research conducted within the HEI, transfer of knowledge and technology to society. Increase in relevance of education and research at a local/regional level, enhanced engagement with societal actors.

Section	Question	Definition	Elements	Sub-elements	Detail
				<ul style="list-style-type: none"> Governance impacts 	Accessing new discoveries, accessing problem-solving capabilities, , development of better informed decision-making process, optimization of resources and investment, better policy creation that reflects non-governmental groups.
			Community	<ul style="list-style-type: none"> Industry, science, society, business 	Creates jobs and stimulates economic growth, increases living standards, productivity and social cohesion, addresses global challenges, organizes discussion in public forums, increase in technical capacity, improvement of triple helix collaboration.
SUPPORTING MECHANISMS	What are the mechanisms supporting the activity?	Interventions in the form of policies, strategies, structural and operational mechanisms that support the case	Policy	<ul style="list-style-type: none"> Economic and financial mechanisms Regulatory mechanisms Other policy mechanisms 	Regional innovation policies, Infrastructure funding available to support UCC development, Policies positively supporting research collaboration between university and public bodies , Public seed capital supporting UCC initiatives, IP rights legislation for academic research discovery ,, Laws / rules / hiring policies positively supporting labour mobility between university and governance, Funding by government bodies subject to strengthen the HEI's service to the public good, national strategy to include the promotion of cooperation and partnerships to contribute to UN Sustainable Development Goals.
			Strategic	<ul style="list-style-type: none"> Documented strategic mechanisms Implementation strategic mechanisms 	A top-level management committed to UCC (Urbact), A documented mission / vision embracing UCC, A strategy supporting UCC, A coordinated communication approach for UCC, The dedication of resources (incl. funding) to support UCC, The practice of recruiting policy experts into the knowledge transfer area, The

Section	Question	Definition	Elements	Sub-elements	Detail
					measurement of UCC performance and outputs, The provision of incentives for academics to engage in UCC, The inclusion of ‘cooperation with city’ as part of the assessment of work performance for academics, The reduction of teaching time for undertaking collaboration with public bodies, Recognition of academics for their UCC activities (e.g. awards), Government experience considered in the recruitment of academics, the practice of recruiting professionals of public roles into the careers / alumni office, public commitment to the joint development of specific solutions via commonly agreed agenda.
			Structural	<ul style="list-style-type: none"> • People-based structural mechanisms • Office / centre-based structural mechanisms • Programme-based structural mechanisms 	Board member or vice rector positions for UCC (e.g. knowledge-transfer, third-mission, valorisation, commercialisation, partnering etc.), Alumni networks, Career office(s), Agencies dedicated to UCC (e.g. technology transfer office, innovation office), Challenge Labs, Joint research institutes, Adjunct positions available within the university for representatives of public bodies, lifelong learning programmes involving governance people. Creation of a municipality position dedicated to UCC relations, creation of a common organization with split funding to facilitate dialogue.
			Operational	<ul style="list-style-type: none"> • Communication and exchange mechanisms • Linking and support mechanisms 	Creation of informal mixed working groups to tackle specific topics, information sessions and forums about UCC, , Networking sessions or meetings for academics to interact with people from public bodies, The featuring of UCC prominently on the university’s website, UCC

Section	Question	Definition	Elements	Sub-elements	Detail
				<ul style="list-style-type: none"> • Training and seminar mechanisms 	activities facilitating student interaction with municipalities (e.g. student projects), Academic networks dedicated to UCC , student networks or associations dedicated to UCC , individual collaboration between researchers and city departments, mechanisms for universal participation in decision-making process.
BARRIERS AND DRIVERS	Which are the temporary conditions that affect the process?	Factors that can have a positive or negative influence on the case and can be modified in the short/medium term	Barriers	<ul style="list-style-type: none"> • Initiation and awareness barrier • Funding barriers • Organisational culture • Organisational characteristics 	HEIs prioritize research and teaching, Governance bodies lack awareness of university research activities / offerings, Universities lack awareness of opportunities arising from UCC, Priority given by HEIs to their position within the national and international context, Lack of city funding for UCC, Lack of university funding for UCC, Lack of government funding for UCC, Difficulty in finding the appropriate collaboration partner, Bureaucracy related to UCC, s, HEIs perception of innovative teaching / research methods as non-consistent and a threat to academic standards, Differing motivation / values between university and government, Differing mode of communication and language between university and government, Differing objectives, drivers, approach to problems and timing, , Insufficient work time allocated by the university for academics' UCC activities, UCC conflicts with my teaching and research responsibilities, Frequent staff turnovers within my university, My lack of knowledge / experience in UCC, resistance to change by HEIs and public bodies, Limitations to establish

Section	Question	Definition	Elements	Sub-elements	Detail
					indicators and evaluation methods for HEI's third mission progress, Municipalities are more risk averse than HEIs. Growth of HEIs can cause a detachment from their geographic origin, or the HEI overwhelming small localities. Multiplicity of HEIs in small areas can hinder strategic negotiation. Lack of understanding of HEI's structure and management by authorities. Potential modification of HEI monetization structure.
			Facilitators	<ul style="list-style-type: none"> • Orientation of the involved stakeholder • Relationship factors • Access to funding 	Social orientation of the university, Scientific orientation of the municipality, Short geographical distance between the two organisations, Existence of mutual trust, Existence of mutual commitment, Existence of a shared goal, Existence of funding to undertake the cooperation, Existing relationship between HEI and city department, Interest of governance in accessing scientific knowledge, Interest of the university in transferring knowledge for public interest. Commitment by HEI to accept knowledge transfer.
			Motivators	<ul style="list-style-type: none"> • Funding motivations • Educational benefits • University reputation • Societal benefits 	To obtain funding / financial resources, to improve the reputation of the university, to use the university's research in practice, to improve the university's teaching (i.e. the learning experience and skills of students), to improve graduate employability. To contribute to the mission of the

Section	Question	Definition	Elements	Sub-elements	Detail
				<ul style="list-style-type: none"> Research outcomes 	university, to address societal challenges and issues, to positively impact society, to gain new insights for research, to improve the HEIs competitive position by increasing their value to the region, to produce more accurate, relevant, sustainable policy, to effectively tackle the increased complexity of public policy issues.
CONTEXT	Which is the fixed environment that affect the process?	Individual, organisational or community characteristics, that have a significant positive or negative influence on the case	Individual	<ul style="list-style-type: none"> Gender Age Fields of knowledge Academics' experience in external cooperation Academics' experience working in government Representative of municipalities' experience in the HEI 	
			Organisational	<ul style="list-style-type: none"> Type of HEI Size of the HEI 	
			Environmental	<ul style="list-style-type: none"> Political Economic Social Technological Legal Environmental 	

Project definitions

<i>Project unit of measurement</i>	Student-city engagement through student project-based learning
<i>Student</i>	<p>Students include all undergraduate, postgraduate students as defined here: http://www.worldstudent.com/uk/mag/features/tablo-diplom.html with most European programmes recognising doctoral students as post-graduate level students.</p> <p>Undergraduate refers to someone who is studying for, but has yet to receive, their first post-secondary education degree e.g typically this degree is some equivalent of Bachelor and includes an honours programme.</p> <p>Once completed, the student is then termed a graduate.</p> <p>A postgraduate student refers to someone who has already obtained a first degree, and is now pursuing a second, third or degree beyond it including a master, MBA or PhD level qualification.</p> <p>A postdoctoral researcher is generally not considered as a student.</p>
<i>City</i>	Relates to a local, city or regional government agency or authority, rather than a state, national or international governmental agency or organisation
<i>Project-based learning</i>	<p>In Project Based Learning (PBL), students go through an extended process of inquiry in response to a complex question, problem, or challenge. Rigorous projects help students learn key academic content and practice 21st Century Skills (such as collaboration, communication, critical thinking, and creativity).</p> <p>PBL involves³³:</p> <ol style="list-style-type: none"> 1. Identification of a problem 2. Exploring pre-existing knowledge, 3. Generating hypotheses and possible mechanisms, 4. Identification of learning issues, 5. Self-study, 6. Re-evaluation and application of knowledge to a problem, 7. Assess and reflect on learning

³³ https://read.oecd-ilibrary.org/education/promoting-skills-for-innovation-in-higher-education_5k3tsj67l226-en#page15