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NATIONAL TECHNICAL UNIVERSITY OF ATHENS

INNOMED-UP

Output 3.1

INNOMED-UP Strategic Context Report

NATIONAL TECHNICAL UNIVERSITY OF ATHENS

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INNOMED-UP

Promoting UPcycling in Circular Economy through INNovation and education for creative industries in MEDiterranean cities

Work Package (WP3): INNOMED-UP model
Output 3.1: INNOMED-UP Strategic Context Report

Activities:	**A 3.1.1**	Conduct state of the art review on CCI SMEs
	A 3.1.2	Review of existing policies and synergies in the Mediterranean on CCI and CE
	A 3.1.3	Conduct state of the art review in Circular Economy: Existing Practices & Trends Models
	A 3.1.4	Data Assessment and Compilation of INNOMED-UP Strategic Context Report

Output Participating Partners:	**National Technical University of Athens (NTUA), Greece**	Lead Beneficiary (BEN) WP1 Coordinator
	Environmental Planning Engineering and Management (EPEM SA), Greece	Project Partner 1 (PP01)
	Municipality of Prato (MoP), Italy	Project Partner 2 (PP02)
	Centre for Economic and Social Research for the South of Italy (CRESM), Italy	Project Partner 3 (PP03)
	Municipality of Tunis, Tunisia	Project Partner 4 (PP04)
	Birzeit University (BZU), Palestinian Authority	Project Partner 5 (PP05)
	Future Pioneers for Empowering Communities' Members in the environmental and educational fields (FPEC), Jordan	Project Partner 6 (PP06)

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Thematic objective:	A.2 Support to education, research, technological development & innovation
Priority:	A.2.2 SMEs access to research and innovation
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1 ACTIVITY 3.1.4: DATA ASSESSMENT AND COMPILATION OF INNOMED-UP STRATEGIC CONTEXT REPORT

1.1 FOREWORD

INNOMED UP - *Promoting **UP**cycling in Circular Economy through **INNO**vation and education for creative industries in **MED**iterranean cities* - is a project financed by the ENI CBC MED 2014-2020 Programme that intends to propose a strategy for Mediterranean cities, where Cultural and Creative Industries (CCIs) SMEs create Circular Economy (CE) clusters locally and participate at cross border innovation networks thus promoting urban and social inclusion.

In particular, the project tackles the production of waste in Mediterranean Cities by helping them adopt Circular Economy solutions. In order to do so, the cities need to create a resilient ecosystem that can give rise to new cooperative networks among SMEs and other actors that can contribute to the circularity of the urban environment. These include R&D centres, public institutions, NGOs, people, etc. that can collectively develop innovative business models that reintroduce waste as a part of the value chain.

To this end, INNOMED-UP proposes to work with the Cultural and Creative Industries to shift local urban economies towards a circular production and consumption paradigm including optimal use of material resources, innovation enhancement for SME, knowledge transfer among Med-cities, social inclusion and citizens' engagement.

The present Report represents a first step towards achieving the project's objective as it provides an extensive review on CCIs, as well as existing policies and synergies between CE and CCIs at Mediterranean and EU level.

By the end of the project, the information collected will help to define the INNOMED-UP model for the Mediterranean area proposing a circular strategy for the Mediterranean, whereby cities can develop their own CE strategies and action plans, and ideas, designs and knowledge are exchanged between countries, and materials are recycled and upcycled at the local level in local clusters. The model will be tested at the local level in order to incorporate each city characteristics and refined so as to promote the clustering capacity of CCI SMEs at the local level through specific clustering roadmaps and smart tools.

1.2 EXECUTIVE SUMMARY

The following deliverable represents the final data assessment of the three first activities of the INNOMED-UP Model. The document intends to be the common understanding for all project partners and stakeholders during the whole project process on issues related to circular economy for the sector of creative and cultural industries.

More specifically, the analyses conducted for this report aimed at investigating the following aspects:

- The state of the art review on cultural and creative industries and its intersections with the Circular Economy, conducted across the Mediterranean, the EU and internationally by the project partners.
- Relevant existing policies and synergies in the Mediterranean area, also in view of the project's sustainability.
- The state of the art review on Circular Economy as a prerequisite to understanding the context of the INNOMED-UP model together with existing practices and trends across the Mediterranean.

In relation to the above, this report has been designed according to the following structure:

Section 1 provides an overview of the creative and cultural industries at European and international level. It describes the new global trends such as digitization, sharing economy and new ways of working, collaborating and networking which are redefining the characteristics of CCIs and impacting urban development. This section includes a brief country profile of the countries of the INNOMED-UP partners, namely: Greece, Italy, Jordan, Palestine and Tunisia.

Section 2 describes Circular Economy paradigm as an economic system characterized by a closed loop flow of products, materials and manufacturing equipment. This section contains information on the current debate and activities promoted at European and international levels, as well as main policies and regulations (Circular Economy Action Plan), practices, trends and models of the circular economy. This section includes as well the country profiles of Greece, Italy, Jordan, Palestine and Tunisia and the synergies between circular economy and creative and cultural industries.

The last section draws some conclusions by linking the circular economy with the CCIs, presenting CCIs spillover effects on other sectors and highlighting the impact CCIs have to stimulate the circular economy.

1.3 CULTURAL AND CREATIVE INDUSTRIES

Cultural and Creative Industries (CCIs) have been important drivers of economic and social innovation. They flourish mostly at the local and regional level boosting local economies and stimulating new activities and also present significant spill-over effects on other economic industries. Activities such as design, architecture and advertising could play an important role in supporting other value-added activities as new technologies, digital economy or environmentally friendly solutions. On the other hand, activities such as performing arts, theatre, and music industry and so on are blooming both at European and international level, proving the importance of culture as a growth lever. Moreover, crafts, publishing, fashion, and other creative professions are the modern continuation of past, traditional roots across Europe and Mediterranean, adding value to local economies and forming the symbolic aspects of urban centres too.

Dealing with creative and cultural industries linked concepts such as Creative Economy, Creative City, Creative Class etc. are popping up and this is a discussion which remains open among international and European organizations. Furthermore, even the conceptualization of the CCIs is still developing in terms of CCIs classification. Different organizations or researchers adopt or formulate their own classifications of CCIs depending on which are the sectors and sub-sectors involved based on their functions, added value or other characteristics (artistic, key technologies etc.). Thus, the concept of CCIs is wide and differentiates among countries, institutions, or researchers.

Today, we are entering a new era in which global and European strategic policies are being redefined and enriched with new milestones and goals.

At the forefront of the United Nations 2030 Agenda for Sustainable Development adopted by the UN Summit in 2015, 17 Sustainable Development Goals and 168 stakeholders have been set. Issues on poverty, economic growth, social inequalities, the environment and the cities are a top priority towards transforming our world. The Territorial Agenda is moving in the same direction at European level, embodying in addition to United Nations objectives and strategies the Paris Agreement (2015), the United Nations' New Urban Agenda (2016), the European Commission's reflection paper 'Towards a Sustainable Europe by 2030' (2019), the proposal for the future of Cohesion Policy (2019), the Urban Agenda for the EU (2016), the revised Leipzig Charter (2020), the Cork 2.0 Declaration on a Better Life in Rural Areas (2016), the OECD's Principles on Urban Policy and on Rural Policy (2019) and the European Green Deal (2019). Furthermore, regarding the specific issue of urban development it is worth to mention also the UCLG (United Cities & Local Governments) The Global Agenda of Local and Regional Governments (2018).

The highest priority for the next decade is given to the issues of protecting the natural and anthropogenic environment, sustainable economic growth with lower emissions, reducing global waste and shifting the model of production and consumption towards a circular economy.

1.4 THE INTERNATIONAL AND EUROPEAN OVERVIEW OF CCIs

1.4.1 Adding Value

In global level CCIs have a strong presence in terms of revenues and employment. Both in North America and Europe CCIs revenue corresponds to ~3% of GDP. Similar picture presents the APAC and is the world's biggest CCI market, generating US$743b of revenues (33% of global CCI sales) and 12.7 million jobs (43% of CCI jobs worldwide). Africa and the Middle East is the weakest market[1].

At European level, in most EU countries between 2008 and 2016, companies in the CCIs experienced an overall positive growth (+4.3%), reaching at least a 10% share of the total number of companies in the business services sector (2.45 million companies in 2016). According to Eurostat data, this increase concerns the majority of CCS sub-sectors. New companies are also outperforming the benchmark survival rates of service enterprises in the EU, and present a similar economic weight to ICT, accommodation, and food services. Total employment in CCS amounts to more than 6.7 million employees in 2016. It has remained stable over the period 2008-2016, with a CAGR of 1%.6 In 2016, the average GVA across CCS sub-sectors amounted to € 41.7 billion, growing over the 2008- 2016 period with a CAGR of more than 2%. The audio-visual and multimedia, visual arts and heritage and archives sub-sectors have seen the highest CAGR over the reference period. The sub-sectors books & press and audio-visual & multimedia achieved the highest GVA in 2016 (€ 76 million respectively € 63 million)[2].

1.4.2 New Global Trends

The creative and cultural industries have come to the fore under the conditions of global transformation and the transition to new economic, social and technological conditions. However, it should be noted that creative activities and creative professions have traditionally been present especially in the Mediterranean countries, contributing significantly to local and national economies.

Today, new global trends, such as globalization, digitization, intellectual property and new ways of working, collaborating and networking are redefining the characteristics of CCIs.

Globalization/Digitalization

Through globalisation, the CCIs, on the one hand, use new technologies and communications to spread their production and exchange know-how, techniques and methods. On the other hand, at local level they play an important role in creating close relationships with their audiences and through the creation of local interconnections and clusters producing significant value added. In short, CCIs contribute and play a leading part in what is defined by many as "glocalization". Besides, it is widely accepted that through local

[1] Cultural times: the first global map of cultural and creative industries, UNESCO, 2015 (https://en.unesco.org/creativity/sites/creativity/files/cultural_times._the_first_global_map_of_cultural_and_creative_industries.pdf)

[2] Culture and creative sectors in the European Union – key future developments, challenges and opportunities , European Parliament, 2019 (https://keanet.eu/wp-content/uploads/IPOL_STU2019629203_EN.pdf)

heritage and identity, culture has become a "niche" to stimulate the demand all over the global economy[3], allowing the creative economy to unlock its growth potential[4].

Within this context, digitalization has played a two-way role between economy and culture which revolutionize both the economy of culture and the relation to culture. The new economy of cultural production is based on the processing and transmission of data so that cultural consumption many times exceeds spatial and time limits.

New Business Models

One of the main characteristics found in CCIs is the ways that they co-organize and collaborate. Based on the flexibility of their production they are capable of creative innovative cooperation and networks also stimulating their intrinsic creativity. Cultural spaces, creative clusters, hubs and incubators – to name a few - are *flourishing in Europe together with networks that share resources, competences and create favourable ecosystems for CCIs to thrive*[5].

1.4.3 Urban Development

There is a well–known link between culture and CCIs and urban development. Many organizations recognize and promote this connection under the view of sustainable development. Culture and CCIs cross many "layers" of cities (economic, social, cultural), create social and cultural networks, contribute to the local economy. The majority of CCIs SMEs are generally based in cities centres, flexibly exploiting the advantages of location, such as partnerships and cooperation with other relative SMEs, low costs of transporting raw materials and products, the ability to meet skilled labour, low rents, etc. It is observed that productive and economic needs are driven these businesses in locations within the urban fabric, where a privileged grid is formed for their operation, defined by the favourable traffic conditions in particular raw materials, products and the presence of business and labour, which simultaneously constitute vectors of traditional knowledge. In addition, the resulting social and economic interdependencies enhance this favourable environment and create a distinctive urban landscape.

1.4.4 CCI SMEs in the Mediterranean countries

The Mediterranean Basin has been increasingly receiving attention in recent years. This is particularly due to the heterogeneity of its countries which, while raising problems as far as business collaborations are concerned, can unfold many cross-national economic opportunities.

Historical cities across Mediterranean present a special illustration of CCIs as their history and the economy are historically linked with the traditional creative professions which often addressed as Arts, Crafts & Design (ACDs). These activities combined with the modernization of the modes of production and emerging key technologies - mostly in the northern shore - are included in the CCIs. Although, due to the often prevalence of informal or shadow economies it is common to be statistically underestimated. So far, there is no recording of creatives exclusively for the Mediterranean region even though the strong

[3] Culture And Local Development, Oecd, 2018 (http://www.oecd.org/cfe/leed/venice-2018-conference-culture/documents/Culture-and-Local-Development-Venice.pdf)
[4] Creative Economy Outlook: Trends In International Trade In Creative Industries, Unctad, 2019 (https://unctad.org/en/PublicationsLibrary/ditcted2018d3_en.pdf)
[5] Culture and creative sectors in the European Union – key future developments, challenges and opportunities , European Parliament, 2019 (https://keanet.eu/wp-content/uploads/IPOL_STU2019629203_EN.pdf)

presence of tangible and intangible heritage is acknowledged along with unique local know-hows and techniques regarding CCIs.

CCIs deserve special attention in the Mediterranean region precisely because of the strong diversification of its economy and the wide cultural diversity, which make it a fertile territory for sustaining and promoting multiculturalism. The creative sector has a strong penchant for models of sustainable development and has been recently trying new forms of social integration and cohesion.

The European Union aims at reinforcing cooperation with the partner countries and regions of the Mediterranean on the CCIs' enhancement. A long-standing position of the European Union has been to elaborate policies for the promotion of investment in and development of CCIs in the Mediterranean Basin, and several projects have been undertaken in this direction.

However, notwithstanding these huge efforts, the development of CCIs at Mediterranean level is far from rising, at least in a coherent and integrated way, as this review reveals. In fact, on one hand no specific and particular guidelines arise from the EU policies upon this issue, and, on the other hand, the EU-funded projects and activities until today mainly concern sectoral analyses carried out at the local or national level, which show significant differences between the EUMC and MPC countries. In addition, they are still lacking a comprehensive and well-organized map of the exploitable resources necessary to elaborate suitable policies for a sustainable culture-driven growth of the Mediterranean, while supporting any prospected synergies with CE paradigm.

1.5 COUNTRY PROFILE: GREECE

The Greek case is characterized by particularities inherent in the structure and size of secondary production throughout the post-war period. The necessary restructuring in production, distribution, marketing and the ever-increasing competition have caused a number of changes and adjustments in the operation of small and medium-sized enterprises, located particularly in central urban areas. However, a significant share of Greek manufacturing comes from small and medium-sized enterprises, and despite the unfavourable context of their function both internationally and nationally, they have showcased a remarkable resilience over time in Greece.

Local craft know-how and expertise (savoir-faire locaux) have historically shaped the Greek territory - both island and land areas - in the last centuries. Craft and protoindustrial activities based on local raw materials and know-how literally resulted in the formation of historic cities and settlements in Greece, shaped their physiognomy and contributed to their economic take-off. The structure of the Greek economy and society though presents a number of particular characteristics, such as (among others): the medium to very small size of the enterprises; the high degree of labour intensity; the emphasis on innovation, the uniqueness of the language; the local know-how and the specialized human resources, which should be taken into account.

The problems identified as regards the further development and support of the CCIs can be summarized as follows:

- The lack of a national definition and classification about the sector of Cultural and Creative Industries and the included activities according to the special characteristics of the Greek case study

- The lack of an inclusive statistics database as many of the activities included in the CCIs sector may not be included in official statistics or chambers databases
- The difficulty of applying European methodologies in the Greek context, as the NACE codes used in Greece are 3-digit (NACE Rev.2) whereas European methodologies use 4-digit codes.

At regional and local level, Attica Region - and Athens - have contributed the most to the Greek economy than any other region and city in Greece. The same situation is evident as regards the CCIs sector, with the Region of Attica playing a leading role. More specifically, in Attica are located over 25,600 CCIs enterprises (57.3%), employing over 65,000 workers (61.3%), producing 75.5% of the gross value added (GVA: 1.6 billion euros). As for the spatial concentrations of CCIs the City of Athens plays a hegemonic role.

The historical centre of Athens and more specifically the historical triangle, is considered as an area with highly symbolic value for the city of Athens, that has been until today an area characterized by its multifunctionality and authenticity, an area which presents the milieu both for the production of symbolic capital and its consumption.

The Greek financial crisis had a severe impact in the Athenian space. Empty stores had risen rapidly following the violent breakdown of commerce, reinforcing the deterioration of Athens. After 2015, when the crisis has been consolidated, and new equilibriums were established, closed and empty stores started to reopen adopting new uses related to activities of entertainment & recreation, such as bars, restaurants etc. At the same time tourism has seen a notable increase since 2013, along with a new actor in the tourism industry, the short stay rentals, seeing a major increase. Whole empty buildings have been transforming into hotels or former storage and laboratories into short term apartments. Very soon the rise of touristic activities resulted in major increases in house pricing. This area is characterized by a deep rooted existence of traditional creative activities such as leather, textile, ceramics, carpentry, goldsmithery etc., as well as clothing and footwear production and merchandise and their operating networks. Historically, these enterprises played a key role in shaping the urban space of Athens' centre becoming at the same time part of its cultural heritage. In recent years, the historical centre has been more and more attractive to modern creative activities, including new fashion designers, jewellery and object designers, as well as graphic designers, architects and artists, who often expand their work in other branches of design. So, apart from the available building stock in low prices and the centrality of the area, what has attracted them are the special character of the centre and the existing operating networks where they can build on.

All the above activities – and especially the touristic ones – produce huge amounts of waste that are most of the time not even sorted and recycled. Our working assumption is that, within the above described context, the current situation in the Athenian city centre, presents a unique opportunity to plan and apply an innovative model of circular clustering between the activities that reside there. The produced waste may be converted to the linking matter in order to apply an innovative model of industrial symbiosis in multiple layers. What we expect is that the three main categories of activities (a. tourism related b. traditional crafts c. new CCIs) will formulate a circular system where innovative procedures, tools and roadmaps will be applied in order to achieve a closed circulatory system, with the aim to produce "Less waste and More value".

Figure 1: Retail of textiles (top left), Top-down organized CCI Co-working space (top right), Goldsmithery lab (bottom left), Bottom-Up Organized CCI Co-working space (bottom right).

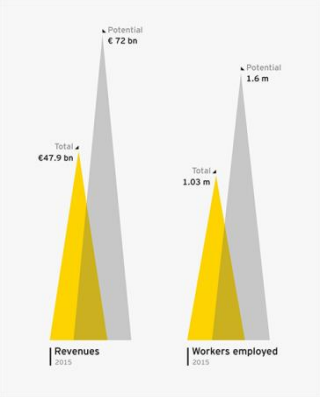
1.6 COUNTRY PROFILE: ITALY

All over the world, the Italian Cultural and Creative Industry is synonymous with excellence; however, today its value is not sufficiently acknowledged. Creativity and culture generate significant economic and social value, both in terms of business volume and employment, but should be further supported if we want them to unleash their full potential.

In 2015, the Italian Cultural and Creative Industry reached a total economic value of 47.9 billion Euro. Direct revenues represent 86% of this value, coming from activities such as design, production and distribution of cultural and creative works and services. The rest results from indirect revenues, related to collateral or subsidiary activities.

The creative sector employed in 2015 more than one million people, the 86% of whom in direct activities. With around 880,000 jobs, direct workers of the Italian Cultural and Creative Industry account for 4% of the entire Italian workforce. These challenges affect 7 million workers at European level, who work in the creative and cultural industries and need particular attention and protection.

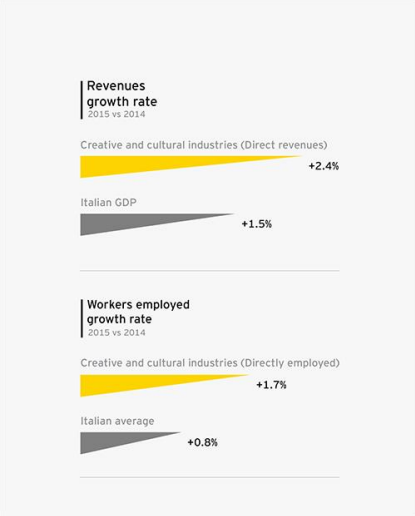
The estimates show that the current economic value equals two thirds of the amount the Cultural and Creative Industry could generate if growth opportunities were pursued and threats effectively countered. Since the economic value was about 48 billion Euro, the potential value could reach 72 billion Euro, meaning that there still exists an untapped value of around 24 billion Euro. Furthermore, the Cultural and Creative Industry could generate more than 500 thousand additional jobs, going from 1.03 million to 1.6 million: a growth rate greater than 50%.



Source: Report ITALIA CREATIVA[6]

The growth rate experienced by revenues in the Cultural and Creative Industry in 2015 was higher than in 2014; most notably, it was higher than national GDP growth in the same period. There was in fact a 2.4% increase in direct revenues (or 951 million euros), compared to a 1.5% increase in Italian GDP.

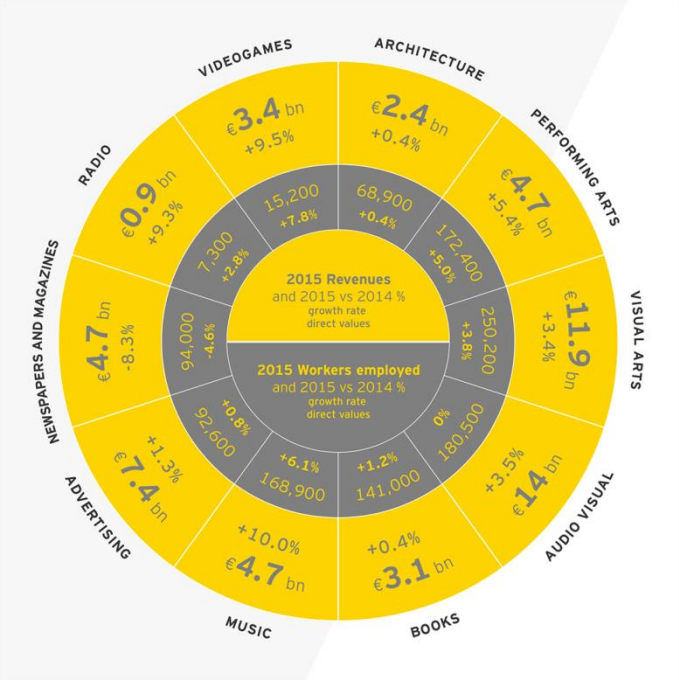
In 2015, direct workers of the Cultural and Creative Industry increased by 1.7% (or 15,000 units) compared to the previous year, a growth rate higher than that of overall employment in Italy (0.8%).



Source: Report ITALIA CREATIVA[7]

With 1 million employees and 48 billion euros in turnover, the Italian Cultural and Creative Industry represents the third employer and a heritage of excellence for Italy and Europe. Architecture, performing arts, visual arts, audio-visual, books, music, advertising, newspapers and periodicals, radio, video games, are a strategic resource from an economic point of view, a great potential and a growth engine.
The diagram represents the value of each sector in terms of turnover and employment.

[6] L'Italia che crea, crea valore. 2° Studio sull'Industria della Cultura e della creatività. http://www.italiacreativa.eu
[7] L'Italia che crea, crea valore. 2° Studio sull'Industria della Cultura e della creatività. http://www.italiacreativa.eu



Source: Report ITALIA CREATIVA[8]

The main threats faced today by the CCIs are value gaps and piracy. The value gap refers to the unfair remuneration deriving from the failure to recognize a substantial part of the value generated by some technical intermediaries, through their platforms, to the creative chain, creator and generator of the content made available. The value gap is estimated to count about 200 million euros. By piracy is meant any activity related to the reproduction, distribution and illegal use of intellectual products. It is estimated at a value between 4.6 and 8.1 billion euros.

In Sicily, that is one of the two pilot areas, the concept of circular economy is relatively new, both in the world of SMEs, and in the field of research related to the INNOMED-UP project. The research carried out in Palermo and Sicily offers a cross-section of very different and disconnected realities and networks, sometimes unknown to each other even at a short distance, as in the historic centre of Palermo, but in the future with the right training and an activity of information and promotion can represent an important possibility for the Sicilian economy.

In particular, the networks of art and crafts already existing in the historic centre of Palermo are, themselves, a core of the sustainable economy for the ancient heart of Palermo and their potential could increase if properly trained and connected.

However, alongside the traditional sectors, a new generation of artisans is coming forward: in particular in the cities of Palermo and Catania, groups of young artisans are combining traditional techniques with techniques of reuse and recycling of materials.

In Tuscany Region exist several studies that classify the SMEs belonging to the CCI sector. A research done by the IRPET - Regional Institute For Economic Planning Of Tuscany on employment in the cultural and creative sector reports over 134.000 workers in the CCIs in 2015, taking the Eurostat classification - ESSnet-

[8] L'Italia che crea, crea valore. 2° Studio sull'Industria della Cultura e della creatività. http://www.italiacreativa.eu

Culture[9]. However, this classification risks overestimating the weight of the sector because it includes also a large a part of the cultural institutions belonging to the public administration. On the other hand it excludes the "Made in Italy" sectors like textile and fashion industry that significantly add to the above numbers and is predominant in INNOMED-UP pilot area, the City of Prato. The comparison between the private or public sector shows a real specialization, with the sector of heritage management and performing arts entrusted almost exclusively to the public sector and that of the creative, cultural and creative industries driven to private entrepreneurship.

Taking into consideration both the public and private spheres (public institutions, enterprises and NGOs), and including the Made in Italy industrial sectors (Symbola Unioncamere classification), the overall number of CCIs in 2015 exceeded 105.000, of which the main part, 99.927 belonging to SMEs.

Table 1: TUSCANY: CCI Sector - Classification Symbola - Unioncamere[10]

2015	Enterprises	Public institutions	NGOs	Total
"CORE" CULTURE	20.029	65		20.094
Creative industries	23.149	18		23.167
Cultural industries	3.850	600		4.450
Performing and visual arts	3.591	2.657		6.248
Historical heritage				
CULTURE "DRIVEN"				
Creative driven industries	49.308	0		49.308
TOTAL	99.927	3.340	2.257	105.524

Source: elaboration ISTAT

1.7 COUNTRY PROFILE: JORDAN

Jordan is a relatively small, semi-arid, almost landlocked country with an area of 89,342 km2 and a population numbering 10 million, making it the 11th -most populous Arab country. The Hashemite Kingdom of Jordan is a constitutional monarchy with a parliamentary system, which, since its independence, to a high degree has been a centralized country in relation to its political, administrative, and fiscal systems. This has undermined the sense of ownership and accountability at lower and local levels for a long time. According to the last census (2015), Jordan's population accounted for almost 9.5 million individuals, 6.6 million of which were found to be Jordanians with 53 percent being male and 47 percent being female. Participation of women in the labour market is low and accounts only for an estimated 15.8 percent. Nearly 70 percent of the country's population is aged 30 or younger with 22 percent between 15 and 24 years old. Meanwhile, the World Bank reports that youth unemployment is around a staggering 28 percent and there are few avenues for youth to participate in political processes.

The Jordanian economy is one of the smallest economies in the region. It is attractive to foreign investors based upon a skilled workforce. The country is a major tourist destination, also attracting medical tourism due to its well-developed health sector. However, a lack of natural resources, large flow of refugees and regional turmoil have hampered economic growth.

[9] https://ec.europa.eu/eurostat/cros/content/culture-finished_en
[10] https://www.symbola.net/ricerca/io-sono-cultura-2019/

A new decentralization law was approved in 2015, aiming to grant broader powers to local government structures; it grants subnational authorities more freedom to attract external funding to local projects and economic activity and the draft Municipalities law proscribes additional powers to Municipalities as well as a broader role in development planning. The new law also seeks to encourage CSOs to take part in the social-economic reform processes and increase popular participation in the community's decision-making and public policy through local (mostly elected) councils' structure. Currently institutionalized interactions and effective coordination between local key stakeholders for public participation is limited.

Jordan has been repeatedly referred to as an "oasis of stability" in a turbulent region. It has been mostly unscathed by the violence that swept the region following the Arab Spring in 2010. The country is also a host for almost 750,000 refugees out of which 655,000 are from Syria. Around 85 percent of Syrian refugees are living in host communities (out-of-camp), adding significant pressure and contributing to the deterioration of the quality of public services delivered. In particular in the northern region such as Irbid, Mafraq, Zarqa and Ramtha. The result was a dramatic increase in waste generation rates and a further burden was placed on the limited airspace and operational capacity of waste disposal sites.

There are several types of CCIs in Jordan, and the main fields are:

- Weaving: Jordan has a long-established rug-making industry dating back to the country's pre-Islamic, Christian communities. Mafrash (rugs) are usually of the flat, woven kind, known as kilims, compared with carpets that have a pile. To this day, especially in Madaba and Mukawir, it's possible to watch kilims being made that are based on early Byzantine designs.
- Ceramics: The craft of mosaic-making has a noble and distinguished lineage in Jordan. Mosaics are made from tiny squares of naturally coloured rock called tesserae. Madaba is famous for its intricate mosaic pieces that were collected from thousands of small stone or glass panels besides to its training school.
- Spices and seasonings: Jordan is famous for selling wonderful spices and seasonings such as black, red and white peppercorns, cardamom, tea, coffee and the Jordanian mix of thyme, which is a mixture of dried herbs and roasted sesame seeds.
- Natural crafts: Manufacture of handmade jewelleries and unique natural cosmetic products such as essential oils made from olive oil and camel milk, in addition to the famous Dead Sea salt products, clay, and lotions that soothe and nourish the skin.
- Traditional handmade crafts: Jordan is famous for embroidery, shawls making, pottery, sand paintings, and silver jewelleries.
- Swords making: this industry is famous in the Karak region and in Mutah. Swords and daggers are decorated with cavernous and prominent motifs. This industry still exists until now and its evolving.

Irbid is the second largest city in the Kingdom in terms of population and of great historical significance, with a population of **907,675** for the year 2019; where 32 % of its population is non-Jordanian, predominantly Syrian refugees and expatriates. The population growth rate in the municipality is projected at approximately 2.4 percent annually, while the number of families is around 191,990 and the average members for each family are 5 individuals, compared to 4.8 individuals in the national level.

Irbid city is currently considered a significant development, commercial and cultural centre in the area, and also has a modern service and representation infrastructure both for public and private institutions and departments. Moreover, the Urban Index in the northern region is over 90%, while the majority of the population of the municipality lives within urban areas.

Solid waste management in Jordan, and particularly Municipal Solid Waste (MSW), has been improved for the last 30 years since the mid-1990s, with improvement of legal framework and institutional capacity to be the main drivers of the sector's development. Currently, Jordan generates 2.6 million tons of MSW per year with an increment of 23% compared to 2010. 350 tons of waste is currently being generated daily in Irbid and Mafraq; which should be collected and hauled away by the municipalities to the relevant final landfill “disposal sites”. MSW collection coverage is estimated at about 90% and 70% for urban and rural areas, respectively, about 50% of MSW is food waste and 35% is packaging waste that would be potentially available for recovery. Most of MSW ends up at dumpsites and landfills, whereas only 7% are currently recovered informally in the Kingdom. The growing industrialization and high population growth rate have led to rapid increase in solid waste generation in the country which has, in turn, put increasing pressure in waste management infrastructure.

In May 2015 a new National Strategy for Municipal Solid Waste Management (MSWM) was launched in Jordan to enhance the overall MSWM system including short, mid, and long-term planning frameworks and implementation actions, infrastructure and investments, as well as the institutional setting at the national level.

Despite the lack of a well-defined policy and strategy, there have been considerable achievements in the sector, and in particular in Greater Amman Municipality, in terms of city cleanliness, engineered landfilling, and service cost recovery, achieving one of the best rates in the MENA region. Still several improvements shall be targeted in terms of policy, strategy, institutional set-up, legal framework, and capacity building.

1.8 COUNTRY PROFILE: PALESTINE

Historic Palestine full area is about 27,000 SQM including the occupied area in 1948, West Bank (WB) and Gaza. With the signing of OSLO agreements in 1993, and the establishment of the Palestinian National Authority (PNA), the Palestinian territory was set to be only West Bank and Gaza, and these areas were divided under into three areas “A”, “B”, and” C”, in which jurisdiction for civil and security in “Area C” remains with the Israelis (over 60% of the west Bank); “Area A” is built up area mainly in urban centres is completely under the Palestinian jurisdiction, and “Area B” has civil administration of PNA and Israeli control over security. It is important to note that significant stretches of agricultural land and different types of natural resources are located within “Area C”. The cities of Hebron and Nablus are located in the South and North of WB respectively as demonstrated in the map (FIG 2), and most of their areas are located in “A” section:

WB and Gaza areas are about 6,220 km2 (5,860 km2 for the WB and 360 km2 for Gaza) and had a total population of about 4, 97 Million (2, 98 Million in WB and 1, 98 Million in Gaza) in 2019.There are several types of CCIs in Palestine, and the main fields are:

1- Embroidery and traditional fashion: the origin of embroidery is back to the time of Canaanites, where their women were famous for sewing and embroidery.

2- Olive wood carving: this industry had been known in Palestine for a long time ago, some theories propose that it started in Bethlehem 1600 years ago with the Christian pilgrims.

3- Ceramics: the history of this industry had started in the 16th century through Turkish of the Ottoman Empire when they were restoring the Dome of the Rock at AL-Aqsa Mosque.

4- Glass: this industry had been known in Palestine through several civilizations passed in this country, and it was developed through mosques constructions and religious places.

5- Pottery: this industry is one of the most ancient industries in this region, theories estimate that it started in Palestine 4000 B.C. and all populations lived in the region had been affected by this industry and developed it for their needs.

6- Seashells carving: there are several theories about the beginning of this industry in Palestine, but researchers propose that it started 7000 B.C. due to some old graves from this period found in Jericho with seashells decorations.

7- Mats from wool: this industry is back to thousands of years ago in Palestine, and it came from the old Egyptians and it continued from that time till nowadays.

8- Nabulsi Soaps: the history of this industry is more than 1000 years and especially in the city of Nablus and it has been named after the city in all over the Arab world.

9- Other industries: Palestinian craftsmen also worked in bamboo furniture that reached the region from China, in addition to candles and fabrics manufacturing and metals carving.

Figure 2: Full Palestine map (Historic Palestine), Source: Palestine Remembered

City of Hebron: Hebron is a beautiful, ancient and historical city of 6000 years in CCI's, the city faced decades of unrest and conflict. It is the largest city in the West Bank, and second largest in Palestine after Gaza, the population of the city is 215,000 Palestinians, the city is located in the southern region of the West Bank in the largest governorate in the country with a total population of 762,541 people. Its Old City of stone roofs, archways and never-ending alleyways is the perfect playground for the sensory delight of the markets and bazaars that had been named after crafts they were famous of, for instance: Kazazin (Glass craftsmen) neighbourhood, the Hadadeen (blacksmith) market, and so on. It is also a modernizing city, home of Hebron University and the Palestine Polytechnic University and won "The international artisan city for the year 2016" certificate by the International Crafts Council due to its distinguished long history making the original Palestinian heritage and traditional crafts.

City of Nablus: Nablus is a Palestinian governorate in the northern region of the West Bank, approximately 60 kilometres north of Jerusalem between Mount Ebal and Mount Gerizim. Its population is approximately 407,754 people, the population of Nablus city is 170,000 people and it is considered the second largest commercial and cultural centre in Palestine after Hebron. Famous for its Kunafa (oriental sweets), Nabulsi olive oil soap that - had been exported across the Arab world and Europe since the 10th century - and busy markets, Nablus is also home to many of Palestine's industries and commerce. Among the main attractions that Nablus has to offer are Jacob's well and the town of Sebastia have also beautiful sites to visit. Nablus' rich history lies in its Old City with its distinct stone facades, beautiful architecture, narrow streets and old urban spaces. The population of the old city today is around 20,000. There are two churches, twelve mosques, and a Samaritan synagogue in and around the densely populated residential areas. City of Nablus

had been named “Little Damascus” by the Arab historians and it was also famous for its historical Turkish Baths.

Efforts to preserve this important part of Palestinian and Nabulsi cultural heritage have continued as the number of soap factories continue to decline from thirty in the 19th century to only four today.

1.9 COUNTRY PROFILE: TUNISIA

Over the millennia, Tunisia has been dominated by many of the world's historical Mediterranean powers, from the Phoenicians, Romans, Vandals and Byzantines to the Arabs, Ottoman Turks and French. Carthage, founded by Phoenicians in the first millennium BCE, became the richest seaport of ancient times, and later on a major city in the Roman Empire. Its remains survive as a tourist attraction in a suburb of Tunis till today. In 1956 Tunisia won independence from France. In 2011, Tunisia led the Arab Spring, and since enjoys freedom of speech, an active political, civil society and cultural scene. The new found freedom of expression, provides a good background for the cultural and creative industry today, which makes INNOMED-UP very timely and necessary.

The Municipality of Tunis chose Medina as the territorial focus for INNOMED-UP. Medina is the historical urban quarter of Tunis. The surface of the central Medina, is 100 ha. Within the capital, it houses various urban functions as well as the majority of historic monuments. Besides being a religious, administrative and political centre, the city is registered as UNESCO world heritage. Medina is rich with educational structures, a great craft and commercial network and important cultural and a slowly growing cultural tourism, thanks to the involvement of the private sector.

Medina’s craft trade and craftsmanship are as important to Medina’s history as its buildings and historical sites. Various crafts migrated to Tunis, with their immigrants, from all over the Mediterranean, and lived together within the medina to create medina’s creative industries which exist till this day. Medina provides a variety of strengths that encourage growth of cultural and creative MSE’s, thanks to its wealth of craftsmanship knowhow, concentration of historical monuments and inherent urban context. Also, the fact that craftsmanship throughout Medina's history, have always been a central part of its socio-cultural scene and encourages the continuation of the crafts legacy within Medina's walls. Until today, the Medina of Tunis attracts designers and artisans to settle in, as it remains an important area that flourishes with industrial urban creativity. This has also made Medina logistically convenient, due to the presence of an important shared economy model between architects, designers, raw material suppliers, distribution networks as well as vendors and customers that are all geographically attracted to the centralization within Medina.

1.10 THE CIRCULAR ECONOMY

Circular Economy (CE) is an economic system of closed loops whose fundamental principle is to keep resources withdrawn and coming from the environment in the economic circuit, therefore extending their life cycle and avoiding their return in the form of waste.

The idea of the circular economy is derived from the closed loop flow of products, materials and manufacturing equipment. This means replacing the linear system with a circular system. The linear system is created primarily by the extraction, manufacture, use and disposal of raw materials. The circular system, in its perfect form, would mean the constant circulation of raw materials, products and materials, which, instead of ending up in a landfill, would be reused in manufacturing.[11]

A circular economy reroutes the waste back into the system, thus creating a recycle-consume-reuse cycle. Once the materials have served their purpose in one product, they are re-manufactured or recycled to go through the cycle yet again.

The main objective of the circular economy is to make economic systems and industrial processes more environmentally friendly and sustainable. The circular economy is able to combine environmental protection with economic profit, reducing unnecessary energy consumption and carbon dioxide emissions and the need for excessive extraction of resources from nature. The reduction in the necessity for natural resources mitigate the impact of human activity on the environment.

The transition to this type of economic system is not a straight forward process and requires substantial changes in the value chain such as greater recycling, re-use of products, better waste and water management or adapted design.

The CE is about driving new economic growth with full awareness that natural resources (material and energy resources) are finite. This brings forward a different approach and attitude towards the materials and business.

In this economic system raw materials, components and products lose their value as little as possible, and renewable energy sources are used.

All products are manufactured in a way so they can be disassembled and materials will be returned to production.

Companies have to find new ways to extend the life of products or components, to find value in the waste, or the design of circular use.

[11] Ungerman O., Dedkova J., 2019, Model of the circular economy and its application in business practice, https://www.researchgate.net/project/http-linkspringercom-article-101007-s10668-019-00351-2)

The CE also is believed to bring more global competitiveness, sustainable economic growth and generate jobs. The circular economy could bring EU companies annual net material cost savings, ranging from €250 to €465 billion – or from 12 % to 23 % of their material costs.[12]

Moreover, it is estimated that 580,000 jobs will be created.[13]

The circular economy is an opportunity for Europe's economy. The EU is a pioneer in the field of circular economy internationally and has implemented from 2015 until today many institutional measures.

The European Commission has adopted a new Circular Economy Action Plan - one of the main blocks of the European Green Deal, Europe's new agenda for sustainable growth.

The new Action Plan introduces legislative and non-legislative measures, targeting the entire life cycle of products, promoting circular economy processes, fostering sustainable consumption, and aiming to ensure that the resources used are kept in the EU economy for as long as possible.

1.10.1 International Framework

As early as in 1972 the "Limits to Growth" report of the Massachusetts Institute of Technology and of the Club of Rome, expressed concerns related to the current economic development model based on an unlimited growth of consumption of available resources and natural capital. According to the report, this model, despite the opportunities offered by modern international market relations, innovative financial instruments and globalization, risks to compromise the safety of minimum ecological levels[14].

More recently, the Ellen MacArthur Foundation[15] has explained that the Circular Economy (CE) "is a generic term to define an economy designed to regenerate itself. In a circular economy the flows of materials are of two types: biological ones, capable of being reintegrated into the biosphere, and the technical ones, destined to be revalued without entering the biosphere". According to the Foundation, as major engines for economic growth, cities can drive the circular economy agenda towards economic, environmental, and social benefits. Together with Sustainable Development Goals (SDGs) and climate objectives, the transition to the CE can help city leaders achieve their priorities, including economic development. By 2050, two thirds of people will live in cities. However, urban environments must tackle the effects of the current linear or take-make-waste economy, whereby cities consume over 75% of natural resources, produce over 50% of global waste, and emit between 60-80% of greenhouse gases. The circular economy can help rethink how things are made and used, and allows to explore new ways of ensuring long-term prosperity. In March 2019 the Foundation has made available to cities a suite of resources for urban policymakers and stakeholders. The *"Circular Economy in Cities"*[16] project focuses on opportunities in three key urban systems - buildings, mobility, and products - and helps figure out how urban governments can trigger the transition to the circular economy. The project focuses on:

[12] https://www.europarl.europa.eu/thinktank/infographics/circulareconomy/public/index.html
[13] https://ec.europa.eu/commission/sites/beta-political/files/circular-economy-factsheet-general_en.pdf
[14] https://en.wikipedia.org/wiki/The_Limits_to_Growth
[15] The Ellen MacArthur Foundation was launched in 2010 with the aim of accelerating the transition to the circular economy. Since its creation, the charity has emerged as a global thought leader, putting the circular economy on the agenda of decision-makers around the world. The charity's work focuses on seven interlinking areas: insight and analysis; business; institutions, governments and cities; systemic initiatives; learning; circular design; and communications. See https://www.ellenmacarthurfoundation.org/
[16] https://www.ellenmacarthurfoundation.org/our-work/activities/circular-economy-in-cities

1. Vision: What will the implementation of circular economy principles in cities look like?
2. Factsheets: What benefits can a circular economy transition in key urban systems bring to cities?
3. Policy levers: What can urban policymakers do to accelerate this transition?
4. Case studies: What examples are there of urban policy makers already putting this into action?
5. Other networks & resources: What are other organisations doing on the topic of circular economy and cities?

The Foundation has created a document that offers an overview of the Circular Economy in Cities resources, which builds on the city-related research and initiatives the Foundation has developed over the years[17].

Another major actor of economic and social development at the global scale that has approached the issue of the Circular Economy, is the World Economic Forum (WEF). In its White Paper "*Circular Economy in Cities - Evolving the model for a sustainable urban future*"[18] issued in 2018, the WEF quotes William McDonough, Architect and Co-Author of Cradle to Cradle[19]:

"Waste does not exist in nature, because each organism contributes to the health of the whole. A fruit tree's blossoms fall to the ground and decompose into food for other living things. Bacteria and fungi feed on the organic waste of both the tree and the animals that eat its fruit, depositing nutrients in the soil that the tree can take up and convert into growth. One organism's waste becomes food for another. Nutrients flow perpetually in regenerative, cradle to cradle cycles of birth, decay and rebirth. Waste equals food."

This concept lies at the basis of the WEF's vision to transitioning to a circular city. A circular city must embed the principles of a circular economy across all of its functions, establishing an urban system that is regenerative and restorative by design. In such a city, the idea of waste is eliminated, with assets kept at their highest levels of utility at all times and the use of digital technologies a vital process enabler. A circular city aims to generate prosperity and economic resilience for itself and its citizens, while decoupling value creation from the consumption of finite resources.

As an example of a virtuous city the WEF indicates Amsterdam, one of the leaders in the application of circular economy concepts to city governance, which follows seven principles in its transition towards a circular economy, as elaborated in a report commissioned by the city government. These principles can be extended to define a vision and an action roadmap on circularity in cities:

6. Closed loop – all materials enter into an infinite cycle (technical or biological).
7. Reduced emissions – all energy comes from renewable sources.
8. Value generation – resources are used to generate (financial or other) value.
9. Modular design – modular and flexible design of products and production chains increases adaptability of systems.
10. Innovative business models – new business models for production, distribution and consumption enable the shift from possession of goods to (use of) services.

[17] https://www.ellenmacarthurfoundation.org/assets/downloads/CE-in-Cities-Project-Guide_Mar19.pdf
Visit also: https://www.youtube.com/playlist?list=PLXT_ozykGVamfU-jss7TQrSb49XpiNeST

[18] **http://www3.weforum.org/docs/White_paper_Circular_Economy_in_Cities_report_2018.pdf**

[19] William McDonough, Architect, Co-Author of Cradle to Cradle: Remaking the Way We Make Things (2002) and Author of Something Lived, Something Dreamed (2003) and Positive Cities (Scientific American, July 2017)

11. Region-oriented reverse logistics – logistics systems shift to a more region-oriented service with reverse- logistics capabilities.
12. Natural systems upgradation – human activities positively contribute to ecosystems, ecosystem services and the reconstruction of "natural capital".

According to Amsterdam's experience, a circular city makes use of system thinking to provide economic, social and environmental benefits for its citizens, while also looking to improve the quality of life.

1.10.2 European Union

In 2015, the European Commission adopted the first Circular Economy Action Plan[20], which included measures to stimulate Europe's transition towards a circular economy, making the EU a force able to lead the international system beyond the current outdated take-make-dispose model.

The action plan was an effective response to the 2030 Agenda, aiming at empowering of public authorities and stakeholders to accelerate the circular economy transition, generate new jobs in Europe, promote innovations, create competitive advantage for EU businesses, and protect the environment in Europe and beyond.

The 2015 EU Action Plan for the Circular Economy established a concrete and ambitious programme of action, with measures covering the whole cycle: from production and consumption to waste management and the market for secondary raw materials and a revised legislative proposal on waste. In late 2018, only three years after its adoption the 54 foreseen actions were fully completed. Among others, the following actions contributing to the European transition towards a circular economy were implemented:

13. Revised legislation on waste[21], which is set to reinforce EU's current role of global leader in recycling;
14. The first-ever European Strategy for Plastics[22], and a follow-up legislation to reduce the negative effects on the environment of some single use plastic items;
15. The revised Fertilisers Regulation[23], which is currently undergoing the final steps in the legislative process;
16. Guidance documents in the areas of industrial emissions, water management, recycling of construction & demolition waste, unfair commercial practices and Green Public Procurement;
17. The Ecodesign Working Plan 2016-2019[24]

The Commission has also adopted a Circular Economy Monitoring Framework to measure progress towards a circular economy at EU and national level. It allows policy makers to identify good practices and prioritise areas where further action is needed to meet the long term goal of a circular economy. The monitoring framework is not just relevant to policy makers but may be used by all – whether they are consumers or businesses – to inspire and drive action. It is composed of a set of ten key indicators which

[20] COM/2015/0614 final - https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015DC0614
[21] Official Journal of the European Union, L 150, 14 June 2018- https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2018:150:TOC
[22] COM/2018/028 - https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1516265440535&uri=COM:2018:28:FIN
[23] Regulation (EU) 2019/1009 - https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R1009
[24] COM/2016/0773 - https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52016DC0773

cover each phase – i.e. production, consumption, waste management and secondary raw materials – as well as economic aspects i.e. investments, jobs, gross value added and innovation.

At the beginning of 2020, the European Commission adopted a new Circular Economy Action Plan[25] as one of the most important elements of the European Green Deal[26], the Europe's new agenda for sustainable growth.

The new Action Plan announces initiatives along the entire life cycle of products, targeting for example their design, promoting circular economy processes, fostering sustainable consumption, and aiming to ensure that the resources used are kept in the EU economy for as long as possible. It introduces legislative and non-legislative measures targeting areas where action at the EU level brings real added value.

1. The new Circular Economy Action presents measures to:

2. Make sustainable products the norm in the EU: the Commission will propose a legislative act on the strategy for sustainable products to ensure that products placed on the EU market are designed to last longer, are easier to reuse, repair and recycle, and contain as much recycled materials as possible;

3. Empower consumers and public buyers: consumers will have access to reliable information on issues such as the reparability and durability of products to make more sustainable choices;

4. Ensure less waste: focusing on measures to avoid waste in the first place and to transform it into high quality secondary resources that benefit from an efficient secondary raw materials market. The Commission will examine the possibility of introducing an EU-wide harmonized model for separate waste collection and labelling;

5. Focus on the sectors that use most resources and where the potential for circularity is high such as: electronics and ICT; batteries and vehicles; packaging; plastics; textiles; construction and buildings; food; water and nutrients;

6. Make circularity work for people, regions and cities;

7. Lead global efforts on circular economy.

It is foreseen that by implementing the Action Plan in Europe, the circular economy will have net positive benefits in terms of GDP growth and jobs' creation, since applying ambitious circular economy measures in Europe can increase the EU's GDP by an additional 0.5% by 2030 creating around 700,000 new jobs

[25] COM/2020/98 final - https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN
[26] COM/2019/640 final - https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1588580774040&uri=CELEX:52019DC0640

1.10.3 The Circular Economy in Greece

Waste management in Greece has proved to be a major challenge regarding proper implementation and effectiveness. At the same time that European Waste Framework Directive obliges EU members to meet preparation for re-use and recycling of waste materials of at least 50% by weight, Greece recycles and composts a total of 19%. Landfilling is still the main waste management option with 80% of municipal solid waste ending up in landfill sites, while the flow of 1% of the produced quantities is unknown. Overall, there are 84 active sanitary landfills and 69 uncontrolled waste disposal sites due to which Greece has paid financial penalties.

The adopted recycling system is formed within the national legislative framework concerning the compliance with waste management principles and laws for alternative management of packaging and other products. There are 22 official recycling systems for a series of waste streams including, among others, packaging, electrical and electronic equipment and construction and demolition waste. Recycling systems are operated by private companies, while their activities are coordinated by Hellenic Recycling Agency (HRA). In general, HRA is responsible to develop and implement policies regarding national alternative management of packaging and other products. Specifically, packaging materials produced at municipality level are separately collected through the “blue bin” system which is under the responsibility of private company Hellenic Recovery and Recycling Cooperation (HE.R.R.CO), formed by companies related to production and trading of packaging. However, it should be noted that there is a lack of infrastructure in a national level, since recycling centres cover 76.2% of the population, with 73% of the population being covered by a separate collection network of recyclable materials and only 3.2% of the population being covered by separate collection of 4 material streams.

Even though numbers do not appear to be very encouraging, the situation has been improved during last years and updated national policies tend to form a more thorough and effective framework for waste management system and enforcement of laws. In this context, the Greek Government published the National Circular Economy Action Plan, aiming at the adoption and promotion of Circular Economy (CE) principles by economic and social actors. Since efforts in this direction are still at the beginning, the country's performance regarding CE is still quite low. According to the European Commission document on environmental performance of each member state, different indicators regarding the transition to CE in 2018 have not yet reached a satisfying level. Resource productivity indicator, meaning how efficiently the economy uses material resources to produce wealth, shows that Greece is ranked below EU-28 average, since the country’s score is 1.59 €/kg and EU-28 is 2.07 €/kg. Moreover, in terms of eco-innovation, Greece is ranked 22nd among EU-28. However, the overall national performance in both indicators has increased considerably during the last decade

1.10.3.1 Policies

Greece, in full compliance with the European waste management framework, has developed a series of policies for waste prevention and management. Waste hierarchy is the main principle characterizing the promoted waste management systems, thus actions towards highly effective recycling, reuse and recovery of waste, meaning the core of CE implementation, are considered to be crucial. National policies aim to create a robust background for extensive and high-quality source separation of waste streams, together with a high rate of participation, so as to meet the defined goals of waste management. Public engagement and small-scale waste management systems are recognized as key-components for the success of the aforementioned efforts.

Waste management in Greece is built upon Law 4042/2012 according to which waste hierarchy, waste management principles and specific targets regarding preparation of distinct waste streams for reuse and recycling, set by Directive 2008/98/EC, are adopted. An important modification of art. 43 by law 4609/2019, introduces the concept of CE and presents the tendency of the central government to shift towards its principles, since waste management authorities are obliged to pay a "Circular Economy" fine, when their practices are incompatible with waste hierarchy.

National Waste Prevention Strategic Plan (NWPSP) and National Waste Management Plan (NWMP) were published in 2015 to provide specific directions towards an integrated waste management and define relevant actors and their responsibilities. National Plans cover a wide range of issues that should be addressed from raising public awareness and promoting sustainable industrial activities to proper implementation of waste hierarchy. Especially, NWMP emphasizes the importance of source separation systems and waste management in small-scale units, near their source of generation. To this end, Waste Management Authorities, consisting of the municipalities' network of each region, as well as each municipality individually are obliged to publish and implement Regional and Local Waste Management Plans, tailored according to the specific needs of local societies. A series of complementary governing documents are dedicated to promote NWMP priorities. Specifically, these documents prescribe the obligation of local authorities to conduct Local Waste Management Plans, provide for economic penalties, in case they do not fulfil their responsibilities and, finally, define categories and requirements of source separation infrastructure.

During last years, and especially since 2018, there is an apparent effort of central government to form the framework for the adoption of CE principles in all different sector of economic and social life. CE is thought to be fundamental regarding national economic growth and sustainability by contributing to revitalization of industry and businesses via enhancement of their productivity. Moreover, CE is identified as a key-driver to address issues like waste management, research and innovation and development of social economy and solidarity to achieve social inclusion. To this end, a series of strategies and laws have been published recently to promote a national shift towards the CE concept.

National Strategy for Circular Economy sets the foundation for the accomplishment of the aforementioned scope. The Strategy recognizes the importance of circular entrepreneurship, including reconstruction, repair, reuse and industrial symbiosis, since it is classified among the three pillars of CE. Moreover, a framework for the support of SMEs towards implementation of CE practices is provided, in order to reorganize their productive and operational schemes and increase their competitiveness. Additionally, within the document, potential synergies with other strategies are promoted, among which Industry Forum and National Strategy for Smart Specialization contain references to implementation of CE and support of SMEs and/or CCIs. Both documents refer to the need for CCIs' empowerment by means of proper provisions and innovative solutions. The necessity for national policies to comply with CE principles is also highlighted by the National Strategy for Sustainable and Fair Growth. Waste management and recycling, support of secondary material markets and development of new productive models, including industrial symbiosis, are considered as priorities.

Except for the general directions and targets of the National Strategies, there are specific laws published recently, that promote adoption of circularity from enterprises by means of financial support and other provisions. Law 4430/2016 provides for development of Social and Solidarity Entrepreneurship, which by definition has to promote sustainable development and CE. CCIs have also right to ask for financial support. Additionally, law 4628/2019 provides for investments identified as strategic, including investments that implement CE practices, through proper financial and supportive measures. The same document

introduces “Hellenic Development Bank” to support enterprises, including SMEs, towards implementation of CE, climate change mitigation and sustainable growth.

In conclusion, there is still a lot to be done in Greece regarding CE and development of a proper legislative framework, since the country has only recently added CE concept in the political agenda. Especially due to the economic crisis of the past decade environmental issues were not effectively addressed. However, important steps have been made and CE seems to be the priority for the upcoming years thanks to its multilevel benefits. In this, context INNOMED-UP program may act as a paradigm for networking, practical CE adoption and social cooperation on the local level of urban environment

1.10.3.2 Practices, Trends and Models in the CE

NTUA research team has developed a **database** of practices, projects, initiatives as well as municipal programmes, which adopt Circular Economy (CE) principles in multiple ways.

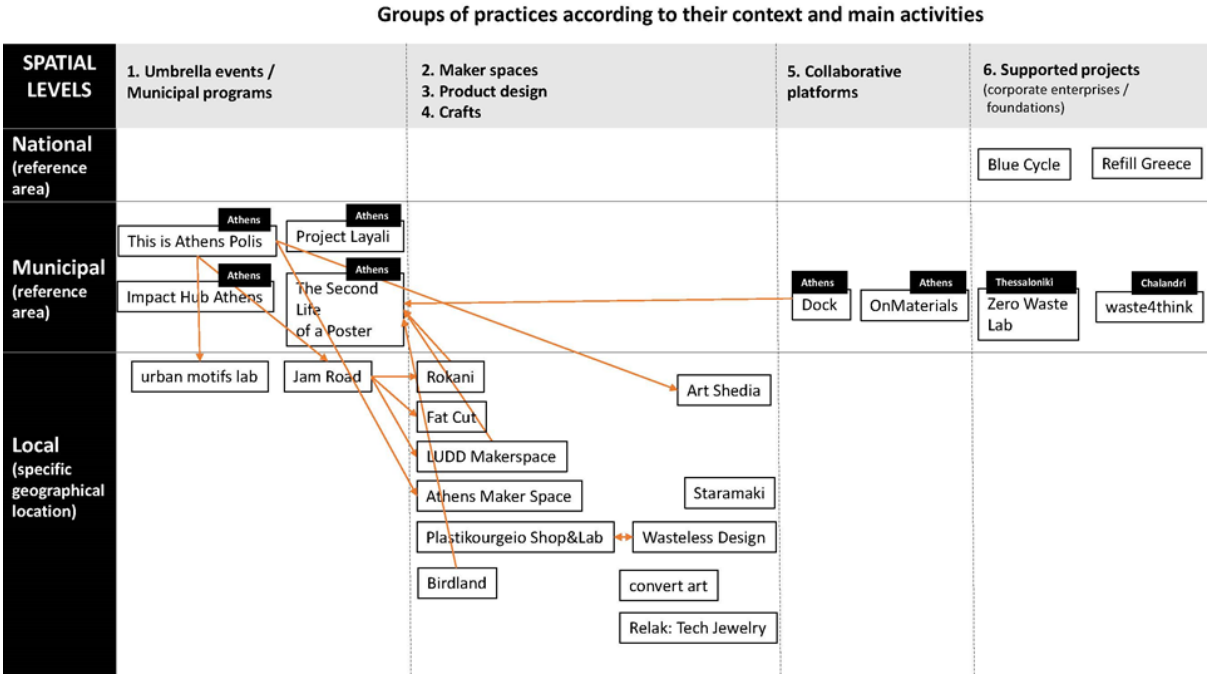
The methods applied to select the suitable Practices, Trends and Models, include primary and secondary literature analysis, desk research and participation in events with relevant stakeholders, and, when necessary, work in focus groups.

At the municipal level of Athens, development plans have been instituted aiming to boost urban areas, regenerate commerce and support innovative and social small businesses. Through the selected practices the encountered experiences range from spontaneous bottom-up private initiatives to centrally-promoted top-down interventions.

It is worth mentioning a methodological decision regarding the type and scale of the practices selected. In more detail, the review has included Practices or other set of actions such as collaborative platforms, municipal programmes, events and projects which despite a lot of context similarities, bear, at the same time, various differences in fields such as type and scale of the endeavour, organisational model, involved parties, time and scope, resilience etc. Nevertheless, it has been decided all the cases to be included equally in the database, as they offer on the one hand a more realistic view of the current complex reality and on the other they may reveal potential synergies and interactions between them.

More specifically, the fieldwork study focused on endeavours in the various sectors of Creative and Cultural Industries (CCIs) which deploy CE principles in different parts of their professional activities, such as concept-philosophy, design methods, resources and materials, implementation procedures, marketing and sales promotion, placing on the market, etc. The selected practices were initially classified into six main categories: (1) Umbrella events and Municipal programs, (2) Maker spaces, (3) Product design, (4) Crafts, (5) Collaborative platforms and (6) Projects supported by corporate enterprises and foundations.

Subsequently, the analysis focused on the spatial levels those practices are referred to: the national, the municipal and the local (see diagram below). The practices classified as local have a specific geographic location, whereas those classified as municipal refer to a wider level, differentiating from the ones which refer to the national level. The categories of Maker spaces, product design and crafts were merged into one, as they seem to adopt similar techniques and procedures, such as material reuse and creation of new products. This unification underpins the fact that those particular practices seem to play a prominent role regarding the synergies between CCIs and CE. The arrows in the diagram following diagram represent the existing interconnections, correlations and networking relations between the practices.



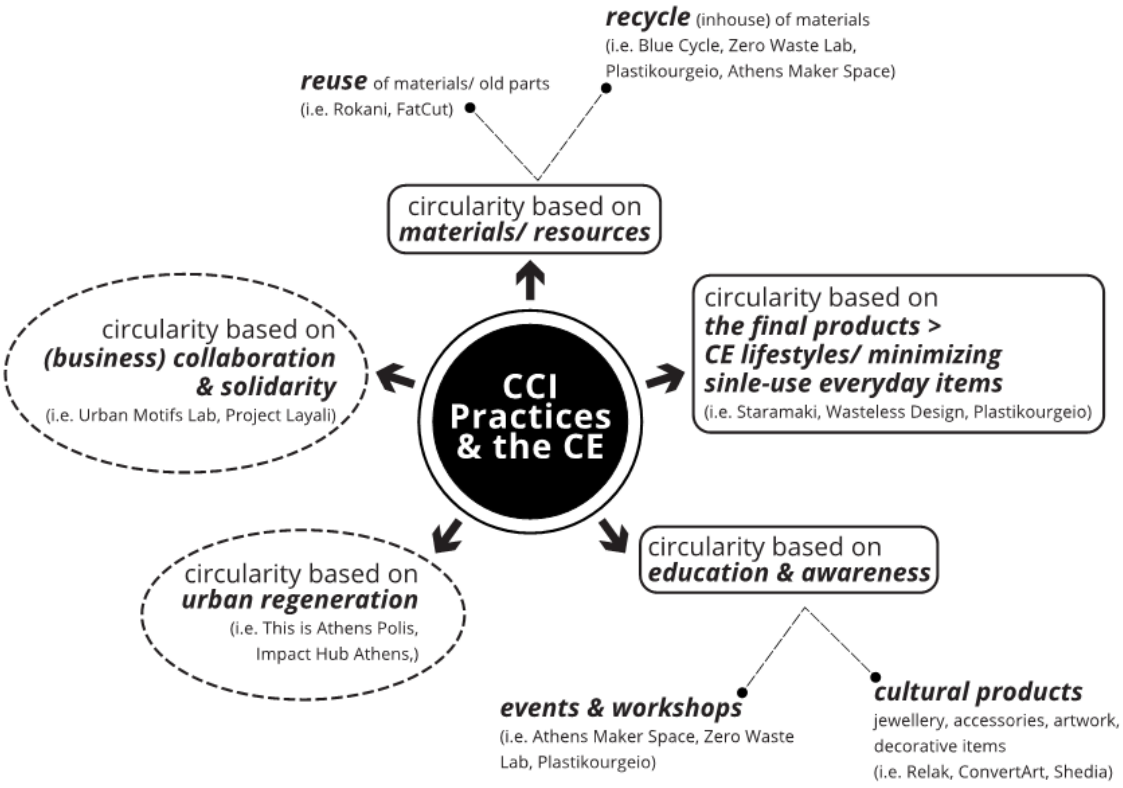
Source: NTUA team's processing

1.10.3.3 Synergies with CCIs

In Greece there are CE policies but not yet any strong institutional framework to promote synergies between CCIs & CE. As for top down practices, we observe few municipal programs aiming to urban regeneration, through supporting small innovative and social businesses, while the private sector - seeing the potential of the CE - leads various innovative and creative projects. On the other hand, as regards the bottom up practices we observe that, the CE has already started being a latent trend between SMEs with innovative, social, cultural and creative attributes. A high percentage of the documented practices are bottom-up initiatives by small and medium-sized groups of creatives who adopt CE principles and share collaborative, cooperative and solidarity values. As for their interconnections, informal synergies are being developed among SMEs and social actors, a fact that can be of great use for potential clustering.

The following diagram attempts to look into the ways the selected CCI practices contribute to CE. And that is:

- Through recycling or reusing of materials or resources, often by employing digital fabrication techniques
- Through the final product they create, which can help minimizing single-use everyday items or support in general a CE lifestyle
- Through their contribution to education and awareness with events, workshops or promotion of cultural products such as jewellery, accessories, artwork, decorative items etc.
- Or through improving urban regeneration processes, deploying business collaboration and promoting solidarity



Source: NTUA team's processing

1.10.4 The Circular Economy in Italy

The "National Report on the circular economy in Italy" 2020, published by the Italian Agency for New Technologies, Energy and Sustainable Development - ENEA and the "CEN-Circular Economy Network" states that Italy is the first among the five main European economies in the ranking by the circularity index, the value attributed according to the degree of efficient use of resources in five categories: production, consumption, waste management, second raw materials market, investments and employment. The Report also concludes that although ranking so high, it is also losing ground to countries like France or Poland that recorded a rapid growth in the last few years.

The reason for the high performance can be found in the fact that Italy makes the best use of the scarce resources destined for technological advancement and has a good efficiency index (for every kilo of resource consumed, 3.5 euro of GDP are generated, compared to a European average of 2.24). On the other hand it is penalized by the scarcity of investments - which translates into a lack of eco-innovation - and by critical issues on the regulatory front. In fact, unlike other European countries, up to day Italy didn't develop a National Strategy and Action Plan for the Circular Economy.

The first steps towards a specific national strategy were taken in 2017, when the Italian Government issued the Strategic Framework: Towards a Model of Circular Economy for Italy. The document, developed with ENEA through a public consultation process, had the objective to prepare a National Action Plan on CE. The document defines a strategic positioning of Italy on all relevant themes of the circular economy, in continuity with the commitments adopted in the framework of the Paris Agreement on climate change and of the United Nations 2030 Agenda.

This document constitutes an important element for the implementation of the wider National Strategy for Sustainable Development, contributing in particular to the definition of the objectives for more efficient use of resources and adoption of circular production models, as well increasing awareness on sustainable and responsible consumer behaviour.

The document identifies the need to launch a new industrial policy with the aim to increase the sustainability levels and boost innovation capacity, but also to rethink the way of doing business and change the consuming patterns.

1.10.4.1 Policies

The main policies that can be connected to and are contributing to CE principles at national level in Italy in the past decade were the National Waste Prevention Program and the PAN GPP - Action plan for the environmental sustainability of the consumption of the public administration.

The National Waste Prevention Program sets the waste prevention goals (targets set for the year 2020), with the aim to dissociate economic growth from the environmental impacts associated with waste production.

The Program sets the following prevention objectives to 2020 compared to values recorded in 2010:

- 5% reduction in municipal waste production per unit of GDP;
- 10% reduction in the production of special hazardous waste for units of GDP;

- 5% reduction in the production of special non-hazardous waste per unit of GDP.

The Program includes a series of general and other specific measures.

The general measures include:

- Sustainable production
- Green Public Procurement
- Reuse
- information, awareness rising and education
- Economic, taxation and regulatory instruments
- Research and development

The specific measures are designed with reference to some priority waste streams, such as food waste, paper, packaging, electronic waste and demolition waste. The Italian Regions were required to integrate the reduction targets and measures in their territorial planning documents for waste prevention and collection within one year from the adoption of the National Program.

The PAN GPP - Action plan for the environmental sustainability of the consumption of the public administration provides an overview of the Green Public Procurement, defines national objectives, identifies the categories of goods, services and priority intervention works for environmental impacts and volumes of expenditure on which to define the 'Minimum Environmental Criteria'. The application of the Minimum Environmental Criteria and the implementation of the indications contained in the Action Plan, as well as contributing directly to its objectives, provide a concrete support for the achievement of the environmental indications contained in main EU and national regulations, strategies regarding the following topics: a) the fight against climate change through policies of mitigation and adaptation; b) the transition from a linear economy to a circular economy and c) the protection of biodiversity.

Another policy worth mentioning for the importance in the Circular Economy is the National Bioeconomy Strategy, updated in the first quarter of the 2019 in light of the new "European BioEconomy Strategy" which strongly emphasizes the need to direct all sectors of the bioeconomy towards circularity and environmental sustainability.

Following the announcement of the European New Green Deal and the adoption of the 2020 EU Circular Economy Action Plan, Italy included under the budget law for 2020 the first measures for the "Green new deal", with the establishment of a fund for public investments (4.24 billion Euros for 2020-2023 period), intended to support innovative high investment projects and programs for environmental sustainability. Investments will be supported for the circular economy, as well as for the decarbonisation of the economy, urban regeneration, sustainable tourism, adaptation and mitigation of the risks deriving from climate change.

In the context of public policies to support the transition to a circular economy, the *Industry 4.0 Plan* was upgraded and redefined, focusing more on environmental sustainability and explicitly aimed - as "Transition Plan 4.0" - to encourage green investments as well of companies in the circular economy; the

expansion of the Fund for support business and research investment (FRI) whose resources can be used to support investment in circular economy, urban regeneration, sustainable tourism, adaptation and mitigation of the resulting risks from climate change.

As regards other fiscal measures, the governmental decree "Growth" has provided for a series of measures to encourage the reuse and recycling of packaging, as well as the purchase of recycled and reused products. In addition, with the aim of discouraging the use of the products in disposable plastics, excluding compostable products and recycled plastics, a *plastic tax,* set to 45 euro cents per kg of plastic was included in the budget law 2020. At the same time, the Decree foresees the incentives for technological adjustments aimed at the production of compostable products.

The survey done at regional and local level in two regions involved in INNOMED UP Project, namely Sicily and Tuscany, show that the trend follows the one that can be seen at national level, i.e. the policies on CE reflect the EU legislation and action plans. But in the last 3 years the growing interest towards Circular Economy, oriented also some other institutions (both public and private) to stimulate initiatives with this approach.

This survey done in Sicily considers some regional policies deriving from EU Structural Funds (EFRD), whose strategy of innovation is quite close to the Circular Approach although it has been worked out before. In addition, the specific orientation of the Plan for the South (of Italy) directly embodies the principles of CE, with some encouraging experimentations. Under the regional level there is still little space for local policies, even if (in particular in little towns) there is a growing interest by mayors and Local Development Agencies. An interesting example of policies, from the Non-profit Sector, is that of the Foundations and here we suggest in particular two main foundations who work in the Southern Italy: CARIPLO Foundation and Fondazione CON IL SUD. The first one has created a specific program on CE initiative, in particular for the north of Italy, but with the possibility of intervening also in the South. While Fondazione con il Sud (Foundation “with the South”) is specifically oriented to support the Third Sector (and of course the Creative Sector) in the South of Italy.

In Tuscany region the CE principles are included mainly in the regional strategy for sustainable development: Agenda 2030: towards a sustainable Tuscany and in the regional waste management legislation (Legislative Decree 152/2006). Nevertheless, the dedicated regional strategy and specific action plans are still missing. The most valuable policy reported in the survey is for sure the **Recò Festival**[27], the first Circular Economy Festival in Italy, promoted and organised by the Tuscany Region, Toscana Promozione Turistica (regional tourism promotional agency) and the City of Prato in 2019. The Festival is a part of the more broad promotional strategy of involved administrations aimed to the awareness rising of the civil society and productive sectors on Circular Economy and in general on the environmental themes. Prato was chosen as a location of the Festival for a reason. Famous worldwide for its textile district, the industry for decades relies on the CE principles having historically based its industrial fortune on the reuse of waste from the textile process and on the reuse of second-hand clothing from all over the world. Prato was the first industrial district arranging a close water cycle so to be able to reuse the waste water more than one time and to clean it before giving back to the environment. From 2016 the city administration participates in the works of the EU Urban Agenda Partnership on the Circular Economy (UACE). In late 2019, the City adopted the CE Action Plan “Prato Circular City” that uptakes the work

[27] http://www.recofestival.it/

carried out with the UACE and in line with the objectives of the **Amsterdam Pact**[28], for a Better regulation, Better funding and Better knowledge on the Circular Economy in the City of Prato.

Figure 3: Waiting for Recò Festival 2020 - Photos by Marco Badiani

1.10.4.2 Practices, Trends, and Models in the CE

Numerous research studies demonstrate how an inefficient use of resources in addition to representing an environmental problem has important repercussions on the economic and industrial ecosystems. In a globalized market, especially in the absence of internal resources, businesses face problems related to the scarcity of materials and extreme price volatility of raw materials. The development of a "circular economy" requires to structurally reorganize the production processes with the aim of limiting the use of non-renewable or recyclable raw materials, reducing waste and the production of waste, promoting recovery and reuse also in other industrial cycles, as well as promoting energy savings.

In any country, the adoption of the Circular Economy paradigm requires a new strategic positioning by the institutional, economic, academic and social actors. In Italy, since the second post-war period, characterized by a rapid increase of population and improvement of living conditions, the potential contrast between economic growth and the protection of the environment has emerged. Here the concept of the CE has evolved in continuity with commitments made under the Paris Agreement on Climate Change, the 2030 Agenda on Sustainable Development of the United Nations, both at the G7 level and in the European Union. An important element for the implementation of the wider National strategy for sustainable development, has been the definition of the objectives of the efficient use of resources and models of production and sustainable consumption.

The Italian Ministry of the Environment and the Ministry of Economic Development, in the strategic document “Towards a circular economy model for Italy[29]" (November 2017) stresses that pursuing the principles of the circular economy represents an opportunity to create new business models. To evaluate viable solutions, it is necessary to pass from a linear approach to a circular approach and sometimes question business models that have been pursued up to now, that should be discussed and confronted with the new market demands. This document indicates the main reference models of the circular

[28] https://ec.europa.eu/regional_policy/sources/policy/themes/urban-development/agenda/pact-of-amsterdam.pdf
[29] http://consultazione-economiacircolare.minambiente.it/sites/default/files/verso-un-nuovo-modello-di-economia-circolare_HR.pdf

economy for further business activities: sustainable supplies or purchases, recovery, reuse and recycling of resources, extension of product life, sharing platforms, transition from product to service.

In this context, the great challenge that Italy will face in the next decade, is to respond adequately and effectively to complex environmental and social dynamics, while maintaining at the same time the competitiveness of the production system. A change of paradigm is needed to launch a new industrial policy aimed at sustainability and innovation while increasing the competitiveness of product and of the Italian manufacture, and which also forces us to rethink how to consume and do business. Italy must seize this opportunity to develop new business models to make the most of Made in Italy and the role of small and medium-sized companies Enterprises (SMEs). The transition to the Circular Economy requires a structural change, and innovation is the cornerstone of this change.

The report done by CRESM for the Sicily Region gives room in particular to Practices of sensitization of Circular Economy. One valuable example is AI REVES, a “Social tailoring” a textile laboratory that uses garments destined to become waste or surplus, after their proper sanitation, to give life to new creations. The examples such this have been chosen both for their internal value and as indicative of a series of other interesting initiatives that are currently running in Sicily. At the same time, the report mentions just two practices from the entrepreneurial world, but it possible to find many others practices in the same Survey on CCIs in Sicily (A.3.1.1). The collected practices of sensitization come from the entrepreneurial world (Chamber of Commerce), and from the environmental associations (Legambiente, MareVivo), but unfortunately not from the Public Administration domain, as demonstration that the CE issue is not yet fully entered into the political and administrative debate, which is still too tied (with little exceptions) to the simple waste management. Great part of these Practices are related to awareness campaigns promoted to target different beneficiaries, while the entrepreneurial initiatives of circular economy still suffers the limitations of the productive system of the island that cannot absorb great part of the recycled materials.

The Tuscany report on the other hand includes several practices and trends relevant for the City of Prato with the main focus on the textile sector. The main issue reported when it comes to the promotion of the CE regards the textile waste. Starting from 2017, the district Municipalities have prohibited the classification of textile waste as urban waste. Companies had therefore to turn to private subjects to dispose of the waste that they previously introduced into the municipal waste circuit. The consequent increase of special waste and the temporary closure of a local landfill, undermined the waste disposal system, demonstrating its fragility. Moreover, the re-use of pre-consumer fibres has been limited by the cumbersome nature of the regulatory framework on by-products, and the post-consumer one by the lack of a clear and common-sense rule on textile waste. Following the requests of the Local Industrial Association, the Region, about two years ago, set up specific working tables to address the critical issues of waste management in the textile, paper and stone sectors, which on turn brought about the signature of a Memorandum of Understanding among all “parties that commit to support policies and actions to promote the development of the economy circular in the textile district”. The idea is that the regional industrial policy should be designed collectively, taking into account local excellences and trying to develop the economy through a circular economy approach. The "Textiles Pact" MoU was signed on January 17th 2020 between the Tuscany Region, the Municipality of Prato, Alia Servizi Ambientali SPA (Waste Management Company), The Industrail Association “Confindustria Toscana Nord”, Business Associations “CNA Toscana” and “Confartigianato Toscana Tessile Moda” and the Producers Consortium “ASTRI” (Associazione Tessile Riciclato Italiana or Italian Recycled Textile Association).

1.10.4.3 Synergies with CCIs

According to the Orientation Paper[30] of the Circular Economy Partnership of the Urban Agenda[31], cities are the place to integrate different policy domains in their practices, e.g. by ensuring collaboration across different sectors and actors. In any city, exploited and unexploited resources from infrastructures, productions etc. are either stored or discarded as waste. Identifying and understanding material flows and stocks, and mapping how these could be better managed through interactions with novel actors including CCIs, is a key element of implementing the circular economy in a city.

Topics that cities can map/investigate are:

- Urban resources (e.g. biomass)
- Value chains of materials – identifying, separation, logistic, treatment etc.
- Resource management, including recycling (high quality) and bio-based resources
- Buildings (repair and reuse)
- Water as a resource (incl. water/waste water re-use and management, etc.)

These flows should interact with business enablers and drivers, such as CCIs and other innovation actors, to achieve upcycling and economic development. The Circular Economy can offer great opportunities to small and medium sized enterprises within a city, provided the innovation is triggered through applying proper human, cultural and technological capital. Enabling businesses to identify and exploit opportunities with the help of CCIs will speed up the development of the transition to a Circular Economy. Some cities have already started this process, by mobilising CCIs in the recovery of material and energy flows.

The CE can be greatly enhanced by exploiting the potential of CCIs embed a great potential to boost the circular economy by using their creativity and knowledge to foster:

- Eco-design for lifecycle management
- The renovation and re-use of space through e.g. sustainable and inclusive buildings
- Industrial symbiosis between manufacturing sectors and CCIs
- Innovative business models
- Use of secondary materials

[30] https://ec.europa.eu/futurium/en/content/circular-economy-orientation-paper

[31] The Urban Agenda for the EU, launched in May 2016 with the Pact of Amsterdam, represents a new multi-level working method promoting cooperation between Member States, cities, the European Commission and other stakeholders in order to stimulate growth, liveability and innovation in the cities of Europe and to identify and successfully tackle social challenges. The Agenda focuses on 12 priority themes essential to the development of urban areas. Each theme has a dedicated partnership that aims to find workable ideas focused on the topics of EU legislation, funding and knowledge sharing. One of these partnerships is the Partnership on Circular Economy, wherein the city of Prato has been an active member for the last few years.

CCIs can also help to incentivize circular consumption. The development of more sustainable consumption patterns among citizens is a huge opportunity to move the economy in a circular direction. CCIs can support cities to motivate, nudge or push their citizens in this direction through vision, cultural shift and practical solutions. Topics to focus on in this direction are:

- Consumer awareness building through e.g. eco-labelling
- Eco-design (awareness, education)
- Creative food consumption for increased sustainability (food waste prevention and urban farming)
- Reduce excessive resource use (food and beverages, clothing, packaging, etc.)
- Waste prevention through preparation for reuse
- New creative retails and e-commerce
- Sharing economy in various sectors
- Increasing reuse and repair

1.10.5 The Circular Economy in Jordan

So far, the discussion on circular economies in Jordan has retained at the top levels. Few initiatives aiming at promoting circular economy approach had been planned and conducted by several NGOs and entrepreneurs aiming to build the concept of a circular economy more practical and tangible for the population as a whole. However, up to date entrepreneurs in this sector are fighting in the niches. Institutions that could provide the necessary support for circular economy initiatives in Jordan are weak on all levels — from universities to finance to the government. On the other hand, the lack of knowledge about the circular economy framework and benefits of the circular economy has been identified as one of the barriers to the implementation of circular economy practices among SMEs, besides to the monopoly of the current linear design of products and the lack of infrastructure and supporting secondary raw material market among others barriers of circular economy business model implementation.

In light of both the barriers that the circular economy approach is facing and the enablers factors of the implementation of circular economy business models in Jordan, cooperation of different stakeholders to face the upcoming challenges of the transformation from linear to circular economy including the transition phase, besides to better understanding of the value of products and materials using better terminology and improving management strategies and plans would be the essential steps.

1.10.5.1 Policies

The Jordanian legal system is based on legal hierarchy. It is the Parliament that reviews, approves, and produces “Laws”. Then the Council of Ministers is sufficient to review and produce “Regulations” stemming from any specific law. Each Ministry may also produce so-called “Instructions” to specify the procedures and mechanisms for the implementation of the laws or regulations.

The short-term planning of the National SWM strategy in Jordan (2015 - 2024) promotes recycling and reuse activities through the establishment of pilot separate collection systems for recyclables (at least paper, metal, plastic and glass), formulating relevant technical regulations and addressing the legislative frameworks required for proper recycling practices, public awareness and educational programs. The expansion of MSW recycling and separation schemes is to be achieved within the mid-term agenda by the year 2024. The construction of mechanical and/or biological treatment facilities, and other sophisticated material recovery systems are to be achieved by 2034 according to the long-term strategy.

The legislation of SWM is broadly categorized into that related to MOE and other governmental organizations.

Legislation related to MOE:

Environment Protection Law No. 6 of 2017: Sets the direct responsibilities for the Ministry of Environment and overarching principles for environmental protection.

Framework Law for Waste Management Law No. 16 of 2020: classifies the waste based on production and specified waste procedure in terms of reuse, recycling, collection, transfer, sorting, storage, recovery and landfill.

Solid waste management regulation No. 27 of 2005: Defines solid and semi-solid materials, to be treated or disposed of, resulting from any activity and not included in the definition of harmful and hazardous waste defined by “Management, Transportation and Handling of Harmful and Hazardous Substances

Regulation No. 24/2005". Demands general requirements in terms of manpower, equipment, monitoring, container management, separation of hazardous wastes, documentation, and final treatment or disposal control for every party that generates and/or manages solid waste.

Management, Transportation and Handling of Harmful and Hazardous Substances Regulation No. 24/2005: Defines harmful and hazardous substances and waste. Instructs method of their treatment and disposal.

Waste oil handling and management instructions of 2003: Licensing requirements and documentation for generators, transporters, and treatment of waste oil. Technical requirements for generators, transporters, and treatment of waste oil in terms of storage, spill management, emergency, fuel specs, etc.

Hazardous waste handling and management instructions of 2003: Licensing requirements and documentation for generators, transporters, and treatment/disposal of hazardous waste. Technical requirements of hazardous waste for central storage, wrapping, transport, treatment, disposal, emergency, empty containers, etc.

Organic compost (animal and plant origin) storage, production, trading, and use instructions of 2009: Licensing requirements for compost plants and trading. Technical requirements including location for composting, storage, processing, etc.

Policies and laws in Jordan are usually written within and with a linear economy that can unintentionally hinder the transition to a circular economy due to unclear, multiple, changing, and complex regulations. Thus, aligning the circular economy with the existing policy priorities instead of creating a new circular economy policy to exist alongside current industrial development, and environment strategies would be an essential step to activate circular economy approach. The policymakers can identify specific initiatives and measures that can improve the implementation of existing national strategy development as well as the industrial strategy priorities.

1.10.5.2 Practices, Trends and Models in the CE

The survey showed that one of the most important challenges facing the application of Circular Economy (CE) is the lack of governmental encouragement and support to invest in the CE field and the lack of commitment of various institutions and establishments to environmental laws that address the concept of economic circular, especially for importing products, as Jordan is a consumer country in general.

It is also noted that in the engineering design and construction sector, the most important environmental standards are not taken into account in the design and construction; where these standards help directly or indirectly in achieving the concept of circular economy. There is no procedure that obliges building owners to follow these standards. The absence of the technical ability and technical skills of small and medium enterprises' owners to determine the required options to serve them in the circular economy system.

The survey observed that SMEs often encounter different types of barriers and challenges for which they need practical, legal, and of course, financial support. Financial aspect is one of the big obstacles as SMEs implement sustainable practices.

During the survey, the absence of government funding and appropriate legislation has been listed as one of the main challenges SMEs are facing and particularly to small enterprises. This condition causes confusion for small and medium-sized businesses and creates difficulties in fulfilling the necessary requirements.

Foremost, lack of knowledge regarding the circular economy benefits plays a critical role. It is because of the misguided belief that green standards are expensive.

1.10.5.3 Synergies with CCIs

Despite the progress that has been made in recent years and the clear examples of business success that already exist, fundamentally the creative industries in Jordan and in Irbid in particular remains a sector which is hampered by a number of major challenges. Most crucially, despite the rhetoric, the sector's development has been neglected by policy-makers. Added to this, the implementation and enforcement of the country's intellectual property rights (IPR) commitments is still lacking. Beyond these regulatory and macro- economic challenges lie a host of other industry-specific challenges, not least of which is the lack of a collective voice.

Irbid market for creative industries remains small in scale and struggles to get access to the international stage. The survey spotlight on the fact that SMEs are regularly complaining about the lack of sustainable sponsorship from companies or banks, as they do about the steady disengagement which has occurred on the part of public authorities. The sector still lacks skills and professionals in arts as well as in cultural program management.

On the other hand, the survey showed that women participation in Art CCIs in Irbid is still **naive**. Also, the education system does not match the ambitions in the creative sector and the effects of the absence of artistic curricula since the 1970s are now being felt with a lack of qualified staff in the cultural sector.

The survey revealed that the audio-visual sub-sector in Irbid consists of a range of activities both relatively old and new. In the former category sits film, photographer and music producers, whereas the latter includes 'born digital' activities such as computer games and special digital effects. Over recent years, many workflow processes in film, Radio, TV and animation have become digitized, meaning that there is a closer affinity in production processes and skill sets across the industries than when the earlier mediums were analogue. Similarly, as with most creative industries activities, the internet and mobile communication are also providing new platforms for filmmakers and animators to reach new audiences and fund their work, through for instance, short and 'episodic' content and crowd-funding sites. For games, the emergence of smartphones, tablets and the app market has led to an explosion in the range of possible games, alongside more established games platforms.

1.10.6 The Circular Economy in Palestine

Solid waste management in Palestine has become a critical issue due to its environmental, economic and social impacts. PNA have exerted many efforts in studying and seeking to solve major obstacles, and they have issued several laws related to the management of solid waste.

Palestinians from WB and Gaza generated about 1.59 Million tons of waste in 2018, or nearly 4,356 tons/ day. Average waste production per capita is about 0.9 kg/day, most of municipal waste (94%) is collected by municipalities JSCs and UNRWA (in refugee camps). The major components of municipal waste are organic with 50% and plastic with 17%, then come paper and cardboards with 11%. Despite this large portion of biodegradables and recyclables, only a small fraction is collected for reuse (about 3%), among which about 1% is recycled. However, the only materials currently recycled in Palestine (i.e. processed waste into secondary raw material to be reused) are organic waste in addition to small quantities of paper and cardboards. Other high value wastes like metals are collected and sent abroad. The recycling and reuse industry in Palestine can be characterized as small, informal and fluctuant. The majority of pilot projects implemented in the last 10 years focused mainly on composting, as well as some plastic and paper/cardboard recycling. The current informal E-waste sector in South of Palestine provides an essential livelihood source for a large number of people, a widespread and active network and considerable manual skills enable the existence of an informal market with limited available infrastructure that permits a profitable E-waste business. Most of these informal workshops concentrate on one or two processes including dismantling and clean metal assembly, they are also involved in extraction of precious metals through burning, and these workshops exercise little technologies using primitive techniques or no control over their activities and use a highly polluting process through random burning.

According to Palestine Economic Policy Research Institute – MAS, the cultural, traditional and tourism industries are simple, manual and depends basically on crafts labour and family businesses, and the number of labour is limited because (1) these industries need special artistic skills and (2) are being taught through family heritage or shall be taught in special institutes, and because they are manual handcrafts with low usage of machinery. CCI's in Palestine are manual handcrafts that usually find markets in the tourism industry and not in the local market with a limited number of skilled labours.

Traditional and Tourism Industries (or CCI's in the research) are presenting wide section in the culture identification of citizens of any region, and it reflects the history of people connecting the past with the future, because these industries that we see them as "traditional" nowadays, were- at some point of time- the main industries of useable tools in the past civilizations of the same people, and they are related to their folklore, food, tales … etc.'.

In Palestine, these industries are very important in the population memory due to the large number of civilizations that were living in this area along the history, and Palestine considered as one of the main touristic and religious countries in addition to the situation of conflict upon identity.

1.10.6.1 Policies

PNA have exerted many efforts in studying and seeking to solve major obstacles, and they have issued several laws related to the management of solid waste (e.g. Local Authorities bylaw No (1), Environmental Law No (7), Public Health Law for the year (2004), Solid Waste Management Bylaw, Joint Service Council (JSC) Bylaw for the year (2016), and the Guidelines for Solid Waste Management Tariff).

The Basic Palestinian Law integrates sustainable development; it identifies well balanced and clean environment is a right to current and future generations. This was further elaborated with the development of the environmental law in 1999; where it addresses both production and consumption side, through articles aiming at reducing pollution, protecting the environment, reduction of waste, enhancement of waste recycling and reuse, mainstreaming environmental consideration in the social and economic developmental plans, and focuses on awareness and environmental information to enhance and increase public awareness and consciousness about environmental aspects.

The geographical scope of the public authorities in Hebron are national and their regulatory framework are internal system and policy and involved all CCI sectors, that's due to the nature of targeted public authority which are governmental bodies with long term policies and plans that target wide range of private sectors including CCI SME's, on the other hand, policies in Nablus covered local areas within the governorate or even the city of Nablus only, and their policies are mainly special or self-initiatives from staff members of organizations like universities and non-profit organizations, and due to this fact, Nablus self-initiative policies were more effective and were able to convince people to cooperate more based on good willing and focused on people daily life like raising awareness and waste management practices.

Policies had been financed by the private sector, self-financing and donation. Some policies had started 10 years ago, others are relatively new with less than a year, but one of the policies related to waste sorting and dismantling had been stopped because people of the locality refused the establishment of such facilities near their neighbourhoods.

Also, most official institutions do not have policies directly related to recycling, but part of them have a future vision in order to reduce the burden of daily waste. Also, an important part indicated that they have procedures related to sorting as there were suggestions from the Chamber of Commerce to arrange competitions to encourage waste management procedures and initiatives.

Table (2) shows results of the second questionnaire main indicators with related Policies institutions, we were able to overview 6 Policies, 2 in Hebron are led by Hebron Chamber of Commerce and Industry and Ministry of Culture and 4 in Nablus are led by Palestinian Red Crescent Society, Nablus Municipality (Joint Service Council) and Palestine Technical University (Kadoorie) in Nablus.

Table 2: Policies on the Circular Economy and Synergies with CCIs indicators

	City	
Aspect	Hebron	Nablus
#	2*	4
Public authority Name	Hebron Chamber of Commerce and Industry, Ministry of Culture	Palestinian Red Crescent Society, Nablus Municipality (Joint Service Council), Palestine Technical University (Kadoorie)
Geographical scope	National	Local
Regulatory framework	Internal System and Policy - Strategy	Special policy - Self Initiative - University level
CE sector	Waste management - Consumer education	Waste management - Consumer education - Raise Awareness
Involved CCI sectors	All	Advertising and marketing - Architecture

	City	
Aspect	Hebron	Nablus
#	2*	4
Financial framework	CCI - Private sector - Ministries - self-financial allocation	Donations from the local community - $ 5,000,000 PADICO Funding (Private Sector) - Municipality resources (self-financial allocation)
Timescale (start/end date)	2019 and ongoing	between 8 months and 10 years
** Waiting another 4 policy's, but due to Covid-19 the delivery of them has been postponed*		

1.10.6.2 Practices, Trends and Models in the CE

In Hebron, most of the practices focused on awareness programs for the women sector, environmental school programs for educating the school students about Solid waste management, environmental beautification and heritage preservation within the programs of Environmental Quality Authority, General Union of Palestinian Women, Feminist Associations, Craftsmen, Hebron Chamber of Commerce, Tourism Union, Local community and Porcelain and glass shops. Thus, the main beneficiaries were the citizens of the Old City especially women, also the school students.

The main CCI sectors involved were as follows:

- Craftsmanship for waste recycling and reuse
- Designing organic products
- Exhibitions for sustainable production and consumption of recycled or natural products
- Product design

The main CE sectors involved were:

- Solid waste management
- Green space utilization
- Recycle of glass waste and ceramic waste
- Embroideries Recycling

However, in Nablus were mainly about solid waste sorting, awareness and capacity building being conducted by Nablus Governorate, The Municipality, The Local Committee for Environmental Protection, Ministry of Agriculture, Child Cultural Centre and International Group for Engineering and Consultations (Maalem) targeting various types of beneficiaries as citizens, youth, women, children and SME's. These practices were intended to simple partial exploitation in the field of creative industries (recycling tires and using them for cosmetic and agricultural purposes) and simple awareness and products for aesthetic purposes. Also, in Nablus there is another type of practices targeting specifically the school students for solid waste management through conducting environmental beautification programs by partnership of the Environmental Quality Authority, Nablus Governorate and Nablus Municipality.

The research team also focused on the field visits to target practices conducted in WB, and we explored stakeholders like Village Councils, JSC for Solid Waste Management, Ministry of Economy, Ministry of Health, Civil Defense, Environmental Quality Authority….etc., and they are conducting Vocational training program and Agricultural awareness program to students of vocational training and education centres (crafts, industries, cosmetics, air conditioning and refrigeration) and this training is mainly to educate them

about waste management and educating the participants according to the type of craft, organic waste management and land exploitation.

The general CCI sectors that were involved:

1. Fashion design from recycled materials
2. Using waste in handicrafts (FIG 4)

Figure 4: Solid Waste Management Awareness programs for School students

In general, we found that the major field of practices is in awareness campaigns and programs targeting CCI SME's and other beneficiaries without one umbrella that covers and leads these efforts, although they go in parallel with SCP national action plan but with lack of coordination and follow up.

The main CE sectors involved were:

- Waste Management and Educating consumers
- Exploiting all available resources at different levels

According to Main Economic Indicators for the Tourism Enterprises in Palestine by Tourism Activity, 2018. The total number of Manufacture and sale of handicrafts and souvenirs facilities was 479 with output value of more than 24 Million USD.

1.10.6.3 Synergies with CCIs

The total number of targeted SME's in both cities has been 36 working in the visual, design and performing art. The main sector Palestinian craftsmen working in is crafts and fashion design and they are related to the cultural heritage of ancient Palestinian industries, while modern arts are still modest within craftsmen, one more reason for this result in that most CCI SME's in west bank are family businesses with lack of modern touch from the new generations.

The research team realized that Nablus CCI's are proposing more unique products than those in Hebron, and this may be related to the fact that AN-Najah University has a prestigious Faculty of Fine Arts that offers programs in Music, Ceramic, Painting, Graphic design and Interior Design, and a new educated generation is taking charge of CCI's in this city.

The research showed that CCI's are basically working with Wood, Seashells, Stones, Papers, Stone Sawdust, Wood Sawdust, Leather, Fabrics, Cardboards, Clay, Glass, Plastics, Ceramic, Keys, Cotton Batteries, Plastic straw, Plastic bottles, Cardboard and Wool.

About 80% of raw materials processed in researched Hebron SME's are used and about 50% of Nablus materials, and SME's highlighted that these inputs are not always easy to find due to lack of waste collection, sorting and handling facilities, and policies in this regard lack the law enforcement and they are more like guidelines, although Environment Quality Authority (EQA) is one of the best governmental bodies in term of cooperation and long term policies, but the awareness upon population regarding concepts and practices of CE is low, and it was even low between some SME's who are working in this field, only 48% of interviewed SME's in Nablus were aware about CE terms and concepts, and about 80% of SME's of Hebron.

We don't have information about the behaviour of green waste management in both cities or about the appropriate eco-system or facilities that can create a smooth circular supply chain, in addition to the fact that end users are usually under estimate final products made from recycled materials even if they were not used before, and this leads to the result that SME's are facing huge challenges in promoting their recycled products and they usually depend on special trade fairs that are dedicated for customers with green awareness or artistic styles.

The main conclusion is that Hebron and Nablus have enough solid waste to be targeted by CCI SME's but we need to work on creating a sustainable supply chain for providing them with solid waste in suitable form to be processed and marketed at competing prices. This requires to build SME's capacities in developing new products that can absorb a wider range of wastes in order to create products with higher value and more suitable for customer needs.

Therefore, the sustainable consumption and production (SCP) National Plan has identified Eco-tourism as an entry point to mainstream SCP in the tourism sector. And here comes the role of the CCI SME'S based on CE and tourism industry because Palestine is considered as one of the most targeted countries for tourism in the region and SME's can find customers with higher awareness about green products.

Also the local market is still promising if SME's can change their strategy of product development and customer segmentation, the research showed that CCI SME's are basically producing secondary products like Gallery items, but not a daily usable/consuming products, and by doing so, they are neglecting the needs of the local consumer who needs **practical, usable, well produced and price competing products**.

Thus, SME's shall research the local market looking for such needs and transforming them into opportunities, for example, there are huge opportunities in the fields of: Educational tools, home and kitchen tools, casual fashion, fashion accessories, toys and others.

The research results indicate that most craftsmen never received any specialized training program dealing with CE in both cities. Thus, their readiness to participate in a CE capacity building program specialized for CCI's is very high with 100% approvals in Hebron and 89% approvals in Nablus.

1.10.7 The Circular Economy in Tunis

Circular economy attempts in Medina, are difficult to make sustainable, since the quantity is not enough for a profitable business model, according to Mr. Hintati, environment department manager at the Municipality of Tunis. Hintati also confirms that outsourcing municipal waste management, or implementing circular economy initiatives through the municipality would be challenging, since there are too many interfering public institutions, to a point where laws are difficult to implement.

In the field of recycling; all local attempts are informal today, and most private sector environment companies collaborate with informal sector individuals who post-sort home waste, that collect plastic and carton; making waste collection more difficult for municipal workers and endangering their lives.

The 2015 approved 'Private Public Partnership' legislation could spark important opportunities for the Municipality of Tunis, to improve its waste management through waste sorting, then providing to environment companies in search for waste valorisation opportunities. Unfortunately, the PPP law has been difficult to implement, and in the absence of a strong internal government administration will, the informal sector will remain the most important beneficiary of waste valorisation.

Medina generates 15tons of waste per day, only collected by the municipality of Tunis. There are 40 municipal cleaning workers, dedicated to Medina's waste collection. Modest means are used for waste collection, due to the challenges faced with narrow roads and alleys in Medina. Collected waste is mainly composed of: souk waste, home waste, coffee shops and restaurant waste and production waste.

Collected waste is discharged at 2 dedicated bumps in Medina, at Khirba and Hafsia, where 80% of the garbage is collected at night, and placed there as collection spaces. The waste is then transported out of Medina to ANGED (the national waste management agency) which the municipality of Tunis pays 5Diars for the ton of waste. The real charged price by ANGED is 25 Dinars; 20 Dinars are received as subsidies from the ministry of environment.

The residential tax, for a household of a family of 5 people, would be on average 60 Dinars a year (price depends on house size). The same household generates an estimate of 2 tons of waste/year, with real municipal cost of 200 Dinars per year. Taking into account the fact that only 30% of inhabitants actually pay their residential tax, the waste collection business is too expensive for the municipality to manage.

1.10.7.1 Policies

Since the initiation of ministry of the environment and sustainable development in the 80's, 2 important environment organizations were founded; ANGED (Agence National de Gestion des Déchets) and ANPE (Agence National de Protection de l'Environnement).

ANPE is a public institution; it's main roles are to participate in the development of the general policy of the government in the fight against pollution and the protection of the environment, and implementation in specific and sectoral actions; propose measures for the implementation of government policy in the field of pollution control and environmental protection, and prevent risks and natural or industrial disasters, and fight against sources of pollution, and all forms of environmental degradation.

ANPE is mainly called upon to carry out technical, legal, administrative, training and research activities and technical assistance, especially the analysis of environmental impacts of industrial, agricultural or commercial, which is an obligatory analysis report prior to launch of activity. ANPE also acts as an auditor

to monitor efficiency and the yield of installations for treating discharges or their destruction means, and pollutant releases

ANGED is also a public institution, which works on improving environmental protection through the implementation of integrated and sustainable waste management. ANGED also receives all municipal waste, at a management fee, and manages all waste types. ANGED is also in charge of collaboration with the private sector, for the creation of new jobs in the circular economy sector.

Both agencies function as an administrative body, and on the receiving, licensing, monitoring end more than project initiation and development. Nevertheless, we have identified very important work in university research labs related to innovative circular economy opportunities.

Following a meeting with higher education research centre, the following INNOMED-UP opportunities were identified, which could be developed in collaboration with research institutes;

- Water and 'circular economy' in water use; especially that the Medina has home reservoirs and wells that might not be used efficiently. Important research has also been done in developing bacterial components to improve polluted water use; could be interesting to analyse what kind of water is generated in the Medina to consider potential treatments and reuse.
- Coffee-ground use for urban farming might not be an economically viable business model; as would need an important amount of coffee ground to have a financially sustainable business model. Might be worthwhile to encourage circular economy in environment hazard material; artisan workshop waste, might not be the most hazardous to the environment. Important research was already done in coffee-ground and could be shared to help make Medina attempts more successful.
- Some craft waste could be used as raw material for other crafts; also, important successful research has been done in laboratories, related to leather strips treatments to generate new raw material leather, which could be important for Medina's over 90 shoe-makers.
- Research is being done in electricity generation through composting; also, historical building reuse is also a circular economy, nevertheless the funding needed for those 2 ideas, could be beyond the scope of this project.

- Important amount of research has been done in composting and the acceleration of composting, and could be considered for Medina's bio-waste.
- Should consider used cooking oils in the Medina as potential circular economic factors.
- Research is also being done in the field of developing compostable packaging solutions, especially for food packaging use.

Environment sector private companies are currently mainly collection contractors with municipalities, many have tried to collaborate with municipalities in the field of circular economy, but very few were able to reach an agreement, which is mainly due to difficulties in the implementation of private-public partnership laws; and hence most collaborate with informal sector collectors. Modest attempts in composting are very successful, even some managed to export bio compost.

There are important thriving civil society movements for the circular economy, but their role is mainly advocacy, municipal audit, cleaning of beaches or public spaces movements.

1.10.7.2 Practices, Trends and Models in the CE

The Municipality of Tunis, have been active in developing innovative attempts at improving Medina's environment, especially activities related to waste valorisation and advocacy; most important is the initiation of 'Ecole de la Proprete' a school that is dedicated to youth environment education and municipal staff, skills development and environmental education. Medina also hosted the first 'Zero Waste' exhibition last year, during which important awareness activities, workshops and dedicated newspapers were published to spread the 'Zero Waste City' objective. There are also 2 urban composting/farming pilot projects going on now in Medina, the first is related to school gardening at 2 Medina based schools and the 2nd tries to initiate inclusive urban farming practices within the Hafsia area.

During the INNOMED-UP survey, we noticed a decline in artisan workshops, since the MEDNETA survey in 2014, which is due to several factors; one obvious factor is Asian products import growth, at lower pricing, faster production and larger variety. Additionally, inefficient government control over international trade since the recent revolution has opened doors widely to smuggled goods and souvenirs that have made sustainability for artisanal businesses, a struggle.

The outdated union of artisans, who were the guardians and legislators of trade, has caused tremendous degradation in craft trade control and transformed craft skills know-how transmission. New socio-economic factors and youth expectations are no longer in harmony with the traditional model of the

master artisan – apprentice model. The market has changed significantly over the past few decades, yet the corporations, which for a large part focus on ethics and customs have not developed with time.

Another challenge is the national currency devaluation, which has had a tremendous impact on artisan ability to purchase quality raw material, and has contributed to the degradation of some crafts. Despite the fact that there is an important number of craft workshop variety in the Medina, most needed raw materials for those crafts are imported, and hence currency devaluation has had a tremendous impact on Medina craft sustainability and quality; since artisans that cannot buy pure substance, move to raw material with lower costs or change workshop purpose all together.

The lack of an appropriate legislative frame of work adapted to the micro-business needs of an artisan and the complicated national loans for MSME have encouraged a large part of artisans to operate in the informal sector, and in the case of designers and artists, there is no legislation at all under which they could structure their business sector.

Craft skills transmission, and craft vocational training schools in Medina, have closed down, due to funding issues, low student registration and inappropriate academic techniques that are more focused on theory rather than hands-on practice. On the other hand, schools of arts and design focus on industrial design and impose little incentive to direct student creativity towards national identity.

The important identified leather crafts know-how, concentration of master leather artisan rich experience and the production capacity, opens doors for opportunities in cross-border collaborations with designers that could help transform and uplift the existing know-how through innovative circular economy methods that could be explored through INNOMED-UP.

1.10.7.3 Synergies with CCIs

Tunisia’s resolution's biggest success is the initiation of an important active civil society, finally able to complement, share resources and expertise with its own government. As socio-economic challenges grow, the government finds itself lacking the necessary tools and execution speed to design solutions and administrative changes much needed for today’s dynamic cities.

A modest project was initiated in 2015, following the 80th anniversary of Rachidia; an association initiated in 1934 for the preservation of traditional Tunisian music, where civil society and social entrepreneurs were united to uplift Rachidia and its presence in Medina. Project goals were to digitize Rachidia’s important paper and recording archives, and create the first open digital library for Tunisian traditional music, hence creating circular economy opportunities in traditional music.

The project proved that a social enterprise business model could be a solution for a more efficient and inclusive historical public building management, which balances building preservation as well as economic and cultural dynamic within its urban community in a way that is independent from government funding; sensitive to heritage preservation needs while securing public ownership.

Research centres, when met during the INNOMED-UP survey, expressed a strong will to collaborate with municipalities, as this is an important missing link in research in Tunisia. Researchers shared difficulties in collaborating with municipalities to implement their research results, and bring their laboratory achievements to reality. There are many final stage findings that are important to our environment, but remain in the laboratory in search for field partners.

The existence of implementation ready findings in research labs, could be important to consider for INNOMED-UP a success, as the final stage of the project, requires a sellable product, and project duration of 3 years might not be enough for a prototype to start now. Working with existing laboratory solutions, could be a way to ensure successful project results that are sustainable for the Medina of Tunis.

Research centres do not have positive experiences with industrial sector collaborations, especially in relation to intellectual property rights. The PPP law is encouraged but hard to implement, nevertheless collaboration methodology between local environmental research findings and local government authorities, could be developed in the frame of work of INNOMED-UP and could be considered a project outcome, for the benefit of all municipalities in the country.

The Medina of Tunis provides a variety of strengths that encourage growth of cultural and creative MSE’s, thanks to its wealth of craftsmanship knowhow, concentration of historical monuments and inherent urban context. Also, the fact that craftsmanship throughout Medina's history, have always been a central part of its socio-cultural scene and encourages the continuation of the crafts legacy within Medina's walls. Until today, the Medina of Tunis attracts designers and artisans to settle in, as it remains an important area that flourishes with industrial urban creativity. This has also made Medina logistically convenient, due to the presence of an important shared economy model between architects, designers, raw material suppliers, distribution networks as well as vendors and customers that are all geographically attracted to the centralization within Medina.

1.11 CONCLUSIONS: LINKING THE CE WITH THE CCIs

As illustrated in the present report, CCIs can have a positive impact on many sectors of the economy, including the Circular Economy. This has been recognised by the EU and is being increasingly incorporated in national, regional and local strategies. CCIs can trigger spill-overs among different industrial sectors, disciplines and knowledge domains, and can act as catalysts to trigger innovation towards more circular economic activities and models.

The typical characteristics of CCIs:

- High growth potential
- Resilience to shocks and economic crisis
- Labour intensive
- High quality of workers
- Territorially rooted
- Eager and early adopters of technological solutions / devices place CCIs in the best position to stimulate innovation in other sectors of production and foster the CE.

CCIs spillover effects on other sectors can occur in different ways[32] through:

- **Knowledge spill-overs**: whereby new ideas, innovations and processes developed within arts organisations and by artists and creative businesses spread in the wider economy and society;
- **Industry spill-overs**: whereby vertical value chain and horizontal cross-sector benefits in terms of sustainable productivity and circular innovation are influenced by a dynamic cultural and creative ecosystem through e.g. innovative business cultures and entrepreneurship models, creative innovation for greater competitiveness, the adoption of emerging digital technologies and solutions, etc.;
- **Network spill-overs**: whereby a high density of arts and/or creative industries in a specific location (such as a cluster or cultural quarter) can have deep impacts and outcomes to the economy and the society at large. The effects of network spill-overs can be similar to those of clustering (such as the spread of tacit knowledge) and agglomeration. Their benefits range from economic growth and regional attractiveness to local pride and identity.

The impact of CCIs to stimulate the CE can be achieved through two main mechanisms:

- the ‘spontaneous’ transfer of knowledge, competences and solutions between companies and individuals resulting from, for instance, labour mobility and ‘competences’ flows’, trade or transfer of creative goods, services or technologies, informal communication between professions/companies’ personnel and informal clusters and (social) networks;
- the ‘spurred’ promotion of knowledge, competences and solutions between companies and individuals encouraged by, among others, sharing and co-creation platforms, co-working spaces, creative hubs and incubators, incentives for collaborative and/or multidisciplinary projects (such as arts + science/technology/research) and formalised clusters and networks. ‘spurred’ spill-overs can result from more or less planned instruments (e.g. incentives to collaborate vs. ‘pop up’ collaborative working spaces).

[32] Impulse paper on the role of cultural and creative sectors in innovating European industry » (2019) retrieved May 2020 https://keanet.eu/wp-content/uploads/Impulse-paper-on-the-role-of-CCIs-in-innovating-European-industry_integrated.pdf

The role of creativity to stimulate innovation and the CE lays in the application of creative skills and knowledge in diverse industry contexts. Thanks to the wide range of products and services, CCIs can partner up with SMEs in the most diverse sectors to support the development of new processes, products and services as well as their manufacture and marketing towards greater circularity.