EURE
Interreg Europe

FOR A BETTER AND SUSTAINABLE QUALITY OF LIFE IN EUROPEAN CITIES

Catalogue of policies, actions, good practices and recommendations

An EURE Joint Report on how the funds allocated by article 7 of the ERDF Regulation for the development of urban policies are being used and how they can be improved

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In the framework of EURE project (Effectiveness of Environmental Urban policies to improve Resources Efficiency), co-financed by the European Union through the INTERREG EUROPE programme 2014-2020, nine partners from nine European countries, on the basis of their territorial experience, have elaborated the present JOINT REPORT about how the funds allocated by article 7 of the ERDF Regulation for the development of urban policies are being used and how they can be improved.

The project partners are:

- EIXO ATLANTICO Atlantic Axis of Peninsular Northwest (ES)
- ASEV Agency for the Development of the Empolese Valdelsa (IT)
- Municipul ALBA IUIA (RO)
- LUBELSKIE Voivodeship (PL)
- Department of Coordination of European Projects of the PILSEN City (CZ)
- NICOSIA Development Agency (CY)
- ACR+ Association of Cities and Regions for Sustainable Resource Management (BE)
- ATLANTIC CITIES (FR)
- RIGA City Council – Development Department (LV)

This Report is divided in the following chapters:

- Chapter 1 –Introduction. It highlights the following messages:
  - The reasons why EU is, and should continue intervening in urban areas
  - How urban areas actors perceive EU intervention

  Along with an analysis of the new challenges for urban areas related to the socio-economic impact of the sanitary crisis COVID 19.

- Chapter 2 – State of Art in Europe. It covers four main areas:

  - Urban resources efficiency
  - Environmental management performance
  - Green growth and eco-innovation
  - Circular economy

  Along with comments on their "relevance for future urban development", and suggesting "good practices" in each of them.

- Chapter 3 – Role and Support of EU programmes on the four above mentioned fields.

  Along with ana analysis of the use of ITI – Integrated Territorial investments and its importance for the future EU Urban Policy

- Chapter 4 – Findings. It offers a SWOT analysis of each of the four fields covered by the study, together with a set of recommendations for the next EU programming period starting on 2021.

1. INTRODUCTION

1.1. Why EU is, and should continue intervening in Urban areas?

The EU Urban population is growing fast

Europe is a highly urbanised continent, more than 80 % of the population is expected to live in European urban areas by 2050. Although urban areas only account for around 4 % of Europe's surface, the sheer number of people causes enormous impacts on resources and biodiversity far beyond city borders.

In fact, the evolution of the EU urban and rural population in the last decades is clear (Eurostat), the tendance is a growing concentration of the population in urban areas, reducing drastically the population of rural areas, but characterized as well by a space occupation of a larger rural territory (urban sprawl) in particular in metropolitan areas.

In 100 years 30 % of EU population move from rural to urban areas (Eurostat)

% of total EU population

	1950	1970	1980	1990	2000	2015	2020	2030	2050
Urban	51.5	63	67.4	70	70.9	73.6	74.7	77	**82**
Rural	48.5	37	32.6	30	29.1	26.4	25.3	23	**18**

These urban areas are seen as both the source of and solution to today's economic, environmental and social challenges. Europe's urban areas are home to over two-thirds of the EU's population, they account for about 80 % of energy use and generate up to 85 % of Europe's GDP. These urban areas are the engines of the European economy and act as catalysts for creativity and innovation throughout the Union. But they are also places where persistent problems, such as unemployment, segregation and poverty, are at their most severe. Urban policies therefore have wider cross-border significance, which is why urban development is central to the EU's Regional Policy.

EU Cities represent:

82 %	**Of EU population expected to live in EU urban areas around 2050**
4 %	**Of EU territory surface occupied**
80 %	**EU energy use**
85 %	**Of EU GDP**

The scope of urban areas in Europe and elsewhere

In order to have a common understanding of what means urban development, we have to understand the concepts of urban areas and how they are applied in practice. The two main referential concepts are those of the UN and the one EU – OECD (see **annex 6.1**).

The UN's definition of urban areas and cities is very simple, it classifies 4 categories: Urban agglomeration, Metropolitan area, City proper and Cities (varying from small cities with less than 500.000 inh. To metacities with more 20 million inh).

The current definition of "city", developed in 2011 by the European Commission and OECD and applicable to EU and OECD countries, is based on population size and density. Eurostat specifies several categories: Urban grid, urban centre (with minimum 50.000 inh), City, Commuting zone, Functional Urban Area, Greater City, and Urban-Rural typology.

To these concepts European ESPON program[1], to analyse the potential for polycentric development in Europe (27+2 countries), identified ***1595 so called Functional Urban Areas (FUAs) with a minimum of 20 000 inhabitants were identified*** consisting of a core area and surrounding areas that are economically integrated with the centre.

What seems clear[2] is that ***the term 'urban area' is often used but not clearly defined***, and that

- Approximately half of the cities in the EU had a relatively small urban centre of between 50 000 and 100 000 inhabitants.[3]
- In EU 28 there are 960 Cities, 715 Functional Urban Areas identified and 40 Greater Cities
- the average density of Cities (inh. Per SqKm) is 3.000 in Europe, against 1.600 in North America and 4-8.000 in Asia, Africa and Latin America[4]
- Cities with more than 5 million inh. We have 4 in EU against 79 Worldwide
- in EU we have 271 Metro Regions[5], 500 cities with more than 1 million inh., and 13.000 cities with less than 1 million inh.
- There is no definition of Small and Medium sized cities in EU.

The panorama of the EURE partners' Cities

Eure partners' Cities spectrum (see **annex 6.1**) represents a total population of **10.200.000** inhabitants, in 9 Countries (Spain, Portugal, Italy, Romania, Poland, Czech Republic, Cyprus, France and Latvia). They are involved **466** Cities. From these cities, 10 have more than 200.000 inhabitants, 35 have more than 50.000 inhabitants, 21 between 20 and 50.000 inhabitants, and 410 are small cities with less than 20.000 inhabitants.

Eure project includes big Cities like the Metropolitan Areas of Riga, Rennes, Brest, Lublin, Nicosia, Pilsen, Vigo, Coruna, Porto and Vila Nova de Gaia.

[1] ESPON project 1.4.3 Study on Urban Functions Final Report March 2007 + Reference 2.
https://www.espon.eu/sites/default/files/attachments/fr-1.4.3_April2007-final.pdf
[2] Jürgen Breckenkamp, Lesley Patterson, Martina Scharlach, Wolfgang Hellmeier, Arpana Verma
European Journal of Public Health, Volume 27, Issue suppl_2, 1 May 2017, Pages 19–
[3] https://ec.europa.eu/eurostat/documents/3859598/9507230/KS-GQ-18-008-EN-N.pdf/a275fd66-b56b-4ace-8666-f39754ede66b
[4] https://ec.europa.eu/regional_policy/sources/policy/themes/citiesreport/state_eu_cities2016_en.pdf
[5] a functional urban area (city plus commuting zone) of at least 250,000 inhabitants

What are the challenges of today's and tomorrow Urban Areas?

Today EU 'urban areas', whatever their population size or status, face considerable problems for which solutions have to be found. Problems are Demographic (increase, decrease or ageing population),Poverty increase, Economic (activities to be re-invented and jobs to be maintained and or created), Environmental (climate change prevention, pollution, quality of life standards), Rural-Urban relationships(space availability for urban occupation, agriculture and other economic activities),Mobility, Social exclusion, Fiscal pressure, Resources-efficiency (like water supply, waste collection and treatment, energy), Housing , Security and Governance (including civil society participation on the decision making process).

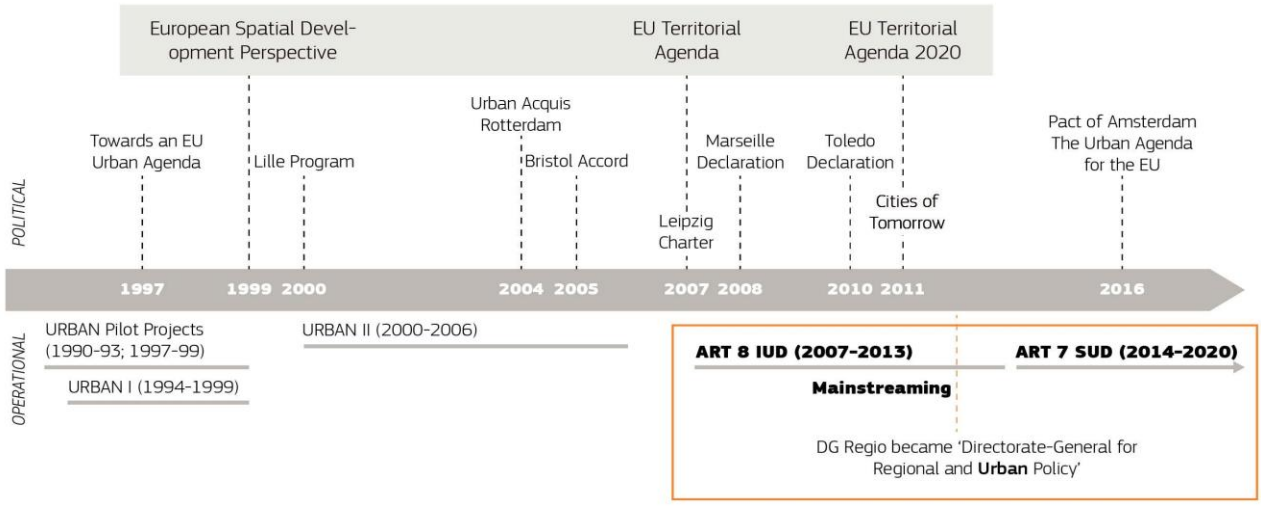
EU URBAN AGENDA

These are challenges that needs an adequate response and an efficient Governance.

The UN and EU already analysed most of these problems and gave some answers via the **Urban Agenda[6].**

The Pact of Amsterdam agreed upon by the EU Ministers Responsible for Urban Matters on 30 May 2016 established the Urban Agenda for the EU. Based on the principles of subsidiarity and proportionality, the Urban Agenda focuses on the three pillars of EU policy making and implementation: Better regulation, Better funding and Better knowledge[7].

Source: The evolution of the urban dimension of the EU policy [8]



2007 was a defining year in this long process. In fact, it was the year when the Leipzig Charter on Sustainable Cities was signed at an informal ministerial meeting held under the German Presidency of the Council of the European Union. The Leipzig Charter offers two key principles for sustainable urban development: the application of a holistic, integrated development policy, and the focus of special attention on deprived neighbourhoods.

[6] All the information concerning EU Urban Agenda is on https://ec.europa.eu/futurium/en/urban-agenda/multi-level-governance-in-action
[7] https://ec.europa.eu/knowledge4policy/territorial/topic/urban_en
[8] https://urban.jrc.ec.europa.eu/documents/handbook-of-sustainable-urban-development-strategies.pdf

The new Urban Agenda - The New Urban Agenda, adopted by the UN General Assembly on 23 December 2016, is a cornerstone in the implementation of the 2030 Agenda for Sustainable Development and other milestone reform agendas such as the Paris Agreement.

The New Urban Agenda incorporates a new recognition of the correlation between good urbanisation and development. It underlines the linkages between good urbanisation and job creation, livelihood opportunities, and improved quality of life, which should be included in every urban renewal policy and strategy (17 goals).

SDG 1 No Poverty, in all its forms everywhere
SDG 2 No Hunger, achieve food security and improved nutrition and promote sustainable agriculture
SDG 3 Good Health and Well-Being
SDG 4 Quality Education
SDG 5 Gender Equality
SDG 6 Clean Water and Sanitation
SDG 7 Affordable and Clean Energy
SDG 8 Decent Work and Economic Growth, full and productive employment and decent work for all
SDG 9 Industry, Innovation and Infrastructure
SDG 10 Reduced Inequalities
SDG 11 Sustainable Cities and Communities, Make cities and human settlements inclusive, safe, resilient and sustainable
SDG 12 Responsible Production and Consumption
SDG 13 Climate Protection Measures
SDG 14 Life under Water
SDG 15 Life on Land
SDG 16 Piece, Justice and Strong Institutions
SDG 17 Partnerships for the goals

A NEW Leipzig Charter[9] was approved by EU ministers on 1st December 2020, to respond to the new challenges of sustainable urban development, including the pandemic effects on towns and cities throughout Europe, and had as reference the SDG 11 goal of the UN Urban Agenda:

1.The Transformative Power of European Cities
1.1 Three Spatial Levels of European Cities
1.2 Three Dimensions of European Cities
2. Key Principles of Good Urban Governance
3. Empowering Cities to Transform
3.1 Strengthening Urban Governance to Ensure the Common Good
3.2 Ensuring Adequate Policies and Funding for Cities

EU, all along the last decades until now, developed several instruments which applies to Cities as well like: several Directives concerning the water, sewage and solid waste and other environmental Regulations (like Natura 2000); Eu Digital Agenda and more recently the Circular Economy Action Plan.

[9] https://www.bmi.bund.de/SharedDocs/downloads/EN/themen/building-housing/city-housing/new-leipzig-charta.html

With this New Leipzig Charter is time to EU to implement it and put forward the financial resources accordingly.

Everybody agrees that a city experiences economic development when people's income increases. A city experiences economic growth if the output of its economy increases. If economic growth is slower than population growth, incomes are likely to decline and inequalities may increase. Growth that increases inequality may benefit certain groups, but the longer-term test of development is whether per capita income grows in a way that spreads opportunity and is reasonably sustainable over the long-run.
And that a city's development policy is judged successful if it raises real per capita income in the city. Household income varies strongly with other characteristics of an economy, including specialisation, education, science and technology capacity, and the wages in core sectors. In addition, national and local characteristics of the labour market and the quality of institutions can have a big impact on per capita income and its distribution.
Many Cities in EU faces additional problems related to their border location, for which specific solutions as to be founded as well, including cross border governance.

The challenges are 'enormous' and should be dealt with in an integrated way so that impact is greater and results are reached more quickly, this is what is meant to show in the State-of-the-Art chapter 2.

A new Challenge – socioeconomic impact of COVID 19

To these challenges a new and more complex one arises in the beginning 2020 with the EU sanitary crisis COVID 19, with enormous socio and economic consequences never seen since the Second World War, which has to be considered as well as a priority in the future EU urban policy.

According to the ***EU Commission document issued in 27.5.2020***[10]:

"The EU economy is expected to contract sharply in 2020. Recession and decrease by around 2 digits of GDP.
The crisis will cause large losses in income for households and businesses. A fragile corporate sector means fewer jobs and a meek recovery.
In spite of efforts to protect workers and jobs, the crisis may cause a large increase in unemployment, hardship and inequality. Household incomes are likely to suffer, both due to temporary cuts in earnings and permanent job losses — the latter are expected to drive up the unemployment rate to around 9½ % in the euro area and 9 % in the EU in 2020, undoing three years' worth of job market improvements.
Government finances may be permanently weakened. Average deficits to increase as never before.
The containment measures will have a devastating impact on companies' production and income levels in 2020, Especially the entertainment, hospitality and transport sectors are estimated to experience the largest losses in real gross value added in 2020, ranging from 20% to 40% compared to 2019 levels.
The economic impact of the crisis will differ greatly across Member States. GDP losses in 2020 are expected to be particularly large in Greece, Spain, Italy and Croatia, at around 9½% each, compared to recessions of between 6 % and 7½ % in most other Member States.

[10] Brussels, 27.5.2020 SWD (2020) 98 final COMMISSION STAFF WORKING DOCUMENT Identifying Europe's recovery needs

Some labour markets will register severe employment losses.
The crisis risks harming the least resilient and still-converging Member States most. This will increase divergence, tilt the economic playing field and undermine the Single Market. This means that around 180,000-260,000 of European companies employing around 25-35 million employees could experience a financing shortfall should the adverse scenario materialise. The sectors showing the greatest share of firms facing liquidity and working capital shortfalls are wholesale and retail trade, accommodation and food services, and transport industries. These firms will face an acute risk of bankruptcy.
Addressing social needs and supporting employment. ***Europe rightly prides itself on universal healthcare and a social safety net to cater for those in need***. The COVID-19 crisis is putting a strain on the EU's health and social systems, and highlights scope for enhancing its resilience and treatment capacity
Investments needs to deliver the green transition and digital transformation. According to Commission the investment needs for delivering the green transition and digital transformation are estimated to amount to at least €595bn per year (€1.190bn over the next two years) – see **Annex 6.4**. Many of these investments needed are under the competence of Cities and Municipalities.

Cities and Municipalities, other than the national and Regional governments, will be in front line of the response to the social crisis of the increasing social exclusion as a consequence of unemployment increase and reduction of household's income. They will be in front line as well not only to help unemployed people with basic revenues, but as well to help people back to work on stimulating new economic activities and investing in socio economic infrastructure to attract them.

OECD document 'Cities Policy Responses'(23 July 2020)[11]reinforces this analysis, as well as the estimation of McKinsey & Company[12] ***up to nearly 59 million jobs (26 percent of total employment) across Europe are potentially at risk*** of reductions in hours or pay, temporary furloughs, or permanent layoffs. Jobs at risk represent 74 percent of total sector employment in the accommodation and food sector, 50 percent in the arts and entertainment sector, and 44 percent in the wholesale and retail sector. Wholesale and retail represent around 14.6 million jobs at risk (25 percent of total jobs at risk) and accommodation and food around 8.4 million (14 percent); manufacturing and construction also see substantial numbers of jobs at risk. Other sectors are much less affected, such as professional services (1.6 million), finance and insurance (1.2 million), information and communication (0.6 million), agriculture (0.4 million), and real estate (0.3 million).

The question is, when the financial support will made available, how is going to work on the basis of Member States Partnership Agreements presented, and how Cities and Municipalities are going to be involved. And in particular how EU Funds are going to be allocated to them when we know that around 80% of the EU population is living in urban areas.

In the chapter 2. State of Art these challenges are analysed in the sense to understand what is being done so far, and in particular with the use of EU funding namelly the resources available through the ERDF Regulation of 2013 (art.7) and other financial instruments (national and private ones).

[11] https://www.oecd.org/coronavirus/policy-responses/cities-policy-responses-fd1053ff/
[12] https://www.mckinsey.com/industries/public-sector/our-insights/safeguarding-europes-livelihoods-mitigating-the-employment-impact-of-covid-19

1.2. How urban areas actors perceive EU intervention?

The Integrated Territorial Approach (ITA) was the most used instrument so far in what concerns EU urban policy,
even if the eligible criteria for financing was wrongly limited to big cities and metropolitan areas of the EU.
The general perception is that it has positive and negative aspects.

POSITIVE	NEGATIVE
The ITAs could support the territorial dynamics of projects and give to territories a range of financing possibilities to meet a diversity of needs / challenges.	The multi-fund strategy has not succeeded in becoming operational: real complexity in harmonizing the intervention frameworks of the different funds, different levels of appropriation depending on the funds and the territories, coordination and management that have not been sufficiently orchestrated in an integrated way
It has made it possible, on the one hand, to bring regional policies closer to the needs of the territories and to the project leaders, and on the other hand, to the accessibility of European funds for the territory and to the project leaders with equality.	Human resources mobilized by the Regional Council greater than expected to respond to management difficulties, secure and boost the programming of projects.
It helps bring out projects that would not have seen the light of day and even support promoters than have never received European funds.	Territories which are not all equipped - expertise, skills and resources - and which have not invested in the same way to manage the process
It has enabled actors in the territory to organize themselves and bring about integrated projects thanks to close support.	A scheme that has resulted in a large number of projects, sometimes mobilizing reduced envelopes of European funds, which has impacted the efficiency of the system
It strengthens territorial collaborations and the link between the territories and the Regional Council	Sometimes a lack of support for leaders that impact the secure the projects
It upgrades the skills of all stakeholders (regional players and project leaders) in the field of European project engineering.	A scheme that remains restricted on a limited number of themes, which may have made the emergence of projects quite complicated on certain topics and territorial strategies that had not been sufficiently worked on, in particular on the identification of mature projects

It does means that it should be done a review of the multi-fund approach in order to reduce the management complexity effects. The support and accompaniment work towards promoters should also be reviewed in order to secure projects as early as possible and impact the performance of the programming and the schemes, and the Principles of implementation must evolve so as to limit the number of "interveners" and improve the overall efficiency of the schemes.

2. STATE OF THE ART

In this chapter a particular attention is made to the following groups of thematic:

- Urban Resources efficiency
- Environmental management Performance
- Green Growth and Eco-innovation
- Circular Economy

2.1. Urban resources efficiency

The following thematic are worked out: sustainable land use; urban renewal, water; waste; energy transition; and sustainable urban mobility.

2.1.1 Sustainable land use and urban renewal

A- Introduction

Having in mind that there is not only one urban model in EU, and that there are differences not only from region to region or country to country or even city to city, sustainable land use is common challenge for all European regions, countries, municipalities, societies and territories. One can even imagine that one day we should think about an 'integrated macroregional urban model', for instance in an Atlantic Macro Region.

A common understanding has been strengthened about balance that must be provided within development of diverse fields and long-term actions must be implemented that won't leave new generations without qualities and opportunities we have in present. There is wide scope of studies, activities in planning and implementation of projects done across the Europe and the step has been taken towards more sustainable land use.

B- Analysis of the thematic

The 'integrated approach' has become a recurring topic in European cohesion policy developing over more than two decades. Several initiatives and declarations laid the ground with the definition of principles of integrated urban development in Europe. There has been widely discussed that there is no single urban model in Europe and that diverse environments, specific problems and potentials differ not only from region to region, from country to country, but also from city to city.

Europe's land cover data shows a general picture of common urban land-use categories: living, working, mobility and recreation. In the same time regarding to non-urban land cover there is investigated relatively stable balance between agriculture and nature at the European level belies significant territorial differences.

B.1 Reduce urban sprawl

The growing demand for new settlements in and around urban areas in EU countries is forced by social, economic[13] and population factors, partly because of growing population and availability of jobs in the cities, partly demand for settlements nearby jobs in areas with higher environmental qualities but leaving city centres uninhabited. However, this trend provokes the loss of agricultural land and green spaces that provide essential ecosystem services and contribute to the wellbeing of local people. Several countries have attempted to limit the growth of urban areas by encouraging the redevelopment of brownfield sites, some use green belts to contain urban expansion. Higher investments are used for re-use, re-build, revitalization of spaces to bring new functions in, also public outdoor spaces are developed and maintained better and more ecological approaches are used, still leaving large space to grow for improvement, for better targeted measures.
Growing metropolitan area and shrinking capital city is the case that Riga region has to face. Latvian legislation also demands that forest protection belts are established around all cities and towns, but there is quite typical character of Latvian nationality demanding private house outside the city. That forces Riga city to develop better housing policy and supply, as well as to improve quality of green public space and services for young families.

Good Practice example	
Project designation	**HLJ2015- Integrated planning process of land use plan, housing strategy and transport system plan**
Location	Helsinki (FI)
Thematic	*regional land use plan, housing strategy and transport system*
Synthesis of the Project	*Helsinki Region Transport System Plan (HLJ 2015) was drawn up for the first time combining regional land use plan, housing strategy and transport system plan.* The goal of the plan is to provide the rapidly growing population with a sustainable transport system and urban structure. The land use, housing and transport system plans for the 14 municipalities of the region were prepared in close co-operation with said municipalities.
Difficulties encountered	As the HLJ 2015 plan is a strategic level regional plan heading to year 2050, there was some difficulties to organize participation with general public.
Instrument used	*Helsinki Region Transport System Plan (HLJ 2015*
Website info	*https://www.interregeurope.eu/policylearning/good-practices/item/420/hlj2015-integrated-planning-process-of-land-use-plan-housing-strategy-and-transport-system-plan/*

B.2 Brownfield regeneration

Almost every European city has areas that can be regenerated to improve cities landscape, to give new life for industrial heritage. Also, common issue is that brownfields are in many cases an integral part of a city's structure, plays a role in public memory and affects the quality of urban life. There is a need for intervention from outside proven and creative ideas must be developed for areas to be reintegrated into the economic cycle again. An excellent location and opportunities for fancy environment development of area plays important role for its regeneration possibility otherwise if location is not so well and big amount of investments are necessary chance is very low for areas regeneration and other incentive must be provided.

An interesting regeneration project is the one of Brest (Bretagne, France) – regeneration of an abandoned port area integrated in the city (the regenerated space of the Capuccins). Bur there are others.

[13] Urban expansion in the outskirt can also be explained by price and space for families.Urban sprawl is not only an issue with population but also economic activities; real-estate companies also invite so many small private buildings along roads without densification

Good Practice example	
Project designation	**HafenCity Master Plan**
Location	Hambourg (DE)
Thematic	Urban District planning
Synthesis of the Project	*The reuse of a former industrial site into a new Neighbourhood* The long-term challenge for the planning and realisation of the HafenCity is to strike the right balance between growth and integration, economic stimulation and social considerations, international and local criteria, and between innovation and tradition. HafenCity was designed as a sustainable urban development project. Various levels intertwined in the process.
Results achieved	HafenCity is among the most outstanding urban development projects on the waterfront anywhere. HafenCity was designed as a sustainable urban development project. Various levels intertwined in the process. As planning progressed further, an energy-efficient, climate-friendly heating supply and the development of sustainable building certification followed
Difficulties encountered	Underestimation of the location. Non-compliance with a time limit (some buildings and constructions were and still are delayed)
Instrument used	Colaboration City with Federal Government
Website info	*https://www.interregeurope.eu/policylearning/good-practices/item/1689/hafencity-master-plan/*

Good Practice example	
Project designation	**Revitalization of Spikeri Square and Daugava Waterfront Promenade**
Location	Riga (LV)
Thematic	Urban regeneration
Synthesis of the Project	The project contains the revitalization of the former warehouse area Spikeri and its adjacent waterfront promenade. Historically, Spikeri was a warehouse district with 58 warehouses, built in the late 19th century, to store cargo from ships and train freights. Spikeri square is a public space, constantly exposed to the changes of the urban development and society evolution process, though the historical environment is authentic and multi-layered, reflecting the citizen attitude towards cultural and historical values, accumulated there over the centuries. The new waterfront infrastructure provides rainwater drainage and lighting, as well.
Results achieved	The revitalisation of the Daugava waterfront, stretching 1,6km along the Krasta street and the river, offers new recreation areas with activities near and on the water, quays for the river boats and ships, new bicycle lane connecting Riga centre with its outskirts, sunbathing benches and a skate park. The waterfront along the Spikeri area extends the promenade in front of the Old city, offering a wide range of public activities in the open cityscape, as well as offering exclusive view of Riga's bridges, Old town and the new National Library of Latvia.
Website info	https://www.rdpad.lv/portfolio/spikeru-projekta-revitalizacija/ https://www.archdaily.com/613568/revitalisation-of-spikeri-square-and-daugava-waterfront-promenade-arplan-a-plus-architects

B.3 Land take

Diverse research shows, that since the mid-50s of 20 century, the total surface area of cities in the EU has increased by 78% while the population has grown by just 33%. The situation is wide popular and was provoked not only by demographic increase and need for new settlements but also because of private interest of municipalities that can charge taxes about owned territory if land use of parcel is changed from forestry or agricultural land to use that aloud to develop territory as a built area. Ecosystem services mapping and evaluation is an approach that is becoming more and more known and used in many countries to help within decision making process and have clear understanding about the most appropriate land use to apply for territories and places.

Good Practice example	
Project designation	**SITxell Project**

Location	Cataluña (ES)
Thematic	Use of Biodiversity data in decision making
Synthesis of the Project	*GIS scheme based on scientific information to be used in land planning at different scales to ensure conservation of natural values and sustainable use of land.* The SITxell project promotes the use of the information related to territorial analysis (geology, hydrology, botany, zoology, ecology, socio-economics, agronomy, town planning) both from independent groups of experts (university research centres, private consultants social organisations, etc.) and inside the administration itself for the socioeconomic development compatible with the preservation of ecosystem services essential for the maintenance of human welfare.
Results achieved	SITxell has been used in land planning of in more than 100 municipalities. Recent plans have defined of Local Green Infrastructure. For protection purposes, it has been used in spatial plans for protected areas and for strategic plans (hydrology, agriculture). In regional planning SITxell analysis and purposes have been the basis for the definition of areas of special protection.
Difficulties encountered	Main difficulties were related to lack of basic information and the existence of many different administrations involved on decision making. We have learned that the combination of scientific information and approach combined with a strong political support are key for the success of the project.
Financial data	Around 2 M€ were needed during first years (2003-2010) to acquire information through agreements with research centres. Nowadays, 50.000 €/year are needed to update information. One internal GIS expert is on charge of the system.
Website info	https://www.interregeurope.eu/policylearning/good-practices/item/679/use-of-biodiversity-data-in-decision-making-the-sitxell-project/

B.4 Housing

Eurostat publication about living conditions in Europe demonstrates that Europeans tend to live more in houses than in flats. The share of persons living in flats ranged from 7.4 % in Ireland (2015 data) and 14.3 % in the United Kingdom to cover more than three out of every five people in Estonia (62.0 %), Latvia (66.1 %) and Spain (also 66.1 %). Housing development processes play role and make an impact to Europe's common indications to be achieved within sustainable development and climate change mitigation and adaption targets. So, investments are diverted to revitalization, re-use activities, as well as for energy-efficiency, social support, for research, innovation etc.

	Good Practice example
Project designation	**Revitalization of historic buildings in the old city in Przemysl**
Location	Podkarpackie, (PL)
Thematic	Regeneration of historic buildings in the Old city
Synthesis of the Project	*As part of the project of revitalization and thermo-modernization, 19 historic buildings in the old city of Przemysl have been subjected.* All buildings were built in the late nineteenth and early twentieth centuries and have been individually registered in the monuments register. Natural persons were the owners of those buildings. Because of the systemic conditions and the resulting rents regulated over many years in Poland, the condition of those buildings was very bad. All activities related to preparation of technical documentation, formal and legal documents, obtaining building permits, submitting a project application in the MA, settlement of the project was conducted on the basis of the proxies granted by the owners of the Association.
Results achieved	The project had a big impact on several factors: a) The first of it is saving of the energy what refers to a reduction of carbon dioxide emissions and renters' fees'). The second factor is to increase the comfort of the lifes of enters. Renovations have also increased the aesthetics of the city centre, so it is slowly becoming a place friendly for native population and tourists.
Financial data	The total value of the project was 6,551,994.92 PLN -ca. 1,5M€-. The co-financing of the RPO in Podkarpackie voivodship was 75% and the rest of the funds were funded by buildings owners. The Association borrowed 1M PLN for 10 years for the project completion.

Website info	https://www.interregeurope.eu/policylearning/good-practices/item/952/revitalization-of-historic-buildings-in-the-old-city-in-przemysl/

Good Practice example	
Project designation	**Landfill mining to develop the area in housing area in Veenendaal**
Location	Utrecht (NL)
Thematic	Regeneration of landfill mining
Synthesis of the Project	*Two former landfills in Veenendaal where mined to be able to develop the area into a housing area. The waste and the excavated soil were largely reused.* A remediation study concluded that complete removal of 54,000 m3 of waste along with separation of material into partly reusable fractions was the preferred and the most economic option. The increase in the price of land, together with a subsidy from the province of Utrecht, made the complete removal economically viable. This practice is very suitable in regions where there is high land pressure and the land value can be potentially high. As the landfill mining project also allows reuse of materials, it also generates some revenues and reduces the costs for primary materials. It contributes to a Circular Economy and reduces CO2 emissions.
Results achieved	In total 80% of the excavated waste was extracted for re-use; Certain hot spots in the underlying soil were remediated completely;' Future land development (land value increase) paid for the remediation.
Difficulties encountered	The following challenges where encountered: High natural groundwater table; presence of asbestos in the waste for working conditions and the re-use potential of the different fractions. New legislation during the remediation lead to a negative impact on the overall reuse of the waste.
Financial data	Total project fee amounts 4.500.000 euro (including landfill tax).The increase in land value together with a provincial subsidy funded the project.
Website info	https://www.interregeurope.eu/policylearning/good-practices/item/2292/landfill-mining-to-develop-the-area-in-housing-area-in-veenendaal/

Good Practice example	
Project designation	**ATER (Territorial agency for residential buildings) Sustainable Public Housing**
Location	Basilicata (IT)
Thematic	Social housing
Synthesis of the Project	*represents a model of "sustainable design" promoted by ATER- Territorial agency for residential buildings (public agency) for the social housing.* The project has been developed in a peri-urban residential area of a municipality in the Province of Potenza (Filiano) and consists of buildings built applying the Green Building and Sustainable principles, methods and architectural techniques with particular reference to energy saving and renewable sources energy production systems. The good practise is an operative example of the results coming out from the application of procedures aimed at designing and realizing "energy-aware" building interventions comparing different design solutions quantitatively.
Results achieved	18 new houses just realized in energy efficiency class A or higher
Instrument used	National and Regional Funds
Financial data	National and regional public funds. Total cost of realization: about 2.500.000 euros
Website info	https://www.interregeurope.eu/policylearning/good-practices/item/1610/ater-territorial-agency-for-residential-buildings-sustainable-public-housing/

B.5 Economic activities

All around the world we significantly need to reduce pressure from economic activities, and in particular from intense agriculture. The sustainable management of land resources can be achieved by ensuring sustainable and productive agriculture, we need to stop polluting to the extent we are doing now, we need to be able to use resources efficiently and reduce unnecessary consumption. But sustainable agriculture cannot be implemented without a significant change of habits and reductions in food waste in Europe and globally.

Good Practice example	
Project designation	**From food production to glass wool production**
Location	Forssa (FI)
Thematic	Re-use materials (recycling)
Synthesis of the Project	The industrial symbiosis (IS) in Eco-industrial Park, in Forssa, Finland, is an IS with a notable regional impact. The symbiosis consists of three companies exchanging and utilising each other's waste and by-products. The symbiosis generates secondary materials such fertilizers, biogas and biofuels. The symbiosis is formed between companies from different sectors; food production, biogas production and glass wool production. The importance of the symbiosis is significant regionally as it reduces the need for exported fossil energy and fuel. The potential for learning lies in planning of regional industrial sites.
Results achieved	Saint-Gobain Finland Oy Forssa plant has reduce CO2 emissions 19 600 ton by 2010 – 2018 as a result of using biogas instead of propane. In practice, this means 50 % reduction in CO2 emission. Cost for CO2 emissions has been fluctuate a lot. Its lowest level was 4€ per ton and it is estimated to rise to 25€ per ton by year 2019. CO2 emission cost for Forssa plant during 2010 – 2018 has been around 10 € per ton which is altogether around 200 000 €.
Financial data	The 2.5 km long biogas pipe from Envoy Group Oy to Saint-Gobain Finland Oy was built in 2010. The investment 250 000 € was joint venture.
Website info	https://youtu.be/KoMfdG1LBUw https://www.interregeurope.eu/policylearning/good-practices/item/2437/from-food-production-to-glass-wool-production/

B.6 Green urban areas – functional areas

Green urban areas incorporate sustainable land use if green-blue structure of the city area and its functional area is developed by taking into account the core principles of green infrastructure planning, such as, green-grey infrastructure integration, providing connectivity within green network, multifunctionality and social inclusion.

It is essential to have data, indicators and analysis tools that can help to better understand the drivers for growth and inclusive social development in functional urban areas and other functional regions, but significant data gaps exist to be able to understand their contribution to polycentric and balanced territorial development. ESPON project FUORE – *Functional Urban Areas and Regions in Europe* pays special attention to a comprehensive description of the functionalities of the final version of the Web Data Analysis Toolbox, and the FUORE web tool (and the Web Data Analyst), which is actually the main product of the whole project, available here: http://fuore.eu/.

Good Practice example	
Project designation	**Urban green infrastructure planning – A guide for practitioners**
Location	Riga (LV)
Thematic	Urban green infrastructure planning
Synthesis of the Project	The content of this guide is based on the results of Research on current knowledge and practice of green infrastructure planning and implementation in Europe, as part of the project Green Infrastructure and Urban Biodiversity for Sustainable Urban Development and the Green Economy (2013-2017) – GREEN SURGE for short. The project is a collaboration between 24 Partners in 11 countries and is funded by the European Commission's Seventh Framework Programme (FP7). Guide is also used as a literature within development of Recommendations for development of Riga green infrastructure.
Website info	https://www.researchgate.net/publication/319967102

Good Practice example	
Project designation	**Urban Development Concept of Graz (including the concept "Green Net of Graz")**
Location	Graz (AT)
Thematic	Spatial planning

Synthesis of the Project	The Urban Development Concept of Graz (UDC) is a spatial planning document that includes integrating green infrastructure (GI) into the spatial planning process; it is updated every 10 years. In the UDC it is determined the mandatory greening of roofs and facades and the maximum degree of soil sealing in built-up areas as well as the minimum green areas per m²/inhabitant to provide the multi-benefits of improved air quality, adaptation to rainfall and flooding. The Green Net Graz, a conceptual study on improving living conditions within a constantly growing city by means of green spaces, has a key influence on the UDC and specifies that each citizen lives within 300m of a green space.
Results achieved	The evidence of success is given as you can see the still existing green areas in high density parts of Graz and the growing number of green roofs. The other spatial planning instruments of Graz have to go along with the development concept and in the zoning maps f.e. you can see that the City try to set the determinations also according to the Green Net of Graz. The PERFECT stakeholders (planners and municipalities) can overtake it now in their municipalities.
Difficulties encountered	It is very often difficult to keep up existing green areas in the cities, as the investors often don't see green plots as a big value. The city itself is growing and need also these green plots for the dwellings. So with the determinations of the UDC they can keep it free from housing.
Financial data	There is no additional funding for this concept. The financial resources cannot be named as it is mainly made from the people working in the authority of Graz partly with help from external planners.
Website info	https://www.interregeurope.eu/policylearning/good-practices/item/1686/urban-development-concept-of-graz-including-the-concept-green-net-of-graz/

Good Practice example	
Project designation	**Green & Blue Futures Project**
Location	Southern and Eastern Ireland
Thematic	*network the communities and stakeholders along a River basin*
Synthesis of the Project	The objective was to get people collaboratively engaged with the river and to get them to think beyound their own interest area. So, a number of initiatives took place, including a variety of consultative initiatives to get people to know each other.
Difficulties encountered	The main problem was a multi governance issue and multiple stakeholders each with their own special area of interest. Huge area, with multi governance and multiple stakeholders, difficulties in getting people to see beyond their own interest area and look at the totality of the river.
Financial data	Project was administered by Heritage Officer with timesheets for project team submitted over 4 years to the value of c €90,000 and projects delivered to the tune of approx. €200,000.
Website info	https://www.interregeurope.eu/policylearning/good-practices/item/218/green-blue-futures-project/

2.1.2 Water

Water – water harvesting, urban flood management, storm water management

All over the world, significance of water resources is growing. We used to call the Earth the „Blue Planet "due to the size of the world's oceans.

Water means life for humans, animals and plants. Water is also closely connected to the Climate adaptation; it plays a fundamental role in the climate regulation cycle. Water is also of great value in the EU economy. That´s why protection of water (resources, ecosystems) is one of the cornerstones of environmental protection in Europe because water protection transcends national borders.

At the level of the EU, Water Framework Directive (WFD) was adopted. Other Directives contributing to sustainable development goals are: Environmental Quality Standards Directive, Groundwater Directive, Floods Directive.

Cohesion policy is an important source of funding for measures contributing to the achievement of the objectives of the WFD and the Floods Directive. Cohesion Policy can finance „grey "infrastructure (wastewater treatment plants, water purification stations, sewerage systems, water retention reservoirs) as well as „blue - green "infrastructure supporting natural capacities for retaining water and for natural water retention to prevent flooding.

The highest share of funding for water management is devoted to waste water treatment, followed by water management and water conservation and provision of water for human consumption. Surprisingly the total funding for water management is in the current programming period lower than for the period 2007 – 2013.

Water scarcity and droughts

While Europe is largely considered as having adequate water resources, water scarcity and drought is an increasingly frequent and widespread phenomenon in the EU.
The main overall objective of EU water policy is to ensure access to good quality water in sufficient quantity for all Europeans, and to ensure good status of all water bodies across Europe.
The major challenge from water scarcity and drought has been recognised in the Communication „Addressing the challenge of water scarcity and droughts "from the European Commission adopted in 2007.

Flood Risk Management

EU Member States are obliged to carry out a preliminary assessment of flood risk to identify areas of potential flood risk, to establish and publish flood hazard and risk maps and to develop and implement Flood Risk Management Plans to reduce flood risk.

Cities try to respond to changing climatic conditions and try to introduce new approaches to water management. In the past, the city water management focused on providing drinking water, the reduction of flood risk and solving water pollution. Nowadays, one of the major city-wide problems is poor rainwater management. Rainwater drains off through sewers from impermeable surfaces without the possibility of soaking or retention. The use of rainwater for example for watering of greenery, sprinkling roads, individual use in households and gardens can contribute to reduction of drinking water consumption. For newly built or reconstructed areas it is necessary to take into account or, also, to adopt measures addressing soaking and using of rainwater (for example green roofs, green facades, soaking surfaces, retention tanks).

Drinking water quality in the EU is in general very good. According to EU, what can we do to improve EU water? Use only the necessary amount of water cutting all waste, buy organic agricultural products since they help to preserve water quality, re – use or re -cycle as much as possible to reduce your water footprint, prevent waste, support decision makers, who want to make polluters pay.

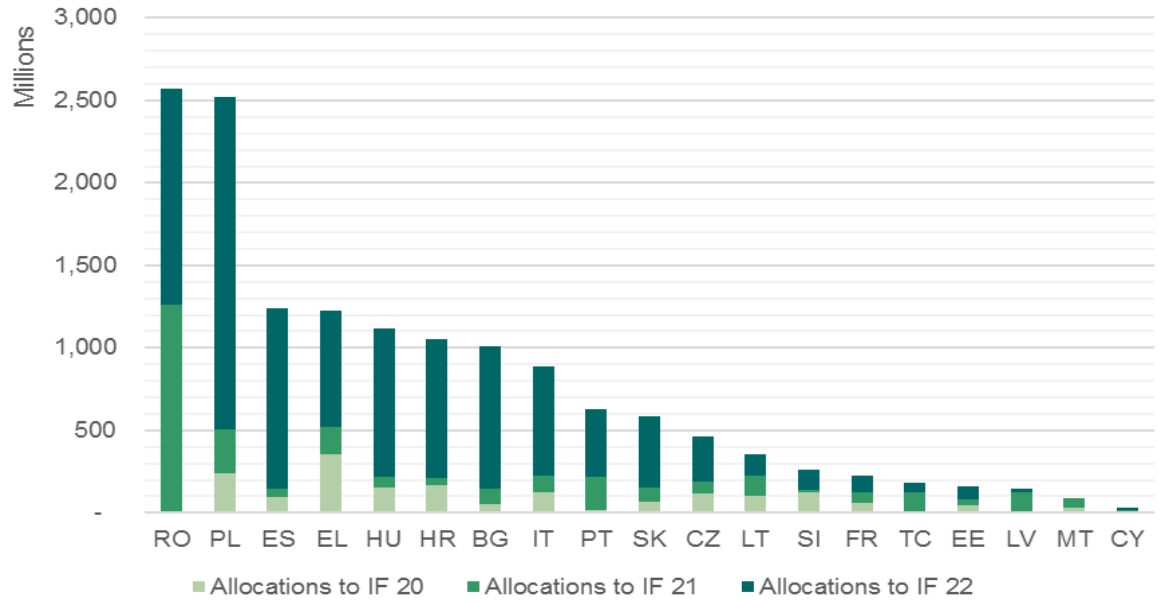
For ***example,*** in the Czech Republic, Czech adaptation strategy was approved as a frame for development and implementation of adaptation strategies in the Czech Republic.

At the local level, the City of Pilsen has adopted Pilsen Adaptation Strategy. The main identified risks associated with the climate change are also extreme rainfall, floods in the city, insufficient soaking of rainwater, drought and insufficient amount of water. Torrential rains are the main cause of lightning floods, the sewers are overstrained and then pollute water which escapes to watercourses without pre-treatment. This is a problem especially in the cities with a large proportion of surfaces with reduced permeabilities. Extreme rains and floods could result in soil erosion, landslides, lower quality of water, etc. Population growth, increased water consumption and changes in the land use have an impact on water supplies and its availability.

The main goals of Pilsen Adaptation Strategy include reduction of risk of lightning floods through nature-friendly measures on selected watercourses not only within the city itself, but also at the wider regional level of entire river basins.

If cities and their citizens as well respect principles of sustainable water management while carrying out their intentions, the cities will be better prepared for climate change.

Picture 1: Allocations (EUR million) to water (IFs 20, 21, 22) by Member States



Source: European level report: Evaluation of the contribution of Operational Programmes to the implementation of EU water policy
IF = Intervention Field – IF 20 = Provision of water for human consumption, IF 21 = Water management and drinking water conservation, IF 22 = Waste water treatment

Good Practice example	
Project Designation	**Sustainable Processes and Optimized Technologies for Industrially Efficient Water Usage**
Project name	SPOTVIEW
Synthesis of the Project	The objective of the SPOTVIEW project is to develop and demonstrate innovative, sustainable and efficient processes and technology components, in order to optimize the use of natural resources, especially water, in three industrial sectors (Dairy, Pulp and Paper and Steel) contributing to 44% of industrial water usage in EU. This resource optimization (including water, energy, raw materials and additives) is a key issue to maintain production

	competitiveness and sustainability. A total of 14 existing and new technologies will be assessed during the project, including solid/liquid separation, ultrafiltration, deionization, biological treatment, disinfection and chemical heat pump.
Results achieved	14 existing and new technologies were assessed for 9 new water management practices. Up to 7 selected technologies chains were demonstrated in real industrial environment. The description of 5 Key Exploitable Technologies is presented in a Technology leaflet. These technologies were evaluated in terms of environmental impacts and benefits, generated by achieving the SpotView targets (20% to 90% reduction of water usage, wastewater emissions, chemicals and energy use). Economic exploitation of the technologies is pursued through a well described business case scenario.
EU Instrument used	HORIZON 2020
Financial data	Overall budget € 7 822 422,50 EU contribution € 7 822 422,50
Website with complementary info	http://www.spotview.eu/
Project contacts	Domaine Universitaire, 38610 Gieres, France

2.1.3 Waste

Waste should concern urban 'waste water' and 'solid waste' treatments.

a. **Waste water treatment**

For most European citizens, sewage from our toilets, sinks and washing machines goes down pipes to be treated, reducing disease-causing organisms and the nutrient load that would otherwise cause pollution and the proliferation of algae.

Waste water from households and industry creates significant pressure on the aquatic environment because of the loads of organic matter and nutrients it contains. If released into **waterways and seas/oceans**, ammonia and natural processes break down the organic matter in the water but can use up the oxygen, making the river uninhabitable for fish and invertebrates. Meanwhile, excess nutrients, such as nitrogen and phosphorus, can cause plants and algae to grow excessively, cutting out light and using up the oxygen in the water through respiration or when the plants decay. The widespread introduction of effective waste water treatment during the 20th century has greatly improved human health and environmental quality.

The proportion of households connected to waste water treatment facilities varies across Europe. In western-central Europe, for example, the connection rate is 97 %. In southern, south-eastern and eastern European countries, it is generally lower, although it has increased over the last 10 years to reach about 70 % (EEA, 2017a). Despite these significant improvements in recent years, around 30 million people are still not connected to waste water treatment plants in Europe. In areas where people live far apart, it may be more practical to use individual treatment methods like septic tanks to deal with sewage. **Source: European Environment Agency*

b. Solid waste treatment

Waste management and recycling. Even though the waste management constantly improves, according to the European Commission, altogether, the EU produces up to 3 billion tons of waste every year.

Turning waste into a resource is one key to a circular economy. In the last years EU focused the legislation to improve waste management and to stimulate innovation in this field and to change the consumer behavior.

Improving waste management leads to a healthier life, to reduce environmental impact and to keep the waters and air clean. Improved waste management system helps to reduce greenhouse gas emissions, reduce health and environmental problems, reduce greenhouse gas emissions and minimize negative impacts at local level such as landscape deterioration due to landfilling, local water and air pollution, as well as littering.
The approach to waste management is based on the "waste hierarchy" [14] which sets the following priority order when shaping waste policy and managing waste at the operational level: prevention, (preparing for) reuse, recycling, recovery and, as the least preferred option, disposal (which includes landfilling and incineration without energy recovery).

In line with this the 7th Environment Action Programme sets the following priority objectives for waste policy in the EU: reduce the amount of waste generated; maximize recycling and re-use; limit incineration to non-recyclable materials; phase out landfilling to non-recyclable and non-recoverable waste; ensure full implementation of the waste policy targets in all Member States.

European Union concerns by Waste thematic was materialised into 5 major directives:

1.WFD: Directive (EU) 2018/851 of the European Parliament, amending Directive 2008/98/EC on waste
2.Landfill: Directive (EU) 2018/850 of the European Parliament and of the Council of 30 May 2018 amending Directive 1999/31/EC on the landfill of waste
3. EOV, Batteries and WEE: Directive (EU) 2018/849 of the European Parliament and of the Council of 30 May 2018 amending Directives 2000/53/EC on end-of-life vehicles, 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and 2012/19/EU on waste electrical and electronic equipment
4.PPWD: Directive (EU) 2018/852 of the European Parliament, amending Directive 94/62/EC on packaging and packaging waste
5.Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment

Directive 2008/98/EC sets the basic concepts and definitions related to waste management, such as definitions of waste, recycling, recovery. It explains when waste ceases to be waste and becomes a secondary raw material (so called end-of-waste criteria), and how to distinguish between waste and by-products. The Directive lays down some basic waste management principles: it requires that waste be managed without endangering human health and harming

[14] https://ec.europa.eu/environment/waste/index.htm

the environment, and in particular without risk to water, air, soil, plants or animals, without causing a nuisance through noise or odours, and without adversely affecting the countryside or places of special interest.

According to these Directives Member states will have to meet separate collection of at least paper, metal plastic, glass, bio-waste (by end 2023), hazardous household waste and textiles (by end 2024) reaching the following targets as they increase the reuse and recycling of municipal waste: reuse and recycling targets of 55%, 60% and 65% by respectively 2025, 2030 and 2035.65% by 2035, and the legislation defines as well specific recycling targets for packaging, landfill reduction (10%) and a common EU target for recycling packaging waste (75%) by 2030.

	By 2025	By 2030
All packaging	65%	70%
Plastic	50%	55%
Wood	25%	30%
Ferrous metals	70%	80%
Aluminium	50%	60%
Glass	70%	75%
Paper and cardboard	75%	85%

Good Practice example

Project Designation	**Scale re-use starting from bulky waste stream**
Project name	PRISCA
Location	Veneto(Italia) Toscana(Italia) Marche(Italia) Lazio(Italia)
Thematic	Waste - Waste reduction - Raw material saving Waste - Waste recycling
Synthesis of the Project	The main objective of the PRISCA project was to reduce the flow of bulky waste sent to landfill. The project also aimed to increase the recovery and reuse of bulky waste. Its specific aims were to contribute to the effective implementation of the EU Thematic Strategy on waste and natural resources, focusing its efforts on the national priorities; to set up two demonstration reuse centres, in Vicenza (northern Italy) and San Benedetto del Tronto (central Italy); and to reduce the flow of bulky waste going to landfill, with a target of reusing 60% of that waste.
Results achieved	The PRISCA project contributed to improvements in waste management generally and, in particular, to the implementation of the waste prevention objectives of the EU Waste Framework Directive (2008/98/EC). The project established two waste reuse centres, in Vicenza and San Benedetto del Tronto, which reduced the flow of waste and goods going to landfill by reusing more than 60% of the incoming material at both sites. In both the demonstration sites, performance monitoring systems were implemented. These consisted of traceability tools that provide useful information, and verified the project's target in terms of intercepted waste flows and management efficiency of the overall process from interception to marketing. Dedicated software was used for the optical reading of characters on labels, to replace the manual input of codes, which made the process of traceability for intercepted goods both easier and faster. The project team created a testing and repair laboratory and published a technical manual.
EU Instrument used	Life+ Programme
Financial data	Duration 01-SEP-2012 to 30-JUN -2015 Total budget 1,647,165.00 € EU contribution 761,534.00 €
Website with complementary info	http://www.progettoprisca.eu/en/
Project contacts	Project Manager: Marco Frey, Tel: +39 050883983; Email: frey@sssup.it

Good Practice example	
Project Designation	**Polymer Wastes in Asphalt Mixes: a Way to Increase Sustainability of Roads Infrastructures**
Project name	POLYMIX
Location	Madrid (España)
Thematic	Waste - Packaging and plastic waste Waste - Waste recycling
Synthesis of the Project	The objective of the POLYMIX project was to demonstrate new environmentally-friendly asphalt mixes, made using polymer waste. By providing an avenue for its reuse, the project sought to reduce environmental problems associated with several types of polymeric waste: polyethylene, polypropylene and polystyrene, as well as end-of-life tires. The project aimed to create several asphalt mixes containing recycled polymeric waste at laboratory scale and to characterize their performance, with different mixer and polymer additions. The most appropriate mixes were selected for industrial use; the project aimed to design the up-scaling of the process for a pilot-scale demonstration, along with life-cycle assessments and an economic analysis of the selected mixes.
Results achieved	POLYMIX provided the first demonstration project of the use of polymer waste in asphalt mixtures in a real-road situation in Europe. The construction of the trial road sections involved the recycling of 20 tonnes of polymer waste, savings on the use of 60 tonnes of aggregate, with emissions reductions and less waste going to landfill; illustrating the environmental benefits to be gained with increasing uptake of the technology. Four Polymix asphalt mixes incorporating polyethylene (PE), polypropylene (PP), polystyrene (PS) and end-of-life tires (ELT) were designed, validated and used to construct four trial sections in a demonstration stretch of 1 600 m of road in Alcalá de Henares (Madrid), which supports heavy traffic loads. The project monitored the behaviour of the Polymix asphalt mixes over 18 months, to test their technical feasibility and economic viability. The project demonstrated that the Polymix asphalt mixes comply with Spanish (PG-3) and European regulations, and provide improved features that could reduce the environmental impact of road construction. The asphalt mixes were found to be cost-effective, because their improved performance ensures the road surface lasts longer than conventional asphalts; so they can be competitive in both the Spanish and European markets.
EU Instrument used	LIFE+ Programme
Financial data	Duration 01-SEP-2011 to 31-MAR -2015; Total budget 1,535,225.00 € EU contribution 760,091.00 €
Website with complementary info	https://www.giteco.unican.es/proyectos/POLYMIX/index.html
Project contacts	Project Manager: Daniel CASTRO FRESNO, Tel: (+34) 942.202053; Email: castrod@unican.es

Good Practice example	
Project Designation	**Integrated information and awareness campaign for the reduction of plastic bags in the marine environment**
Project name	LIFE DEBAG
Location	Anatoliki Makedonia, Thraki (Ellas) Kentriki Makedonia (Ellas) Dytiki Makedonia (Ellas) Thessalia (Ellas) Ipeiros (Ellas) Ionia Nisia (Ellas) Dytiki Ellada (Ellas) Sterea Ellada (Ellas) Peloponnesus (Ellas) Attiki (Ellas) Voreio Aigaio (Ellas) Notio Aigaio (Ellas) Kriti (Ellas)
Thematic	Marine pollution, environmental education, Waste Management
Synthesis of the Project	The main objective of the LIFE DEBAG project was to develop and implement an integrated information and awareness-raising campaign for the prevention and reduction of plastic bag pollution in the marine environment. The aim was to change consumers behaviour.

	Specifically, the project aimed to improve the knowledge base and create awareness of the problem of plastic bag use and disposal at the national level, and to inform and educate the public on Syros island; ensure a sense of public ownership to build support for relevant measures; improve educational efforts directed towards teachers and pupils; and contribute to changing Greece to a sustainable society, starting with plastic bags.
Results achieved	LIFE DEBAG developed and implemented an integrated information and awareness-raising campaign for the reduction of plastic bag pollution in the marine environment, on a national level in Greece and on a local level on the Greek island of Syros. On Syros, the project informed more than 41 000 visitors and 16 500 inhabitants of the problems caused by plastic bags in the marine environment, as well as measures to address the issue, for example, through factsheets at hotels and leaflets for the general public. The project team produced 12 000 reusable cotton bags, which were given for free to the local population. Local voluntary agreements to reduce the consumption of plastic bags were signed with 215 local shops in Syros. Educational events were held, such as beach clean-ups, and information materials produced for every school on the island. The project conducted a rigorous assessment of the marine litter load on the island's beaches and seafloor using drones, towed underwater camera and underwater remote operated vehicles (ROV); results showed that, at the end of the project, the accumulation of plastic bags had decreased by 85% on the surveyed beaches and by 60% on the seafloor. This strongly indicates that an intensive awareness-raising campaign can have a tangible impact on the environment. At the national level, the projects intensive information campaign, involving TV and radio spots, printed publications and electronic newsletters, and social media, reached approximately 600 000 people. A national voluntary agreement was reached with five supermarket chains (representing more than 50% of Greece's market share), with a variety of measures introduced to reduce plastic bag consumption. The project also organized seven stakeholder consultation forums that brought together for the first time all pertinent stakeholders in Greece. Through these forums, it contributed with a significant set of recommendations for the integration of the European Directive on reducing the consumption of lightweight plastic carrier bags (2015/720) into Greek legislation. These were incorporated in a Joint Ministerial Decision in 2017 that imposed a fee on single-use plastic bags from January 2018. After the fee, a 60%-80% plastic bag use reduction was noted in Greece after one year, according to the Hellenic Recycling Agency. Networking activities with 95 groups in Greece and six other EU countries took place. The project developed a Replication Handbook which summarizes the steps interested parties can take for reducing consumption of plastic bags and other single-use plastic items. The project is also relevant to other EU legislation, such as the Waste Framework Directive (2008/98/EC), and the Marine Strategy Framework Directive (2008/56/EC).
EU Instrument used	LIFE+ Programme
Financial data	Duration 01-SEP-2015 to 31-JAN -2019 Total budget 1,257,545.00 € EU contribution 754,527.00 €
Project contacts	Project Manager: George Papatheodorou; Email: gpapathe@upatras.gr

2.1.4 Urban Renewal / Urban Regeneration

The district of Nikiszowiec in Katowice, Poland; a post-mine housing area which was neglected for a long time; due to integrated revitalisation activities place gets its "second life".

Urban regeneration is closely connected with general urban and territorial agenda which has been developed in Europe for the last decades. Urban policy is not an EU level responsibility under the treaties of the European Union but in the Lisbon treaty of 2009, the notion of territorial cohesion appeared for the first time. This reflected a steady progression of steps over the past quarter century to reinforce the urban and territorial agenda.

- The Gothenburg agenda of 2001 agreed at the Gothenburg European Council added a third environmental pillar to the economic and social reform pillars of the EU's Lisbon agenda. The four priorities were: climate change, sustainable transport, public health and resource management.
- The 'URBAN Acquis' of 2004 recognised the contribution that cities make to the economic, environmental and social success of Europe, and referring to a method combining the area-based, integrated and participative approach including local partnerships. The key principles comprising the URBAN Acquis as a way to promote the development of 'sustainable communities' are:
  - (i) To promote long-term visions at city and metropolitan scale (set in appropriate territorial policy frameworks) recomposing individual projects in a strategy balancing economic competitiveness, social cohesion and environmental quality;
  - (ii) To adopt an integrated approach, which involves both horizontal and vertical coordination across policy areas and government tiers;
  - (iii) To engage the widest number of local players in the programming and implementing of the projects, supporting private public partnerships as well as fostering participative processes and reinforcing local society's 'ownership' of the promoted actions;
  - (iv) To concentrate funds in selected target areas;
  - (v) To capitalise knowledge through networking, exchange of experience and dissemination practices related to urban development and policy learning;
  - (vi) To identify and adopt appropriate indicators and evaluating procedures in order to assess progress against established objectives.
- The 2005 Bristol Accord highlighted the importance of sustainable communities for Europe´s development, set out eight characteristics of sustainable cities and called for set of case studies based on a template. The eight characteristics are: active, inclusive and safe; well run; well connected; well served; environmentally sensitive; thriving; well designed and built; fair for everyone

- The Leipzig Charter on Sustainable European Cities of 2007 highlighted the importance of integrated urban development policy approaches and the need to pay special attention to deprived neighbourhoods.

THE LEIPZIG CHARTER

- The 2007 Territorial Agenda introduced the idea of territorial cohesion and situated the issues faced by cities, towns and urban areas.
- The 2008 Marseilles Statement called for the implementation of the Leipzig Charter principles by developing a common European Reference Framework for Sustainable Cities also known as RFSC .
- The 2008 Barca Report put a new emphasis on 'place-based' approaches in regional development.
- The 2010 Toledo Declaration recognised the role that European urban areas can play in achieving the aim of smart, sustainable and inclusive growth as part of the Europe 2020 Strategy and emphasised the significance of integrated urban development and called for a common understanding of the concept and its application in urban regeneration.
- The Europe 2020 strategy responds to the European and global challenge by proposing 7 flagship initiatives to catalyse progress under the priority themes of smart, sustainable and inclusive growth. Cohesion policy and its structural funds are key delivery mechanisms. The flagship initiatives are: Innovation Union, Youth on the Move, A Digital Agenda for Europe, Resource Efficient Europe, An Industrial Policy for the Globalisation Era, An Agenda for New Skills and Jobs, European Platform against Poverty.
- The New Leipzig Charter was approved on 1st December 2020 by all Member states.

Urban renewal refers to special local development actions and programs aimed at rehabilitation of certain urban areas to improve the living environment, meeting objectives of social inclusion and sustainable development.
It designates a specific intervention related to the revitalisation of a limited part of the city, a neighbourhood and as such it can be regarded as a specific tool of urban public policy. Urban renewal programmes are often integrated and financed by specific funds that join physical urban planning and social programmes together.

The examples of such funds exist in several European countries: The National Programme for Urban Renewal (Programme national de la renovation urbaine, PNRU) in France, the Big Cities programs in the Netherlands; the Sozialestadt programme in Germany. Funds for revitalization projects are also available via the Cohesion Policy. The proposals of regulations presented by the European Commission for the financial perspective 2021-2027 included revitalization in the Policy Objective no. 5 – "Europe closer to citizens" where preparation of integrated strategies is a mandatory requirement for implementing any projects. In the current perspective 2014-2020 many revitalization projects (co-financed from ERDF and ESF) were implemented using territorial tools such as ITI as integration permitting the combination of different thematic objectives (social, economic, etc.) and focus on territory were essential in the revitalization approach.

An important factor for successful urban renewal programmes is the co-operation of public and private spheres. The public intervention in many cases becomes leverage for private investors who

find interest in neglected areas and districts. The urban regeneration is a long and complex process that requires involvement of many stakeholders with often contradictory needs and ideas, intervention in many spheres (physical regeneration, environmental, social and others). It should result in sustainable solutions that boost development of area neglected for tens of years and stops gentrification and urban sprawl processes which particularly nowadays are cost-consuming.

Night of Culture in Lublin. New functions introduced. After the event, the city's authorities decided to make this street a pedestrian zone.

Over the last few decades, the specific position of urban renewal within urban policies in European countries has been continuously emphasised and reshaped, and in parallel it has also become a clear objective of European spatial policies.

Between the end of the Second World War and the 1970s the main challenge was the problem of obsolete housing and/or housing shortages, in great part related to the demolitions during the war and the permanently increasing need for housing related to the demographic boost in the after-war period. Therefore, physical constructions and reconstructions were at the core of urban policies, although with differences in pace and methods implemented in different European countries. In the Netherlands, for instance, physical reconstruction and construction of new housing were strongly related to the reconstruction of city centres demolished during the war.
The 1980s and 1990s were the decades in which the social element of urban renewal and of public housing renovation became recognizable, especially because of dilemma of how to maintain the spatial balance between poor and wealthier populations, how to avoid segregation and social exclusion and the concentration of poverty in certain neighbourhoods of the city. The promotion of social mix in all urban areas became one of the tools adopted to achieve these purposes. In the Netherlands, the successive phases of the 'Big Cities Policies' introduced in the 1990s represented this idea until recently. In France, the idea of socially mixed neighbourhoods derived from the political enigma between two approaches concerning the fight against segregation. In a simplified way, these two proposals were as follows: either create a more equal spatial redistribution of poverty within the social housing sector or improve the conditions of accessibility of the poorest people to social housing.

Since the 1990s and 2000s integrated urban development has become a prevailing paradigm in urban policies in Europe. European policy declarations opted for a more sustainable, more balanced urban structure in Europe. Hence urban renewal is a complex program with the intersection of physical, economic and social types of interventions.

The report "Cities of tomorrow. Challenges, visions, ways forward" emphasizes that cities are economically and socially complex and fragmented, and city administrations have to deal with this. According to the report, European cities should be:

- ✓ places of advanced social progress with a high degree of social cohesion, socially-balanced housing as well as social, health care and "education for all" services;
- ✓ platforms for democracy and citizen participation, cultural dialogue and diversity;
- ✓ places of green, ecological or environmental regeneration;
- ✓ places of attraction and engines of economic growth or development, with a high-quality built environment and public spaces improving the quality of life. A conceptual framework on European cities cannot be seen independent of the larger territorial and spatial context in which urban development takes place.

The report concluded that European urban territorial development should:

- reflect a sustainable development of Europe based on balanced economic development
- strive towards a balanced territorial organisation within a polycentric urban structure
- contain strong regional centresthat provide good accessibility to services of general economic interest
- be characterised by a compact settlement structure with limited urban sprawl
- enjoy a high level of protection and quality of environment around citie

The important factor influencing good governance for urban and territorial development is the cooperation of the respective governmental layers and the involvement of key stakeholders including private sector, civil society organisations and NGOs. Horizontal and vertical co-operation and co-ordination is necessary to achieve long-term sustainable results.

Trinità delle Monache complex (also known as Ex-military Hospital) in Naples, Italy – Sleeping Giant in Second Chance URBACT project focusing on reactivation and urban regeneration

There are many definitions of urban regeneration across Europe examples:

- The process of urban regeneration is one in which the state or local community is seeking to bring back investment, employment and consumption and enhance the quality of life within an urban area
- In 1994 the British Government's priority for urban regeneration programmes in England was: to enhance the quality of life of local people in areas of need by reducing the gap between deprived and other areas, and between different groups.
- Igloo Regeneration Fund: Urban regeneration is concerted social, economic and physical action to help people in neighbourhoods. experiencing multiple deprivation reverse decline and create sustainable communities.
- British Urban Regeneration Association: Urban regeneration is a comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area (Jon Ladd, Building, February, 2006).
- The Toledo Declaration: The EU Ministers state that they understand 'Integrated Urban Regeneration' as: a planned process that must transcend the partial ambits and approaches that have usually been the norm until now, in order to address the city as a functioning whole and its parts as components of the whole urban organism, with the objective of fully developing and balancing the complexity and diversity of social, economic and urban structures, while at the same time stimulating greater environmental eco-efficiency
- The Revitalization Act dated 2015 from Poland where revitalisation is characterized as a complex process of recovering from a crisis condition degraded area through integrated activities (mutually interlinked projects covering social, economic, spatial, functional, or technical and environmental issues) joining interventions for the benefit of local society, space and economy which are territorially focused and conducted in a planned and integrated manner through revitalisation programmes.

On the EU level, the Urban Acquis of the EU is based on its integrated, collaborative and innovative approach to urban regeneration. It was also assumed in the "urban mainstreaming" vision adopted in the context of the Cohesion Policy from 2007, in which its guiding principles aimed to be integrated into the operational programs of the Member States. In the programming period (2014-2020) the urban dimension of the Cohesion Policy was reinforced – Member States were obliged to allocate at least 5% of their allocations of the European Regional Development Fund (ERDF) to support integrated sustainable urban development strategies.

In addition, new tools have been introduced to foster innovative and integrated urban action (the Urban Innovative Actions, the Urban Development Network). Together with the continuation of existing initiatives (for instance URBACT programme), all policy instruments are to foster the EU support to urban regeneration with an integrated approach.

Wrzeszcz, Gdansk in Poland, the street which was awarded in the contest concerning revitalization of the street which has changed an image of the whole district – for changing a neglected place in a fashionable space that attract young people and encourages for taking walks and culinary journeys

2.1.5 Energy Transition

Energy industry projections recognize that the world population is expected to grow to nine billion by 2050, and up to eleven billion by 2100. Meanwhile, despite efficiency gains, ***electricity consumption*** is expected to continue growing at the rate of 0.7% per capita per year.

The UN Population's Division most-favoured median projection[15] estimates that 9.7 billion will be in the planet in 2050 and 10.9 billion in 2100. But there a lot of differences in population projections and divergences occur over the next 30 to 40 years after 2050 due to demographic changes (mortality decline highly compensated by fertility decline due in particular to increase in education levels in Asia and Africa). Today we are 7.7 billion and the lowest estimates for 2100 forecasts population even below as it is today.

One of these main fundamentals is the distinction between "primary energy" and "final energy".[16]

"Primary energy" refers to the "raw" energy contained in natural resources such as coal, oil, gas, uranium, biomass, wind, sun and other renewable energy sources. It should be noted here that, in most world statistics, primary energy comes from sources that are widely distributed among the poorest populations - namely the combustion of wood and wood waste, charcoal and animal dung. dried - is not counted.

The energy delivered to the end consumer is referred to as **"final energy".** Consequently, and this is a fundamental principle, the quantity of final energy is always lower than the quantity of primary energy (losses linked to possible transformations and to transport), and the difference is sometimes significant (losses which vary from country to country are of the order of 1/3 of primary energy).

Energy provides three main types of "services" satisfied by different forms of "final energy":

- the production of heat and cold, also called "fixed use", whether for domestic needs (heating and domestic hot water) or for industry (such as industrial ovens). This production uses overwhelmingly fossil fuels or biomass (wood);
- transport, which is 94% based on "petroleum products" (resulting from the transformation of crude oil in a refinery);
- electricity which is mainly produced globally by fossil fuels (and to a lesser extent by nuclear power, hydropower and other renewable energy sources).

According to Eurostat in 2018 the final energy consumption in EU 27 was Heat and Cold 46.5%, Transport 30.5% and Electricity 23.0%.

[15] The Great Population Debate, Richard Webb, New Scientist, 14.11.2020
[16] Énergies renouvelables dans l'UE: de la perception à la réalité, Samuel Furfari et Ernest Mund

EU 27 Primary Energy Consumption (Eurostat)

TOTAL, EU 27	RENEWABLES (15%)
1 479,27 Mtep	**222,07 Mtep,** of which (in %) -Biomass 59,8 -Hydro 13,3 -Wind 12,4 -Heat pumps 5,2 -Geotermic 3,1 -Solar Term 1,9

In the collective imagination and especially in the media, energy too often boils down to electricity. The growing and sometimes very large share of intermittent renewables is highlighted, but omitting to specify that we are referring only to electricity, which accounted for 23% of final energy consumption in 2018.

In other words, when you only concern yourself with electricity, you neglect more than three-quarters of the energy you consume. Of course, in the medium term, we expect to electrify more final consumption and therefore this share is expected to grow. But can we reasonably think that we will also heat the 180 million housing units in the EU with intermittent electricity channels?

However, let's take a closer look at the data on electricity. Renewable energies accounted for around a third of electricity production in 2018 according to the latest Eurostat data and hydropower[17] itself accounted for 38% of electricity production from renewable sources this year -there (while the term "renewable energy" is often mistakenly considered a synonym for wind and solar energy alone)[18].

Total EU 27 Electricity production in 2018 (Eurostat) – 2 941,5 TWh, of which (in %), Renewables represented 32,9%:

- Hydro 12,6
- Wind 10,9
- Solar Photov 3,9
- Others 5,5.

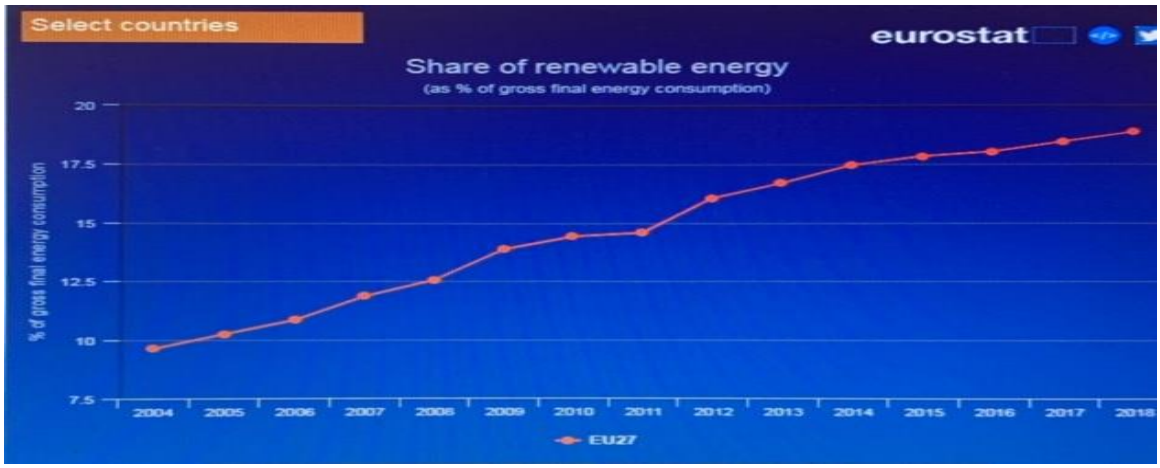
When we bring back the weight of intermittent renewable sectors in the primary energy balance of the EU - the fundamental indicator when we are concerned with energy, whether for geopolitical aspects, balance of payments and decarbonisation - their share is thus limited to a few percent. In 2018, these energies so popular in the media thus accounted for only 2.5% of primary energy consumption in the EU27 (1.4% in France, 1.8% in Belgium and 4, 3% in Germany) ...

Saying that the challenge remains how to accommodate population pressures on the planet in a sustainable way. In the past, most city governments have not taken it upon themselves to ensure reliable and environmentally sound delivery of energy to their constituents, or to encourage efficient energy use.

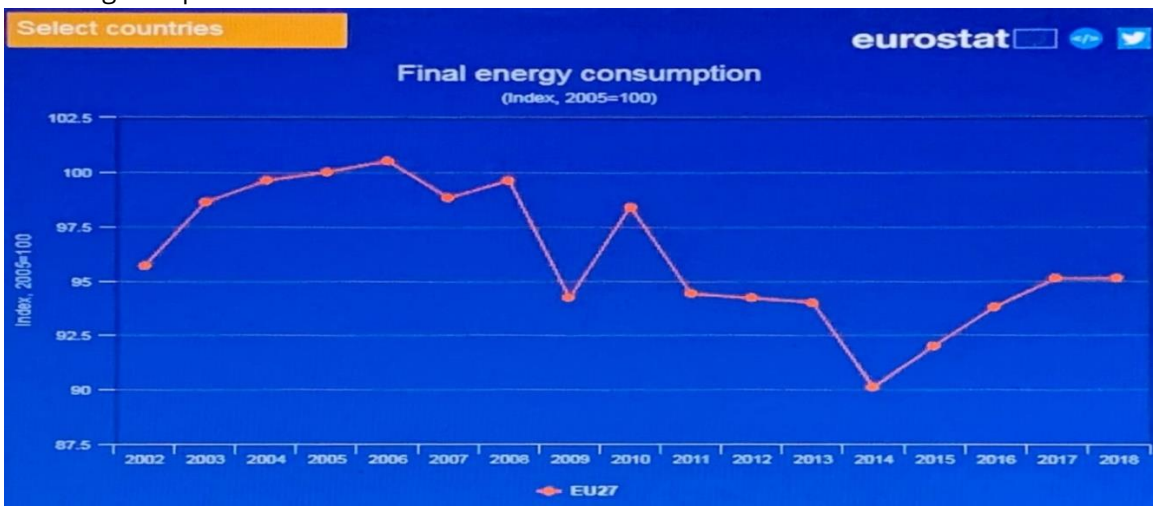
[17] Energy statistics - an overview, Eurostat, juillet 2020.
[18] However, voices are rising to no longer consider the oldest renewable energy sector in the field of electricity as "renewable", because it would disturb the environment, by flooding the valleys upstream of hydroelectric dams. However, if we removed hydropower from the nomenclature of renewable energies, the latter would see the share of wind and solar grow artificially in renewable production, but also the share of renewable in total electricity production.

An increasing number of cities are beginning to do so now, using their established statutory powers to respond to political expectations regarding environmental quality and economic development. Over the past ten years, municipalities have emerged as significant players in global energy markets, they are even increasing their own staff capacity and resources to address climate change and lead new energy programmes while exerting leadership in programmes and policies to decarbonise energy products and use.

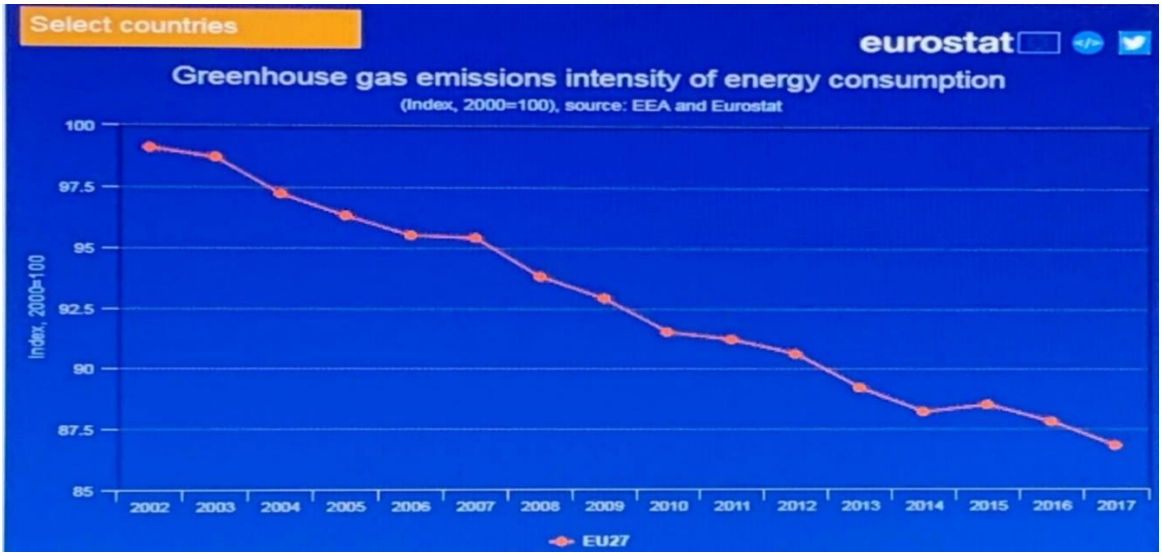
The data presented below (source: Eurostat) prove that lots of activities undertaken since 2002 have already brought tangible results and resources and efforts have been designed in compliance with real needs. This particualry is visible in the case of renewable energy which in the final energy consumption has been growing continuously. The trend is very promising, however, to maintain it lot needs to be done.



The graph below, showing the data on final energy consumption indicates altering needs and proves that securing energy supply should still be critical for governments and other actors including European cities.



Greenhouse gas emissions intensity of energy consumption has a decreasing tendency that is beneficial for the European economy. But to maintain it many activities supporting low-carbon economy must be implemented and supported. There are still lots of challenges that the whole Europe and particularly European cities are currently facing.



The issues concerning energy transition and climate change problems were identified in many European-level documents setting principles for development processes and policies. Importance of designing such policies was emphasized in the Declaration of Toledo from 2010. The metropolitan areas, cities and towns are key factors in achieving goals of sustainability and combatting climate change since they are the places where most of the resource's consumption (both materials and energy) are concentrated. Therefore, the battle for urban sustainability is crucial to achieve possible eco-efficiency in the existing urban fabric of the cities.

The Declaration of Toledo emphasized a necessity to introduce "green, ecological and environmental" regeneration of cities with particular attention paid to:

- Reducing transport needs by promotion of proximity and mixed-uses schemes and at the same time promoting a more sustainable mobility
- Boosting energy efficiency in existing buildings
- Improving the management of energy and material resources and flows in the city, including the whole water cycle, waste etc.
- Promoting renewable energies and implementing them and their use in cities
- Recycling land as a key strategy for contributing towards the reduction of land consumption and therefore combating "urban sprawl"
- Promoting the consumption of local green products to shorten consumption circuits and to strengthen the local eco-economy
- Protecting natural, landscape, water resources, agricultural areas etc. around cities and strengthening their links or articulation with cities.

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provided guidelines for peace and prosperity for people and the planet and it identified seventeen Sustainable Development Goals (SDGs), including a goal no. 7 Affordable and clean energy.

It is crucial therefore to introduce a strengthened EU Agenda on the energy transition. The Partnership concerning the energy transition was also to help the EU meet its international commitments - the United Nations' Paris Agreement on Climate Change and the United Nations Sustainable Development Goals.

The Partnership that included 25 partners worked on a structural change on how energy systems operated by creating a far smarter and more integrated energy system that would be zero carbon and demand led. Planned energy systems would be pro-active in how they use, manage, recover, and store energy. Particular attention was paid to:

- Improving energy efficiency at a city-level through the recovery and use of waste heat and at a building level through retrofitting for energy efficiency and energy management;
- Fostering innovative approaches to energy storage and supply (e.g. local systems);
- Increasing the amount of local and renewable energy**.**

Cities are the most crucial actors to mitigate and adapt to climate changes. This is because 75% of Europeans now live in urban areas therefore lots of activities have to be prepared, managed and implemented on this level - decarbonising heat, retrofitting buildings, using local and renewable energy, or promoting ultra-low emission vehicles. The importance has also been paid to facilitating behavioural changes that contribute to a more sustainable lifestyle – that requires a co-operation with a wide variety of different stakeholders: citizens, businesses and others.

The partnership managed to elaborate what is needed to make successful energy transition and it specified required smarter, more integrated and flexible system-level approach that will:

- Minimise energy demand;
- Diversify energy sources, maximising renewable, and local secondary (heat and cold) energy sources;
- Maximise affordable combinations of storage options, including thermal, electrical, and hydrogen;
- Deploy smart energy platforms, technologies, controls, and management systems to:
  - Create a more integrated, smarter, and more decentralised energy system
  - Maximise demand-side management and the use of storage to manage the quantum and timing of energy consumption
  - Provide affordability and choice to consumers, including through new time-of-use tariff structures
  - Enable customers to be energy prosumers - both consumers and producers of energy.

The latest European document referring to, among others energy transition issues is the European Green Deal which was presented on 11 December 2019 by the President of the European Commission Ursula Von der Leyen before the European Parliament – it is a strategic plan to better apply the United Nations 2030 program and to reach carbon neutrality by 2050.

The document emphasizes that the clean energy transition should involve and benefit consumers. Renewable energy sources will have an essential role, with increased offshore wind production. The smart integration of renewables, energy efficiency and other sustainable solutions across sectors is identified as a means to help to achieve decarbonisation at the lowest possible cost.

The important area of intervention is also construction, use and renovation of buildings that require significant amounts of energy and mineral resources (e.g. sand, gravel, cement). In compliance with available data buildings account for 40% of energy consumed. Today the annual renovation rate of the building stock varies from 0.4 to 1.2% in the Member States. This rate would have to be significantly increased or even doubled to reach the EU's energy efficiency and climate objectives. In parallel, still 50 million consumers struggle to keep their homes adequately warm.

Transport accounts for a quarter of the EU's greenhouse gas emissions, and still growing. To achieve climate neutrality, a 90% reduction in transport emissions is needed by 2050. Road, rail, aviation, and waterborne transport will all have to contribute to the reduction. Achieving sustainable transport means putting users first and providing them with more affordable, accessible, healthier and cleaner alternatives to their current mobility habits.

The industry which needs introduction of new sustainable standards and norms is food industry. European food is famous for being safe, nutritious and of high quality and therefore it should present the global standard for sustainability. Although the transition to more sustainable systems has started, feeding a fast-growing world population remains a challenge with current production patterns. Food production still results in air, water and soil pollution, contributes to the loss of biodiversity and climate change, and consumes excessive amounts of natural resources, while an important part of food is wasted. At the same time, low quality diets contribute to obesity and diseases such as cancer.

The Commission presented its calculation on how much is needed to meet ambitious climate and energy targets – the amount of €260 billion of additional annual investment is required which is about 1.5% of 2018 GDP28. Such financial challenge would definitely require co-operation of the public and private sector.

Sustainable Europe Investment Plan is to help meet the additional funding needs. It will combine dedicated financing to support sustainable investments, and proposals for an improved enabling framework that is conducive to green investment. At the same time, it will be essential to prepare a pipeline of sustainable projects. Technical assistance and advisory services will help project promoters to identify and prepare projects and to access sources of finance.

The EU budget will play a key role. The Commission has proposed a 25% target for climate mainstreaming across all EU programmes. The EU budget will also contribute to achieving climate objectives on the revenue side. At least 30% of the InvestEU Fund will contribute to fighting climate change. As part of the Sustainable Europe Investment Plan, a Just Transition Mechanism, including a Just Transition Fund, is going to be implemented. The belief is that the transition can only succeed if it is conducted in a fair and inclusive way. The Just Transition Mechanism will focus on the regions and sectors that are most affected by the transition because they depend on fossil fuels or carbon-intensive processes. The mechanism will use sources from EU budget but it will also try to leverage the necessary private and public resources. The mechanism will come in addition to the substantial contribution of the EU's budget through all programmes directly relevant to the transition, as well as other funds such as the European Regional Development Fund and the European Social Fund Plus.

New technologies, sustainable solutions and disruptive innovation are critical to achieve the objectives of the European Green Deal. New technologies will have to be applied across sectors to construct new innovative value chains. European programmes (such as Horizon Europe) will be to finance innovations and solutions for climate (at least 35% of its budget).

Schools, training institutions and universities will also play an important role in implementation of the European Green Deal as they are institutions where ideas are disseminated. They should be

responsible for engaging pupils, parents, and the wider community to make changes needed for a successful transition.

EU Regulations identified a necessity to concentrate ERDF funding on certain investment priorities depending on the level of development of each region. This was achieved by defining minimum financial allocations to specific thematic objectives:

- ✓ The allocation of resources at the national level will be at least 80 % in more developed regions, at least 60 % in transition regions and at least 50 % in less developed regions for two or more of the following thematic objectives: 1 ('strengthening research, technological development and innovation'); 2 ('enhancing access to, and use and quality of, ICT'); 3 ('enhancing the competitiveness of SMEs'); and 4 ('supporting the shift towards a low-carbon economy in all sectors');
- ✓ The allocation of resources at the national level will be at least 20 % in more developed regions, at least 15 % in transition regions and at least 12% in less developed regions for thematic objective 4 ('supporting the shift towards a low-carbon economy in all sectors').

The said provisions prove that the shift towards a low-carbon economy was one of the most important areas that required intervention from EU structural funds. The Member States were enhanced to allocate funds in operational programmes for projects causing positive changes for achieving a low-carbon economy on European, national, regional and local levels.

2.1.6 Sustainable Urban Mobility

A. Introduction

A.1 Urbanisation and car reliance

Nowadays, urban transport relies on the use of conventionally fuelled passenger cars, mainly oil based energy consumption (98%). This kind of transport represents a significant part of total energy consumption (33%). Moreover, urban transport represents 40% of CO2 emissions within the transport sector, a sector weighing 20% of total carbon emissions, a large contribution to climate change.
In Europe, poor air quality leads to half a million premature deaths per year, costing 72 billion euros per year. The use of diesel passenger cars (35%) is still one of the main causes of high particle concentration in our cities. Traffic in urban areas is also the principal cause of noise pollution, with about 80 million people exposed above the safety limit of 55dB.
Half of total urban trips (less than 5 km) are made with a private car, causing high level of congestion and costing 202 billion euros per year. Urban accidents represent more than 10000 casualties per year. Lastly, private cars are not used 96% of time although one third of urban infrastructure is dedicated to them, implying less public place for other modes.

A.2 EU funding and effectiveness

In Europe, transport is a shared competence between EU institutions and Member States, whereas urban mobility is essentially a local stance. European Commission regularly proposes a strategic framework along with funding programmes, action plans and semi-formal forums involving cities (see annexes). As far as EU funding is concerned, it was progressively reinforced, mostly through

ESIF funds (ERDF and CF). Within the financial framework 2014-20, estimation exceeds 16 billion euros (+46%), with a large focus on clean urban transport. Funds under the Connecting Europe Facility (CEF) relating to TEN-T urban nodes correspond to 214 million euros (1% of CEF's total funds). Other funds are available in the field of research and innovation such as H2020, the CIVITAS initiative or the new EIT Urban Mobility.

Despite constant strategic policies, action plans and large funding, the European Court of Auditors claims that the EU-supported projects have not yet helped make mobility in urban areas more sustainable. Regarding urban transport, the projected passengers target is not often reached and traffic congestion has not yet significantly reduced, impacting negatively people health and climate change[i]. European commission approved a new strategy "European Green Deal: towards a climate-neutral Europe" (December 2019) with the ambition to achieve 90% reduction in GhG emissions by 2050. In order to succeed, it aims to shift towards more sustainable mobility policies along with clean and smart solutions in cities.

B. Sustainable Urban Mobility Plans

In 2013, the first "Urban Mobility Package" came up with recommendations to deliver on sustainable urban mobility.

It called for establishing procedures and financial support mechanisms for the preparation of sustainable urban mobility plans (SUMP) in Europe. Currently, SUMP is the major EU tool to tackle urban mobility challenges. It aims to create a sustainable and integrated urban transport system by involving all types of modes, conventional or alternative. Besides, it aims at ensuring the accessibility of jobs and services within the city and urban surroundings in a safe and secure environment. It must reduce pollution, greenhouse gas emissions and energy consumption, along with increasing the efficiency and cost-effectiveness of the transportation of persons and goods. Comprehensively, it aims to enhance attractiveness and quality of the urban environment. Guidelines are regularly updated for developing and implementing a sustainable urban mobility plan in a successful way (annexes). In 2018, a study identified a thousand of SUMPs in Europe[ii]. According to a survey, less than 40% of surveyed cities had implemented one. However, there is a large variation among countries. France, Flanders (Belgium) and Catalonia (Spain) accounting for half of implemented SUMPs, the outcome of their national and regional laws. In France, urban mobility plans have been compulsory in urban areas of over 100000 inhabitants for several decades.

Under the application of the Amsterdam Pact, the Partnership on Urban Mobility (PUM) settled in 2017. It covered technological advancements, encouraging the use of active modes of transport, improving public transport and promoting multi-level governance. The Partnership set its initial focus on four themes: active modes of transport and use of public space, innovative solutions and smart mobility, public transport for the city/region and multi-modality and governance. The final Action Plan was endorsed in November 2018, heralding the implementation phase, currently undergoing.

Good Practice example	
Project designation	**INNOVATIONS IN SUSTAINABLE URBAN MOBILITY PLANS FOR LOW CARBON URBAN TRANSPORT**
Location	Several European Municipalities and Cities
Thematic	Sustainable Urban Mobility
Synthesis of the Project	The InnovaSUMP project aims to introduce improvements in preparation, adoption and monitoring of SUMPs. It also looks to introduce new policies and measures to promote investments in sustainable mobility solutions, and explore how SUMPs can contribute to urban regeneration, social inclusion and society empowerment. InnovaSUMP will develop new SUMPs and enhance their methodology, so that other regions can use the results. SUMPs will be developed for eight of the project partners: Nicosia Municipality (Cyprus), City of Prague (Czechia), Devon County Council (United-Kingdom), and the Municipalities of Ravenna (Italy), Kordelio Evosmos (Greece), Viseu (Portugal), Vilnius (Lithuania), and Iasi (Romania). InnovaSUMP already led to the creation of a Bike Sharing System of 42 bikes in Kordelio Evosmos, and the first steps are being taken in Iasi to acquire 100 new efficient buses. Nicosia Municipality has also been exploring how to integrate SUMPs with Sustainable Energy Action Plans (SEAPs) and Sustainable Energy and Climate Action Plans (SECAPs), examining the many interlinkages between sustainable transport and energy use.
Instrument used	Interreg Europe
Financial data	1,70 million euros Period: January 2017 – June 2021
Website info	https://www.interregeurope.eu/innovasump/

C. Actions for improvement

SUMPs have helped to improve the quality of life in European cities, particularly in the city-centres. Nevertheless, they have still areas for improvement. SUMPs appear as still insufficient regarding air quality (PM2.5 and NO2) or CO2 emissions, not to mention urban road safety. In general, Intelligent Transport Systems (2010 ITS Directive) could support SUMP implementation.

C.1 Urban vehicle access

In the last decade, restrictions on circulation in urban areas through access limitations – urban toll, congestion pricing, pollution emergency, low emission zone, limited traffic zone, etc. – have rapidly spread throughout Europe. Low emission zones are numerous in largest cities and rather widespread in medium sized cities located predominantly in northern Italy, Germany, Netherlands and Belgium. So as to create synergies, the European commission prepared a set of non-binding guidance documents backing future implementations, to be presented to EU Member States.

C.2 Parking management

On average, 30% of road congestion is due to parking search (up to 20 minutes). In France, every year 70 million hours are spent looking for a place. For private cars, SUMPs have basically ignored parking management within mobility policies. Conversely, it could be considered as part of a wider strategy – private cars but also bicycles – that can benefit sustainable urban mobility. Innovative and efficient parking solutions could support management, information, payment and enforcement functions. For instance, several EU cities adopted park and ride systems, connecting external lots with public transport so the cars are parked outside the city centres.

C.3 Active mobility

In their SUMP, many cities encourage walking and cycling instead of using a private car. A useable network of high-quality paths is key for a pedestrian-friendly city. Pontevedra is famous for its "METROMINUTO" or pedestrian map. On the other hand, so as to reduce vulnerability and fatalities in cities (vulnerables equal to 70%), the European Transport Safety Council calls for the widespread use of 30km/h zones in residential areas and for classifying the roads according to safety, vulnerability and sustainability. They also propose a road design based on the Safe System approach. Therefore, road safety should be a SUMP essential component.

C.4 Shared mobility services

In SUMPs, shared mobility has not received much attention, mainly because transportation authorities are not in charge; shared mobility providers are generally private (even if some count on a public partnership). If legislation allows or it is made more flexible, cities may adopt their own public shared mobility services, particularly transport on demand. Despite the image of shared mobility as a tool against congestion and emissions, the expected modal shift firstly originates from public transport and not private cars, with shared mobility being best suited to provide last mile solutions in not so well-deserved areas.

Finally, a European roadmap already envisions a future made of autonomous, connected, electric and shared vehicles in cities.

C.5 Urban logistics

The European Commission has set the ambitious goal of CO2-free city logistics by 2030. A few businesses, including start-ups, have been trying to develop solutions mainly for city-centres. Several EU projects, notably in the ETC strand or even Horizon 2020 have worked on short delivery systems, especially for food. Nevertheless, the lack of coordination of actors and the scarcity of data contribute to insufficient urban planning and slow down the integration of urban freight into the city's operations. Consequently, urban logistics is rarely included in SUMPs. Challenging in terms of capacity building, a guideline has been released, which proposes governance scheme and use of digital platforms.

C.6 Multimodal transport

In order to combine and make more visible the transport alternatives, digital journey planners are widely used together with e-ticketing. As a result, these tools provide insights on mobility behaviour, in real time and in the long term. Mobility as a Service (MaaS) is also emerging. Integrating mobility data sources, collecting several mobile applications, this service delivers real-time information, booking, payment, and ticketing, with other customised services. A full solution is already rolled out in Helsinki, Birmingham, Vienna and Antwerp. However, many challenges lie ahead, particularly on the regulation side.

Furthermore, in a few European cities, mobility stations already provide a multimodal area, combining public transport and shared mobility services.

Good Practice example	
Project designation	**TMaaS - TRAFFIC MANAGEMENT AS A SERVICE**
Location	Ghent (BE)
Thematic	Multimodal mobility
Synthesis of the Project	The TMaaS project has built a Platform that offers citizens and local governments an efficient view of what is happening in their city in terms of multimodal mobility. Here, users can build a customised tool by subscribing services according to their needs. In 2018 and 2019, a through end-user research was carried out into what information citizens need and how they prefer to view it. Today, citizens have access to a dashboard that they can adapt to their preferences and where they can follow-up the mobility items of interest to them. Traffic Management as a Service is built on an open, modular data Platform that facilitates the adaptation to new technological trends and innovations and creates opportunities for new partnerships. In February 2019, TMaaS launched a call to cities Worldwide to apply to take part in the TMaaS Replicator City Programme. Three cities were given the opportunity to work together with the TMaaS team to create their version of the TMaaS dashboard, adapted to their own situation and needs. Award: CIVITAS Awards 2018.
Instrument used	UIA (ERDF art. 8)
Financial data	4,33 million euros Period: 2018-2021
Website info	https://drive.tmaas.eu

C.7 Electrification of transport

According to the EU's new Green Deal, the European commission will revise CO2 standards of cars to reach zero-emission vehicles. However, there is still a lack of investment in charging infrastructure, with only 185000 charging points (1 million were expected in 2025). The situation hinders the electric vehicle market, with a share of less than 2%. Finally, the Directive on the Deployment of Alternative Fuel Infrastructure was not well implemented and will be revised. For rail, most of the transport already runs almost exclusively on electricity. Public tenders relating to electric bus fleets are challenging for the European industry as Chinese players currently cover 90% of the market[iii]. Battery technology is in rapid progress with 16 large-scale lithium-ion battery cell plants in operation by 2023, delivering enough capacity to cover the needs. In contrast, local electricity networks are definitely not capable of managing the electricity demand expected from huge fleets of e-buses.

Good Practice example	
Project designation	**A SMART ENERGY MANAGEMENT SYSTEM INTEGRATING RENEWABLE ENERGY AND ELECTRIC VEHICLES**
Location	four city pilots in Arnhem, London, Schwäbisch Gmünd and Nottingham
Thematic	renewable energy production and charging infrastructure for electric vehicles
Synthesis of the Project	Cities are increasingly investing in renewable energy production and charging infrastructure for electric vehicles. However, the control systems for energy generation, utilisation, storage and charging are currently separate. This results in high costs and CO2 emissions due to inefficiencies. At the end, electric vehicles are mostly powered by electricity generated by fossil fuel. At the same time, renewable energy is inefficiently utilised because production and demand are not synchronised across the city. CleanMobilEnergy integrates various renewable energy sources, storage devices, electric vehicles and optimisation of energy consumption through an intelligent Energy Management System (iEMS). It increases the economic value of renewable energy and significantly reduces CO2 emissions. The iEMS assures the smart integration through interoperability based on open standards for data flows and analysis tools. CleanMobilEnergy makes it possible for renewable energy sources to be used locally; so electric vehicles can be charged with 100% renewable energy offered at an optimum price. Electrical energy from the grid is only required when prices are low or renewable energy sources are not available, the iEMS monitors and optimises the system 24 hours a day, 7 days a week. One generic transnational iEMS was adapted to four city pilots in Arnhem,

	London, Schwäbisch Gmünd and Nottingham; covering from small towns to large cities, different types of renewable energy, storage and electric vehicles as well as different contexts and diverse city environments.
Instrument used	CleanMobilEnergy Program: Interreg North-West Europe
Financial data	7,16 million euros Period: 2017-2021
Website info	https://www.nweurope.eu/projects/project-search/cleanmobilenergy-clean-mobility-and-energy-for-cities/.

2.2. Environmental management performance

The following thematic are worked out: air and noise quality; climate adaptation /mitigation; social inclusion; governance for sustainable urban development and participation.

2.2.1 Air and Noise Quality

Air pollution

Most of the pollution affecting air comes from energy use and production, burning fuels release harmful gases and chemicals into the air.

With the development of industry and the increase of energy production and consumption, air quality has deteriorated considerably. The considerable increase in road traffic has also led to an increase in air pollution which can lead to serious health problems. The same applies to maritime transport.

In Europe, more than 90% of the ports are located in urban areas.

As regards city ports, it also originates from related industrial area, port logistics and ship traffic emissions. Thus, air quality has become a key determinant of public "acceptance" of port activity, involving potential tensions with neighbouring residential areas. Therefore, a ports survey points out that air quality has become the top priority since 2013[19].

To tackle this issue, mitigation measures often locally focus on relocating factories and industrial sites out of the urban area but also on harbour operations – loading and unloading of vessels, fuelling, etc. – as they particularly propagate exhaust particulate matter (PM10 and PM2.5) in the form of mineral dust. Yet they also concerned EU regulation, in particular with the compliance to new low-sulphur standards (0.5% sulphur cap, 2020) for shipping fuels in port areas. EU regulation also includes the IMO NOx Tier III requirements for vessels built from 2021 onwards operating in the North and the Baltic Seas, which are Nitrogen oxide emission control areas (NECAs).

According to studies[20], marine vessels, which are often powered by relatively old engines and using poor quality fuel, are a major pollution cause in Europe. They actually contribute to 1-7% of ambient air PM10 levels, 1-14% of PM2.5, and at least 11% of PM1. In addition, their NO2 contribution ranges between 7 and 24%, with highest values in Netherlands and Denmark. Impacts

[19] Annual environmental report, ESPO, 2019
[20] Impact of maritime transport emissions on coastal air quality in Europe, in Atmospheric Environment, June 2014

on SO2 concentrations were high for Sweden and Spain. It has also been revealed that shipping emissions could enhance new particle formation processes in urban areas. By the way, policies implementation has proved its efficiency, with decreases in SO2 levels ranging between 50 and 66%, even though a special focus on exhaust particle matter emissions (PMx) from ships must be encouraged."

As a step towards improving air quality[21], the European Commission adopted in 2013 a Clean Air Policy Package, including a Clean Air Programme for Europe setting objectives for 2020 and 2030, and accompanying legislative measures.
In 2018, the European Commission adopted the Communication "A Europe that protects: Clean air for all' which provides guidance for the national, regional and local actors to improve ai quality.

	Good Practice example
Project Designation	**Air & Noise - Air pollutants**
Project name	CA - CLEAN AIR
Location	Wien (Österreich) Steiermark(Österreich) Salzburg(Österreich) Praha(Czech Cesko) Berlin(Deutschland) Københavns amt(Danmark) Kozep-Magyarorszag(Hungary Magyarország) Mazowieckie(Poland Polska)
Thematic	Air & Noise - Air pollutants Information - Governance - Improved legislative compliance and enforcement
Synthesis of the Project	The CA project tackled the problem of continuing violations of air pollution limits by strengthening environmental governance and increasing access to justice, which helps to improve compliance with EU legislation. It empowered and motivated EU citizens and NGOs to campaign for effective air quality measures. The beneficiary organised ten workshops for NGOs during the project period. Those workshops imparted the knowledge, which options organisations and affected citizens have to sue institutions for the right to clean air. In Berlin, Brussels, Prague, Vienna, London, Bratislava and Lisbon experts taught interested participants, how to act in the most promising way during a lawsuit. The project was innovative with regards to the raising awareness of the issue of clean air in ports (sea and inland) among all stakeholders. An important deliverable was its manual "Clean Air in Ports", which was distributed to ports, ship owners, local authorities, major port cities, during events and by email. Elsewhere in Europe among participating authorities, the city of Budapest agreed investments for 2016 to continue the renewal of the public buses by retrofitting and replacing them with greener alternatives, including of 25 electric buses). The CA project actions have helped to implement the provisions of the Air Quality Directive and proposed revisions, as well as the Non-Road Mobile Machinery Directive, and the Thematic Strategy on air pollution.
Results achieved	In total, nine European environmental NGOs joined forces under the framework of the project to tackle areas of urban air pollution including private and public transport, inland and maritime ships and construction machinery. Pilot actions were implemented, best practice models presented, Low Emission Zones extended and the

[21] https://ec.europa.eu/environment/air/index_en.htm

	consortium lobbied for stricter air pollution limits at EU level. Significantly, many of these initiatives are continuing after-LIFE. The most challenging aspect of the project was the cooperation with local authorities, some of whom proved less active in contributing than was expected.
EU Instrument used	LIFE+ Programme
Financial data	Duration 01-SEP-2012 to 30-NOV -2015 Total budget 3,398,810.00 € EU contribution: 1,686,635.00 €
Website with complementary info	http://www.cleanair-europe.org/en/home/
Project contacts	Heiko Balsmeyer Tel: 0049/30/280351-22 Fax: 0049/30/280351-10 Email: heiko.balsmeyer@vcd.org

Good Practice example	
Project Designation	**Improving the Smart Control of Air Pollution in Europe**
Project name	iSCAPE
Location	Dublin Ireland
Thematic	Air Pollution
Synthesis of the Project	The iSCAPE project was European research and innovation project active from September 2016 to December 2019 that worked on integrating and advancing the control of air quality and carbon emissions in European cities in the context of climate change through the development of sustainable and passive air pollution remediation strategies, policy interventions and behavioral change initiatives. It tackled the problem of reducing air pollution impacts, focusing on the use of "Passive Control Systems" in urban spaces, on policy intervention and behavioral changes of citizens lifestyle. Projections and real-world physical interventions were applied on the urban tissue in the selected cities assessed for future climate change scenarios and representative of different cultural & lifestyles in Europe.
Results achieved	iSCAPE successfully provided: scientifically-validated results and evidence-based data for stakeholders; guidelines and policy recommendations; advanced sensing technologies; new ideas and promising concepts; and increased collective awareness of air pollution and its impact on city life.
EU Instrument used	HORIZON 2020
Financial data	Overall budget € 5 850 830 EU contribution € 5 850 828,75
Website with complementary info	https://www.iscapeproject.eu/
Project contacts	UNIVERSITY COLLEGE DUBLIN, NATIONAL UNIVERSITY OF IRELAND, DUBLIN Address: Belfield, 4 Dublin Ireland

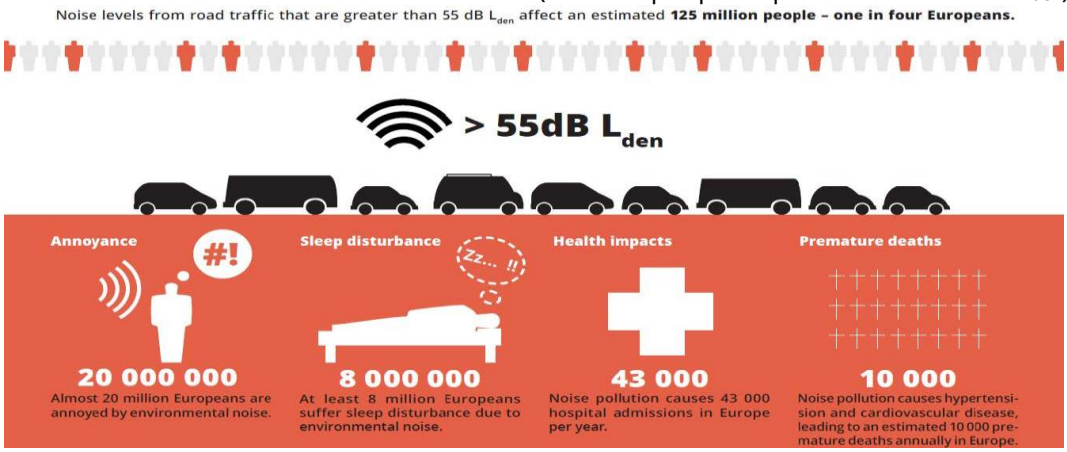
Noise pollution

Noise pollution[22] poses a high environmental risk to human health, both direct and indirect, and it can be defined as unwanted or harmful outdoor sound with road traffic being the greatest contributor.

[22] https://ec.europa.eu/environment/legal/law/5/e_learning/module_1_5.htm

It is a product of transport and industrial activity on land, in the air, on waterways, and on oceans. It is a pervasive pollutant that directly affects the health and well-being of exposed humans and wildlife. It is estimated that 125 million people are affected by noise levels from road traffic greater than 55 decibels (dB) L_{den} (L_{den} is the common EU indicator that corresponds to the average noise level throughout the day, evening and night, to which a citizen is exposed over the period of a year. Environmental Noise Directive 2002/49/EC defines a number of noise indicators to be applied in noise mapping and action planning. These indicators represent a physical scale for the description of environmental noise, which has a relationship with its harmful effects. The two most important indicators are: 1. Lden: the day-evening-night–level indicator designed to assess annoyance; 2. Lnight: the night-level indicator designed to assess sleep disturbance.), including more than 37 million exposed to noise levels above 65 dB L_{den}. Exposure to noise from road traffic is followed by:

- rail traffic noise (nearly 8 million people exposed above 55 dB L_{den})
- aircraft noise (almost 3 million people exposed above 55 dB L_{den})
- industrial noise within urban areas (300 000 people exposed above 55 dB L_{den})



Compared to other types of pollution, noise pollution has not been given the necessary attention due to the limited knowledge about the negative effects it has on people. The negative effects of noise pollution are equally widespread and the health consequences are at the same level as for other types of pollution.

2.2.2 Climate Adaptation

Climate adaptation is one of the actual themes to be solved at all levels of administration. Adaptation to climate change, adaptation to ongoing current and expected impacts is essential for sustainable development of cities.
In international context the theme is solved by Paris Agreement to the United Nations Framework Convention on Climate Change and Sendai Framework for Disaster Risk Reduction 2015 – 2030.

The EU is fighting climate change through ambitious policies at home and close cooperation with international partners.
Examples of adaptation measures at the level of EU include using scarce water resources more efficiently, adapting building codes to future climate conditions and extreme weather events, building flood defences and raising the levels of dykes, developing drought-tolerant crops, choosing tree species and forestry practices less vulnerable to storms and fires, and setting aside land corridors to help species migrate.

Adaptation strategies to climate change are needed at the local, regional, national, EU and also the international level. Due to the varying severity and nature of climate impacts between regions in Europe, most adaptation initiatives could be taken at the regional or local levels. The ability to cope and adapt also differs across populations, economic sectors and regions within Europe.

On the EU level the Commission adopted an EU Strategy on adaptation to climate change in April 2013. The document supports action by promoting greater coordination and information-sharing between member states. It aims to make Europe more climate-resilient. The document and the theme of climate adaptation is connected with the EU 2020 Biodiversity Strategy.

The EU's role can be particularly appropriate when climate change impacts transcend borders of individual states - such as with river basins - and when impacts vary considerably across regions. The role of the EU can be especially useful to enhance solidarity among Member States and ensure that disadvantaged regions and those most affected by climate change are capable of taking the necessary measures to adapt.

'Coastal and port cities have a specific role to take into account, as they board oceans which role in mitigating and adapting to climate change is increasingly recognized towards resilient coastal areas.

The role of integrated urban coastal management in addressing the challenge of Climate Change.

In 2002, the EU's Recommendation on Integrated Coastal zone Management referred to the threat to coastal zones posed by climate change as the basis for a strategic approach on coastal management.
The challenges posed by climate change to coastal areas have been also addressed by national integrated coastal management strategies, which have implemented different principles and tools to respond to these challenges: long-term perspective and precautionary principle, adaptive management, accounting for diversity of local conditions, working with natural processes and coherence between planning and management.
But also, the coastal fact should be noted as an opportunity to foster the development of the Blue-green economy while preserving marine ecosystems and contributing to climate change adaptation and mitigation.'

The EU has also set itself targets for reducing its greenhouse gas emissions progressively up to 2050.
Key climate and energy targets are set in the 2020 climate and energy package and in the 2030 climate and energy framework.

Example. At the level of the Czech Republic, Czech adaptation strategy was approved as a frame for development and implementation of adaptation strategies in the Czech Republic.
At the local level, the City of Pilsen has adopted Pilsen Adaptation Strategy. The vision of the document is to reduce vulnerability and ensure the resilience of the city to the impacts of climate change using appropriate adaptation measures that support city´s preparedness and ensure a good environment for its inhabitants. The Adaptation Strategy is one of the sources of Strategic Plan of the city of Pilsen. This Strategic Plan contains in its Objective 3 Measure "to increase awareness of the environment of the City of Pilsen, of the impacts of climate change and the possibilities of adaptation measures".
The city´s green infrastructure, the correct application of principles of rainwater management is the basis of the city´s ability to adapt to climate change. Increasing awareness of the importance of adaptation measures will increase the amount of individual implemented measures and thus will improve the preparedness of the city to climate change.

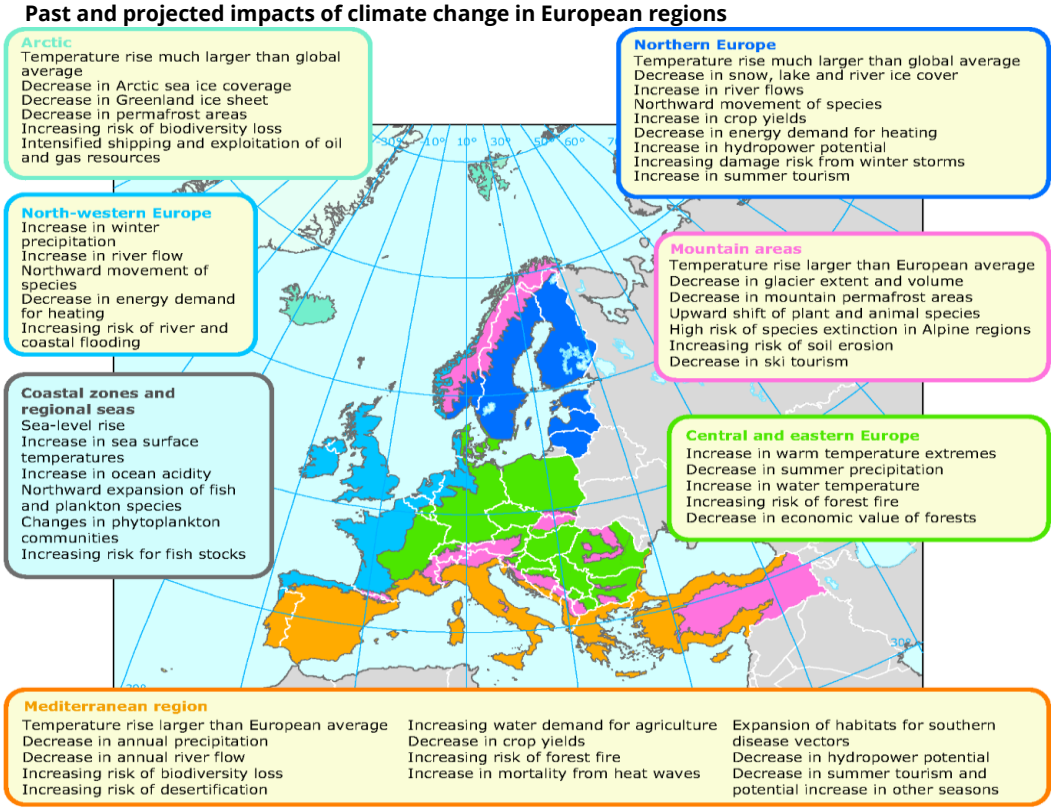
The EU finances adaptation to climate change in Europe through a wide range of instruments. The Multiannual Financial Framework 2014 -2020 will ensure that at least 20 % of the European budget is climate related expenditure. Other funding opportunities can also be found via the work of the European Investment Bank or the European Bank for Reconstruction and Development.

Climate change adaptation is integrated throughout EU sectoral policies, using, on one hand, the five European Structural and Investment Funds (ESI Funds): the European Regional Development Fund (ERDF), European Social Fund (ESF), Cohesion Fund (CF), European Agricultural Fund for Rural Development (EAFRD), and European Maritime and Fisheries Fund (EMFF). On the other hand, other instruments exist, such as Horizon 2020 that will promote research and development on climate change adaptation, the LIFE instrument which finances a wide range of projects related to environment and climate mitigation and adaptation, or the EU Solidarity Fund for natural disasters.
On the other hand, the EU also finances climate change adaptation outside its borders, being the largest contributor of climate finance to developing countries and the world's biggest aid donor, collectively providing more than half of global official development assistance.

Example. The Czech central institutions (especially the Ministry of Environment) announce own grant schemes, which supplement the financial possibilities from European Funds. This is e.g., Landscape Care Programme, which aims at adaptation measures both investment and also non-investment character mitigating the effect of climate change.

It is necessary to use the instruments supporting development and implementation of adaptation measures, such as grants announced by municipalities, partnership between public and private sector, the possibility to use financially repayable investments, support of citizen´s activities aimed at adaptation to climate change.

Past and projected impacts of climate change in European regions



Source: The EU Strategy on adaptation to climate change

2.2.3 Social Inclusion

This chapter focuses on which are the EU Urban policies and instruments for Social inclusion-New jobs and economy, and concentrates specifically on the following ones:

- The European Pillar of Social Rights
- The role of the European Structural and Investment Funds
- Pact of Amsterdam - The Urban Agenda for the EU
- Cooperation and exchange of experience between cities
- European Urban Policies - post 2020

The European Pillar of Social Rights

The European Parliament, the Council and the Commission proclaimed the European Pillar of Social Rights at the Social Summit for Fair Jobs and Growth in Gothenburg, Sweden, on 17 November 2017. The Pillar sets out 20 key principles and rights to support fair and well-functioning labour markets, structured around three chapters:

Equal opportunities and access to the labour market:

1. **Education, training and life-long learning**. Everyone has the right to quality and inclusive education, training and life-long learning in order to maintain and acquire skills that enable them to participate fully in society and manage successfully transitions in the labour market.
2. **Gender equality.** Equality of treatment and opportunities between women and men must be ensured and fostered in all areas, including regarding participation in the labour market, terms and conditions of employment and career progression. Women and men have the right to equal pay for work of equal value.
3. **Equal opportunities.** Regardless of gender, racial or ethnic origin, religion or belief, disability, age or sexual orientation, everyone has the right to equal treatment and opportunities regarding employment, social protection, education, and access to goods and services available to the public. Equal opportunities of under-represented groups shall be fostered.
4. **Active support to employment**. Everyone has the right to timely and tailor-made assistance to improve employment or self-employment prospects. This includes the right to receive support for job search, training and re-qualification. Everyone has the right to transfer social protection and training entitlements during professional transitions. Young people have the right to continued education, apprenticeship, traineeship or a job offer of good standing within 4 months of becoming unemployed or leaving education. People unemployed have the right to personalised, continuous and consistent support. The long-term unemployed have the right to an in-depth individual assessment at the latest at 18 months of unemployment.

Fair working conditions

5. **Secure and adaptable employment**. Regardless of the type and duration of the employment relationship, workers have the right to fair and equal treatment regarding working conditions, access to social protection and training. The transition towards open-ended forms of employment shall be fostered. In accordance with legislation and collective agreements, the necessary flexibility for employers to adapt swiftly to changes in the economic context shall be ensured. Innovative forms of work that ensure quality working conditions shall be fostered. Entrepreneurship and self-employment shall be encouraged. Occupational mobility shall be facilitated. Employment

relationships that lead to precarious working conditions shall be prevented, including by prohibiting abuse of atypical contracts. Any probation period should be of reasonable duration.

6. **Wages.** Workers have the right to fair wages that provide for a decent standard of living. Adequate minimum wages shall be ensured, in a way that provide for the satisfaction of the needs of the worker and his / her family in the light of national economic and social conditions, whilst safeguarding access to employment and incentives to seek work. In-work poverty shall be prevented. All wages shall be set in a transparent and predictable way according to national practices and respecting the autonomy of the social partners.

7. **Information about employment conditions and protection in case of dismissals**. Workers have the right to be informed in writing at the start of employment about their rights and obligations resulting from the employment relationship, including on probation period. Prior to any dismissal, workers have the right to be informed of the reasons and be granted a reasonable period of notice. They have the right to access to effective and impartial dispute resolution and, in case of unjustified dismissal, a right to redress, including adequate compensation.

8. **Social dialogue and involvement of workers.** The social partners shall be consulted on the design and implementation of economic, employment and social policies according to national practices. They shall be encouraged to negotiate and conclude collective agreements in matters relevant to them, while respecting their autonomy and the right to collective action. Where appropriate, agreements concluded between the social partners shall be implemented at the level of the Union and its Member States. Workers or their representatives have the right to be informed and consulted in good time on matters relevant to them, in particular on the transfer, restructuring and merger of undertakings and on collective redundancies. Support for increased capacity of social partners to promote social dialogue shall be encouraged.

9**. Work-life balance**. Parents and people with caring responsibilities have the right to suitable leave, flexible working arrangements and access to care services. Women and men shall have equal access to special leaves of absence in order to fulfil their caring responsibilities and be encouraged to use them in a balanced way.

10. **Healthy, safe and well-adapted work environment and data protection**. Workers have the right to a high level of protection of their health and safety at work. Workers have the right to a working environment adapted to their professional needs and which enables them to prolong their participation in the labour market. Workers have the right to have their personal data protected in the employment context.

Social protection and inclusion

11. **Childcare and support to children**. Children have the right to affordable early childhood education and care of good quality. Children have the right to protection from poverty. Children from disadvantaged backgrounds have the right to specific measures to enhance equal opportunities.

12. **Social protection.** Regardless of the type and duration of their employment relationship, workers, and, under comparable conditions, the self-employed, have the right to adequate social protection.

13. **Unemployment benefits.** The unemployed have the right to adequate activation support from public employment services to (re)integrate in the labour market and adequate unemployment benefits of reasonable duration, in line with their contributions and national eligibility rules. Such benefits shall not constitute a disincentive for a quick return to employment.

14. **Minimum income.** Everyone lacking sufficient resources has the right to adequate minimum income benefits ensuring a life in dignity at all stages of life, and effective access to enabling goods and services. For those who can work, minimum income benefits should be combined with incentives to (re)integrate into the labour market.

15. **Old age income and pensions.** Workers and the self-employed in retirement have the right to a pension commensurate to their contributions and ensuring an adequate income. Women and men shall have equal opportunities to acquire pension rights. Everyone in old age has the right to resources that ensure living in dignity.
16. **Health care.** Everyone has the right to timely access to affordable, preventive and curative health care of good quality.
17. **Inclusion of people with disabilities**. People with disabilities have the right to income support that ensures living in dignity, services that enable them to participate in the labour market and in society, and a work environment adapted to their needs.
18. **Long-term care.** Everyone has the right to affordable long-term care services of good quality, in particular home-care and community-based services.
19. **Housing and assistance for the homeless.**
    a. Access to social housing or housing assistance of good quality shall be provided for those in need.
    b. Vulnerable people have the right to appropriate assistance and protection against forced eviction.
    c. Adequate shelter and services shall be provided to the homeless in order to promote their social inclusion.
20. **Access to essential services**. Everyone has the right to access essential services of good quality, including water, sanitation, energy, transport, financial services and digital communications. Support for access to such services shall be available for those in need.

The Pillar is the first set of social rights proclaimed by EU institutions since the Charter of Fundamental Rights in the year 2000. To put the 20 rights and principles into practice, the Commission launched concrete initiatives at European level.

The role of the European Structural and Investment Funds

Cities are seen as both the source of and solution to today's economic, environmental and social challenges. Europe's urban areas are home to over two-thirds of the EU's population, they account for about 80% of energy use and generate up to 85 % of Europe's GDP. These urban areas are the engines of the European economy and act as catalysts for creativity and innovation throughout the Union. But they are also places where persistent problems, such as unemployment, segregation and poverty, are at their most severe. Urban policies therefore have wider cross-border significance, which is why urban development is central to the EU's Regional Policy.

In recent years, the EU has given a strong push to its social agenda, in particular with the adoption in 2017 of the European Pillar of Social Rights. In this context, the ESI Funds – in particular the ESF – have underpinned structural reform, including the modernisation of public services, encouraging youth employment and reducing poverty and inequalities.

Regarding social inclusion, to which the ESF is the biggest contributor, the projects selected so far represent over €36 billion in projects. The EAFRD also supported over 60,000 actions for social inclusion in rural areas. At least 50% of the ERDF resources for this period has been invested in urban areas. Around 10 billion euros from the ERDF has been directly allocated to integrated strategies for sustainable urban development. And about 750 cities will be empowered to implement these integrated strategies for sustainable urban development.

During the 2014-2020 programming period, European cities are benefiting even more from the EU's Regional Policy.

Pact of Amsterdam - The Urban Agenda for the EU

Urban Areas of all sizes can be engines of the economy which boost growth, create jobs for their citizens and enhance the competitiveness of Europe in a globalised economy. At present, 73% of all jobs and 80% of people aged 25-64 with a tertiary education are based in European cities, towns and suburbs. Urban Areas are, however, also places where challenges such as segregation, unemployment, and poverty are concentrated.

The Urban Agenda for the European Union (UAEU) was 3 launched in May 2016 with the Pact of Amsterdam. The Urban Agenda for the EU is a new working method to ensure maximum utilisation of the growth potential of cities and to successfully tackle social challenges.

At the heart of the Urban Agenda for the EU is the development of 12 partnerships on 12 identified urban challenges. The partnerships will allow cities, Member States, EU Institutions and stakeholders, such as NGOs and
business partners, to work together on an equal basis to find common ways to improve urban areas in the European Union.

Each of these themes has led to the creation of thematic partnerships, some of which are summarized below as particularly relevant with respect to the theme of social inclusion.

Focus: Urban Poverty

In 2014, 120 million people – nearly a quarter of the EU population – were at risk of poverty or social exclusion, 27% of which were children (European Commission, 2016c). In 2014, 10% of Europeans lived in a household in which none of its members were employed (idem.)

It is important to put into place specific actions to address urban poverty through policies and instruments in which cities have to be involved and play a key role.

As defined in the Pact of Amsterdam (2016), the priority area on urban poverty in the EU's Urban Agenda aims to "reduce poverty and improve the inclusion of people in poverty or at risk of poverty in deprived neighbourhoods". The Urban Poverty Partnership (UPP) identified 5 four priorities: child poverty, regeneration of urban deprived areas and neighbourhoods (UDAN), homelessness, and vulnerability of Roma people. The UPP has also defined two 6 transversal priorities: (5) Access to quality services and welfare; and (6) Development of data to identify, measure, monitor, and evaluate urban poverty.

Focus: Inclusion of migrants and refugees in cities

The successful integration of migrants is key to the future well-being, prosperity and cohesion of European societies. Although Member States are primarily responsible for integration, the EU supports national and local authorities with policy coordination, exchange of knowledge and financial resources.

As the percentage of migrants and refugees living in cities is on the rise is also the need for cities to deal with the reception and integration of their new inhabitants in a proper and successful way. Cities in Europe find themselves in different stages regarding migration and the integration of migrants and refugees.

Cities have shown to play an important role in promoting positive public perception of migrants and refugees and an understanding among the public of the need and obligation to grant them protection. In order to encourage a positive reception work is being done by local governments and NGOs to help people understand migrant and refugee experiences. When considering the urban responses to the reception of migrants and refugees, the important role that civil society initiatives such as 'Refugees Welcome' has played so far should also be taken into account. Cities pay particular attention to the promotion and protection of human rights and vulnerable groups such as unaccompanied minors. Effective inclusion policies are put into place at the urban level to ensure that potential local and regional benefits are unleashed, including support in finding jobs, housing, social services and education.

Migration and integration challenges have clear urban dimensions.

The Partnership of the Urban Agenda for the EU on the inclusion of migrants and refugees 7 brings together cities, EU countries, the European Commission and civil society organisations to develop common actions to promote integration.

Focus: Jobs and skills in the local economy

At the EU level, measures to boost jobs and skills, youth employment and lifelong learning have been put forward. Within the partnership of the Urban Agenda for the EU on jobs and skills in the local economy, EU countries and the European Commission deal with economic performance and business development at the local level, essential components of sustainable development and social cohesion.

The Partnership identified three Priority Areas and six Themes to intervene in, namely:

- 1st Priority Area: Skills - Next Economy, and Education and Skills
    - Next Economy
    - Education and Skills.
- 2nd Priority Area: Capital investments Valorisation of R&D and Business Locations
    - Valorisation of R&D
    - Business Locations
- 3rd Priority Area: Governance - Public Services and Effective Local Governance
    - Public Services
    - Effective Local Governance

Furthermore, there was impact of the CoVid-19 crisis on coastal and maritime tourism. In fact, coastal cities depend on tourism as a key economic sector and job provider in the local economy, notably in peripheral maritime areas composed by medium and small size cities.

Focus: Circular economy in cities

Cities play an essential role in the development of a circular economy; they act as enablers of potential measures by which they can influence both consumers and businesses. Moreover, overall governance, enabling businesses, public procurement, consumption and resource management are all themes with a bearing on the development of circular economy concepts within cities. European cities are uniquely positioned to address complex problems through practical experimentation and innovation.

Focus: Housing

The lack of affordable housing is a critical matter.

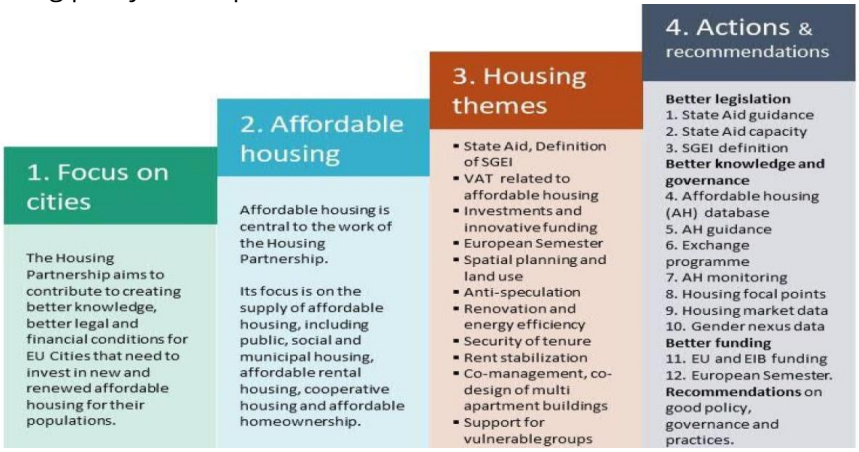
Costs relating to housing are increasingly the most significant item of household expenditure in Europe. In 2015, 11.3% of the EU population lived in households which spent 40% or more of their disposable income on housing. The housing need has not only increased, it has also diversified, affecting population groups across income levels. Overall, housing prices are recovering faster than earnings.

It has been recognized that inequalities in education, health, employment and earnings all combine, resulting in significant differences in lifetime earnings across different population groups. What has not been sufficiently acknowledged is that high housing costs exacerbate these differences and may permanently impede social mobility, sustainable economic recovery and social cohesion. The housing need, however, has not been matched with investment in affordable housing.

Cities are affected by the housing crisis in a specific way. More economically successful cities have higher housing and land prices across housing tenures and therefore seem to exhibit a heightened affordable housing need.

The Housing Partnership's work focuses on alleviating the effects of the GFC that have led 13 to unprecedented housing need and increased challenges for diverse groups of the population in accessing adequate and affordable housing. In line with the Pact of Amsterdam, the Housing Partnership's objectives are 'to have affordable housing of good quality. The focus [is] on affordable public housing, state aid rules and general housing policy'.

The Partnership defined 12 concrete actions and a set of comprehensive recommendations for future housing policy development.



Cooperation and exchange of experience between cities

European urban policies materialize not only through instruments towards individual national and local authorities, but also through cross-border and international cooperation programs. These programs are primarily aimed at the exchange of good practices and the transfer of innovative solutions. Three particularly significant initiatives that have characterized the last few years are briefly mentioned below.

URBACT programme

URBACT is a European exchange and learning programme promoting sustainable urban development, which integrates economic, social and environmental dimensions. It enables cities to work together to develop new, pragmatic and sustainable solutions to major urban challenges, reaffirming the key role they play in facing increasingly complex societal changes.

URBACT's mission is to enable cities to work together and develop integrated solutions to common urban challenges, by networking, learning from one another's experiences, drawing lessons and identifying good practices to improve urban policies.

Following the success of the URBACT I and II programmes, URBACT III (2014-2020) has been developed to continue to promote sustainable integrated urban development and contribute to the delivery of the Europe 2020 strategy.

URBACT uses resources and know-how to strengthen the capacity of cities to deliver integrated urban strategy and actions on the thematic according to their challenges. The main target participants include practitioners, city managers, elected representatives and stakeholders from other public agencies, the private sector and civil society.

City Networks, however, are not eligible under this programme, being this, in our opinion, its main weakness. City networks can multiply the effect of each euro invested in projects and are perfect to better widespread the messages and findings of this programme.

One of the Thematic Objectives of URBACT is "Promoting social inclusion and combating poverty".

The Urban Development Network

The Urban Development Network is made up of more than 500 cities/urban areas across 16 the EU responsible for implementing integrated actions based on Sustainable Urban Development strategies financed by ERDF in the 2014-2020 period.

The Network's mission is to: ● Review how European funds are implemented on the ground in Europe's cities ● Support information exchange between cities involved in integrated Sustainable Urban Development (Art 7) and in Urban Innovative Actions (Art 8) ● Promote direct dialogue between the Commission and cities on Sustainable Urban Development

In each EU Member State, a minimum 5 % of the ERDF must be invested in integrated Sustainable Urban Development with deployment decided and directed by urban authorities.

Three different arrangements for Article 7 can be used within the operational programmes: ● A specific priority axis of an operational programme dedicated to Sustainable Urban Development

● A specific operational programme dedicated to Sustainable Urban Development ● Integrated Territorial Investments (ITI): a certain part of the financial allocation of one or more priority axes of one or more operational programme can be implemented through it is.

Cities need to do more with less, responding to growing challenges but with lower budgets. This calls for innovative approaches. The Urban Innovative Actions initiative has been created to identify and test new approaches to the challenges faced by cities (through pilot projects).

The aim is to generate knowledge of what works and what does not and why, what should be done differently, etc. Projects are selected through calls for proposals with an ERDF contribution not exceeding EUR 5 million per project, a unique co-financing rate of maximum 80%, and maximum three-year duration. The topics of the calls are defined annually by the Commission. The management of Urban Innovative Actions is delegated to the Nord-Pas de Calais Region in France.

The aim is to gain insight and improve ERDF implementation in the area of urban and territorial development. This is achieved by reviewing how European funds are deployed on the ground, and by supporting the exchange of experience between cities involved in integrated Sustainable Urban Development (Art 7) and Urban Innovative Actions (Art 8). The Network helps to identify the critical success factors and conditions for better, smarter urban development strategies which also complement existing tools, mechanisms, instruments and platforms used by the Commission and Member States.

UDN complements the work undertaken by URBACT III, working together to support cities implementing Article 7 – an integrated approach to Sustainable Urban Development. The experience and expertise gained through URBACT thus feeds into UDN. There is no direct overlap between UDN and URBACT, as URBACT is supporting its own projects (consisting of networks of 7-10 cities working together on a specific theme) for capacity building. The two initiatives are mutually reinforcing.

International Urban Cooperation (IUC)

The European Union launched a three-year programme (2016-2019) to promote international urban cooperation (IUC) . Europe's cities want to link up, build and share knowledge and solutions with other cities and regions. The IUC boosts sectoral, transversal and international urban cooperation and exchange with key city partners (public and private) in Asia and the Americas (box). With a budget of over EUR 20 million, IUC activities support Habitat III goals as well as the Paris COP 21 declaration and the Sustainable Development Goals.

The IUC is built on existing cooperation through: ● City-to-city cooperation on sustainable urban development ● Sub-national action under the Global Covenant of Mayors initiative ● Inter-regional cooperation on innovation for local and regional development

Cities and other sub-national authorities are encouraged to join a global initiative to tackle climate change challenges focused on mitigation, adaptation and universal access to energy, in line with the principles of the EU Covenant of Mayors. Support on methodologies, governance, training and capacity building are provided, as well as technical assistance to encourage implementation of ambitious climate commitments. A powerful knowledge-sharing element spur inter-city cooperation, learning and innovation.

European Urban Policies - post 2020

Cohesion Policy will focus on five policy objectives around a (1) Smarter, (2) Greener, (3) Connected, and (4) Social Europe, and a new cross-cutting objective (5) to bring Europe closer to citizens by supporting locally developed investment strategies across the EU.

Cohesion Policy will continue to support integrated territorial and local development strategies through various tools and empower urban authorities and territorial bodies in the management of the funds, while requiring strong local partnerships with relevant stakeholders. The urban dimension of Cohesion Policy will be strengthened, with at least 8% of the European Regional Development Fund dedicated to sustainable urban development strategies. There is also a new European Urban Initiative to support cities to innovate, access knowledge and understand policy, and support networking and capacity building.

The various dimensions of urban life – environmental, economic, social and cultural – are interwoven and success in urban development can only be achieved through an integrated approach. Measures concerning physical urban renewal must be combined with those promoting education, economic development, social inclusion and environmental protection. It also calls for strong partnerships between local citizens, civil society, industry and various levels of government.

Eure partners considers that COVID 19 added to economic stagnation a serious economic crisis with consequences most probably until 2022.

The Commission's proposal for the post-2020 ERDF/CF Regulation provides for a new instrument providing coherent support for cities that builds on all thematic priorities of the Urban Agenda for the EU (UAEU) and covers all urban areas: the European Urban Initiative (EUI) (Article 10 of the ERDF/CF Regulation proposal). This proposal is in the context of the current, 2014-2020 programming period, background of a highly fragmented governance structure and stakeholders' representation.

The proposed EUI is aligned with the Pact of Amsterdam (point 38) that calls upon the European Commission to "further strengthen in a transparent way its coordination and streamlining of policies directly or indirectly impacting on Urban Areas, in order to enhance the complementarity of the policies and strengthen their urban dimension, in particular in the areas of Better Regulation, Better Funding and Better Knowledge".

The EUI will combine three main strands of activities:
- Strand a) will foster a community of practice supporting urban practitioners and local stakeholders of cities of all sizes throughout Europe. The objective of this strand is to improve the capacity of cities to design and implement sustainable urban development strategies. (This strand is based on the current URBACT and Urban Development Network (UDN)).
- Strand b) will support experimentation in the area of sustainable urban development focusing on innovation in governance, strengthening the integrated and participative approaches, linking with the policy objectives of cohesion policy, EU policies and the objectives of the Urban Agenda for the EU. This strand will aim at developing transferable and scalable innovative solutions to urban challenges. (This strand is based on the current Urban Innovative Actions.)
- Strand c) will support the deepening and evidence-based demonstration of urban facts and policies together with capitalising and disseminating results of experiences and expertise "from the ground". The objective of this strand is to create a structural knowledge base in support of better policy design, implementation and mainstreaming of sustainable urban development.

The intervention logic in the table further below provides more information on the three strands, activities and interconnections among them.

EURE partners agrees on the idea of simplifying and coordinate financial instruments addressing urban policy. Having in mind that urban policy covers several thematic areas ranging from waste to social inclusion, it makes sense have a single instrument with different strands in order to better coordinate fund assignment and priorities supported in each of them.
Nevertheless, it is important to note that the new instrument cannot be the result of gather all current programmes under a new name. The resulting **new instrument should improve the weakest points of the 2014-2020 programmes.** Namely, EURE partners think that:

- **The new strand A** (current URBACT) **should be open to networks of cities**, currently out of URBACT. City networks can multiply the effect of each euro invested in projects and are perfect to better widespread the messages and findings of this programme
- **The new strand B** (current UIA) should have a specific strand to finance actions in small and medium cities. Under the current terms, most of small cities are out of this programme and its benefits. As not always is possible scaling solutions proved in big cities and considering the high number of small and medium cities in Europe, it makes sense have a **specific strand to finance innovative projects in small and medium cities.** This new strand, which could have limited financing and/or lower expenditure ceiling that other strands, would allow small cities and their inhabitants benefit from this interesting programme.
- **Concerning governance, EURE partners** appreciate and support the following – up mechanism designed by the EC but in order to really achieve the declared objective of achieving a better stakeholders' representation, **ask for a wider range of** stakeholder's **participation. Small and Medium cities,** as well as **peripheral cities should be also represented** in the governance mechanism of this programme to **ensure that European urban policy is valid for all kind of cities in Europe.**

Good Practice example

Project designation	**Supporting growth in Madrid's social economy**
Location	Madrid (ES)
Thematic	Support of social economy
Synthesis of the Project	Implemented in four districts of Madrid – Vallecas, Villaverde, Vicálvaro and Centro – the EU-funded MARES project focuses on a different sector in each one: mobility, food, recycling and energy, with a focus on the care economy common to all four districts. It is deploying the models and values of the social economy to generate economic activity and create jobs, as well as improving employability among the unemployed and people at risk of social exclusion. In addition, MARES is organising citizens' skills laboratories. Open to all residents, these labs aim to identify and map peoples' skills and the links between them, as well as social needs. Opportunities are then identified for the creation of social enterprises which help participants make the most of their skills. This approach stimulates existing productive resources and gives the emerging collective forms of economic activity a more central role in the economy. Thus, the project is generating a new social-economy-based economic fabric, while the innovation it fosters is improving the competitiveness and sustainability of convencional sectors. MARES projects in the care sector include the design of cooperatives offering care services for the elderly and the development of Neighbourhood health plans. As regards mobility, a delivery bikers' cooperative has been set up, while another project aims to introduce reverse logistics to Madrid, which involves moving goods from their normal final destination (often the consumer) for reuse. Furthermore, MARES is involved in projects aimed at creating localised, sustainable food production networks such as cooperative enterprises, restaurants and supermarkets. The recycling element supports projects that focus on products like textiles, IT equipment, furniture and building materials which are not widely recycled and could boost Madrid's recycling rate. In relation to energy, development of solar-energy-system installation cooperatives could help Madrid achieve its energy transition goals, particularly in the housing sector.

Instrument used	"Urban Innovative Actions" Initiative (2014-2020)
Financial data	6 M€; ERDF 4,8 M€
Website info	https://maresmadrid.es

Good Practice example

Project designation	**Urban agriculture boosts innovation and inclusion in greater Milan**
Location	Milano (IT)
Thematic	Urban agricultura and social inclusion
Synthesis of the Project	In the outskirts of Milan, the capital of northern Italy's Lombardy region, the OpenAgri project is fostering innovation around agriculture and food. The project incubates new businesses and attracts investment to a deprived part of the city, while boosting social inclusion and availability of locally-produced, sustainable food throughout greater Milan and beyond. The project is developing an urban agricultural lab in Cascina Nosedo, a site on Milan's south-east edge. This is the first stage in transforming the deprived Porto di Mare suburb into an agricultural innovation hub. The lab supports innovation around urban agriculture, to generate new jobs, skills and services. Along with over 30 hectares of land, it includes co-working and event spaces, laboratories, a greenhouse, an aquaponics system and business support. Eighteen initiatives have been chosen for the project's first round, over half of which plan to become start-ups. Inclusive potential **-** Job creation is a key driver for the project. Although Milan has one in seven of Italy's innovative start-ups, 30 % of its under 35s are unemployed and 18 % of under 25s are not in education, employment or training. Milan's food sector is a local strength. It provides almost 4 % of Italy's exports and has high potential for further growth. OpenAgri is transforming the urban fringe into an area of new knowledge and opportunities, in particular for residents with limited opportunities, such as young people, disadvantaged groups and migrants. Old or lost skills are combined with new and emerging skills so that people with traditional skills are included in Milan's development.
Instrument used	Urban Innovative Actions" initiative (2014-2020)
Financial data	6,2 M€; ERDF 5 M€
Website info	http://www.comune.milano.it/wps/portal/ist/en

Good Practice example

Project designation	**Social housing pilot in Ostrava promotes inclusion in the Czech Republic (RegioStars Award)**
Location	Moravian-Silesian region (CZ)
Thematic	Social Housing
Synthesis of the Project	Ostrava, the Czech Republic's third largest city, has piloted social housing to improve social inclusion in the Moravian-Silesian region. The project has renovated 105 apartments for families who would otherwise live in sub-standard housing, with five set aside as emergency homes. It has also developed processes to access housing, a framework to cooperate with city districts, and social support for tenants. Tenants can more easily stabilise their lives and participate in society, while their low rent returns a profit to the city. The Czech Republic has a shortage of affordable rental homes and no national social housing law. The City of Ostrava has responded by developing its own social housing system. It has renovated municipal apartments near transport and services, fitting them out with kitchen appliances and, for emergency homes, furniture. Tenants, who cannot afford private rents or are in crisis, are selected by need and receive help to overcome problems. Once in secure, decent homes, families find it easier to work, see their children do better at school and report an improved quality of life.
Financial data	0,5 M€; ESF 0,46 M€ (2014-20) – ESF -Employment" Operational Programme
Website info	https://ec.europa.eu/regional_policy/en/projects/czech-republic/social-housing-pilot-in-ostrava-promotes-inclusion-in-the-czech-republic

Good Practice example

Project designation	**Personalised labour market integration and social inclusion for refugees (RegioStars Award)**
Location	**Murcia (ES)**
Thematic	Refugees integration
Synthesis of the Project	Refugees in the Spanish region of Murcia are receiving personal plans and 'one-stop-shop' support to find work and settle into the local community. An integration and inclusion programme by Murcia's Regional Employment and Training Service (SEF) offers courses, help to obtain documents and job-matching adapted to each refugee's needs. Spain's Service for Social

	Policies, SEF and four NGOs also contribute expert staff and services, while participating businesses receive advice on how to employ refugees. Refugees can integrate more easily, while the region can make full use of their skills.
Instrument used	Region de Murcia" Operational Programme
Financial data	0,158 M€ ; ESF 0,04 M€
Website info	https://ec.europa.eu/regional_policy/en/projects/spain/personalised-labour-market-integration-and-social-inclusion-for-refugees-in-murcia-spain

2.2.4 Governance for Sustainable Urban Development and Participation

A-URBAN SUSTAINABLE DEVELOPMENT

A.1 2030 Agenda, the urban leadership

Mandated by the United Nations, UN-Habitat programme promotes socially and environmentally sustainable towns, cities and communities[23]. In particular, it aims to monitor and reports on global agendas. Adopted in 2015, the UN's 2030 Agenda universally sets out a shared normative framework comprising 17 Sustainable development goals (SDGs) along with 169 targets[24]. The SDG 11 related to "sustainable cities and communities"[25] aims to make cities and human settlements inclusive, safe, resilient and sustainable.

According to OECD, territories have a crucial role to play in SDG achievements[26]. Indeed, about one-third of SDGs have a local or urban component and two-third of their overall targets will not be reached without engaging cities and regions. Therefore, the OECD claims that a territorial approach is required to monitor progress, engage multi-level governance and share best practices. In 2016, the Pact of Amsterdam established the Urban agenda for EU (UAEU), which recognises the crucial role of cities in achieving the SDGs. In Europe, the "2030 Territorial Agenda: a future for all places"[27] should be the appropriate policy framework to contribute to the 2030 Agenda for sustainable development[28].

A.2 Monitoring European cities

The SDGs' targets are monitored each by about 1 or 3 more precise indicators. Reviewed in 2020, the UN's Global indicator framework gathers 231 unique indicators[29]. Early 2020, the EU Joint Research Centre (JRC) published the Handbook for SDG Voluntary local reviews[30] (VLR), with the purpose to provide comprehensive guidelines. It includes 71 indicators to set up an effective SDG local monitoring system for European cities. Up to date, only 8 frontrunners – cities and regions – have already published their VLR[31].

Smart cities are expected to play a key role to reach SDGs' targets, with a shift to smart sustainable cities paradigm. On the other hand, governance policies engaging civil society propose a range of participation and deliberative schemes and tools.

[23] https://unhabitat.org/about-us/sustainable-development-goals
[24] https://www.un.org/sustainabledevelopment/development-agenda/
[25] https://www.un.org/sustainabledevelopment/cities/
[26] https://www.oecd.org/cfe/territorial-approach-sdgs.htm
[27] https://www.territorialagenda.eu/renewal.html
[28] https://www.territorialagenda.eu/renewal-reader/UN-SDG.html
[29] https://unstats.un.org/sdgs/indicators/indicators-list/
[30] https://urban.jrc.ec.europa.eu/#/en/sdgs
[31] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/european-handbook-sdg-voluntary-local-reviews

B- SMART CITIES, THE DIGITAL GOVERNANCE

B.1 What is a smart city?

The concept of Smart City has become much more multidimensional and scalable, depending on which technologies to use, data to cope, domains to apply and integration level to reach[32]. The deployment of connected devices – sensors, smartphones or connected vehicles – is a prerequisite to collect and exchange data. Smart cities envisage data as a resource to monitor the urban life, optimise public policies or create new services for society.

Data are collected and treated in real-time through the cloud (smart data) or combined massively all together for predictive analytics (big data) thanks to the use of cutting-edge algorithms (AI). The volume of big data has been exponentially increasing (+40%/year), particularly in urban areas. Entered into force in 2019, the EU Directive on open data and the re-use of public sector information is supposed to boost the use of big data[33].

Even though ICTs are deployed in a range of application domains, cities cannot really be considered as smart until the whole connected system – a system of systems – is entirely integrated and geographically deployed at the urban functional scale. Moreover, cities need to acquire an urban data platform (UDP) so as to identify, collect, integrate and visualise environmental data for a better decision-making. Hence, smart cities cut horizontally across verticals, bringing cross-silo data virtually together in only one platform.

B.2 State of play in Europe

In Europe, 240 cities with populations over 100 000 have made some progress towards becoming smart cities[34]. In Nordic countries, all of them are smart cities. Most cities over 100,000 people in Italy, Austria and the Netherlands are smart cities, as well as half of British, Spanish and French cities. In contrast, Germany and Poland are behind, while the eastern EU Member States have the lowest number of smart cities.

Since 2014, the EU H2020 agenda has largely supported a set of demonstrator programmes – the Smart cities and community's lighthouse (half a billion euros) – involving a hundred of cities with the aim to speed and scale the European market[35]. Conversely, they largely resulted in pilots and small-scale demonstrators, leading to a much more subsidised, fragmented and modest scale market[36]. In rather rare cases, cities take direct initiative with the industry.

As regards urban data platforms, the market uptake is at its beginning. According to a recent European survey[37], 80% of surveyed cities were developing a platform and roughly half including external data. Half of them have clear ambitions to set up a citywide platform supporting multiple services but principal motives are more internal and environmental monitoring is not yet a real priority.

[32] https://journals.sagepub.com/doi/10.1177/1550147719853984
[33] https://ec.europa.eu/digital-single-market/en/european-legislation-reuse-public-sector-information
[34] https://euagenda.eu/publications/how-many-smart-cities-are-there-in-europe
[35] https://eu-smartcities.eu/sites/eu-smartcities.eu/files/2019-01/Connected%20Smart%20Cities%2017-1-2019%20-%20M%20van%20Oosterhout%20%28draft%29%20final.pdf
[36] https://www.rsm.nl/fileadmin/Images_NEW/ECFEB/pdf/Connected_Smart_Cities_17-1-2019_-_M_van_Oosterhout_final.pdf
[37] https://eu-smartcities.eu/sites/eu-smartcities.eu/files/2020-01/2019%20Study%20on%20Urban%20Data%20Platforms%20-%20key%20findings%20%2828-1-2020%29%20.pdf

New initiatives came up to support the development of open standards and protocols as well as more integrated services platforms. The Open & Agile Smart Cities[38] (OASC) promotes the minimal interoperability mechanisms (MIMs), which are vendor-neutral and technology-agnostic. Applied in any existing systems, they foster sustainable, scalable and efficient digital services deployment. In 2020, over 60 EU, national, regional and city leaders officially signed the "Join –Boost – Sustain Declaration on Upscaling Digital Urban Solutions"[39], which is endorsed by the EU's urban agenda partnership on digital transformation. It follows a new worldwide initiative – the G20 Global Smart Cities Alliance on Technology Governance[40] –, established to promote global norms and policy standards for the use of connected devices in smart cities. With the backing of the World economic forum (WEF), the alliance gathers fifteen of the world's leading city networks and technology governance organisations, representing more than 200,000 cities and local governments, corporations, start-ups, research centres as well as civil organisations.

Good Practice example

Project designation	**ONDIJON, A UNIQUE SMART CITY INITIATIVE**
Location	Dijon (FR)
Thematic	Smart Cities
Synthesis of the Project	Dijon Metropole (256k inhab) builds the region of the future with an original Smart City project in France, which has new services for citizens and the modernisation of public action at the heart of public space management. The OnDijon smart city project has an unprecedented scope as it includes all 23 municipalities of Dijon metropole. Urban equipment are connected to and remotely managed by the connected control centre (50 employees), which aims to simplify and improve the coordination, manage remotely the urban equipment, ensure public safety and security, organise inhabitants' mobility and process the treatment of citizens' requests. To carry out the project, Dijon Metropole relies on a consortium responsible for building the connected control centre and managing it for 12 years under a public design, construction, operation and maintenance contract. The local authority has already planned most of this investment as part of its investment and urban equipment renewal programme. OnDijon relies on an innovative investment leveraging effect: modernizing public services and equipment, especially installing 100% LED lighting, will generate savings (65% energy saving on 12 years) allowing new digital services to be funded.
Results achieved	See website.
Instrument used	ERDF 2014-20
Financial data	The project's total cost is €105 million, of which €53 million is investment by public sources: Dijon Metropole, the city of Dijon, the Bourgogne Franche-Comté Region and the European Regional Development Fund (ERDF).
Website info	https://www.citelum.com/wp-content/uploads/2019/04/PK-OnDijonInauguration041119.pdf

C- COLLABORATION AND CIVIL PARTICIPATION

C.1 An international network

At international level, dialogue is engaged through multi-level governance. The Covenant of Mayors[41] for Climate and Energy is a bottom-up, multi-level governance model that brings together local governments, regions, Member States but also non-governmental organisations, such as WWF. The Urban agenda for the EU has also launched a range of partnerships[42] to deal with thematic urban issues. Each Partnership is made up of Urban Authorities (cities), the

[38] https://oascities.org/
[39] https://www.living-in.eu/
[40] https://www.weforum.org/press/2019/10/unprecedented-global-alliance-for-smart-city-technology-launched-to-counter-growing-tensions/
[41] https://www.globalcovenantofmayors.org/
[42] https://ec.europa.eu/futurium/en/node/1819

European Commission, EU organisations (European Investment Bank, European Economic and Social Committee, Committee of Regions), Member States, Partner States, experts, umbrella organisations (e.g. EUROCITIES, Council of European Municipalities and Regions), knowledge organisations (e.g. URBACT, ESPON and INTERREG EUROPE) and other stakeholders (NGOs, business, etc.).
At local level, URBACT and IINTERREG Europe Local support groups[43] (ULSGs) aim to foster shared ownership of the urban planning process and also strengthen capacities of local actors. Its toolkit play an active role in delivering on participative policymaking and delivery. In addition, the European Community-led local development (CLLD) could also be implemented through professional orientations, such as FARNET[44], through which Fisheries local action groups (FLAGs), managing authorities, citizens and experts from across the EU can work together on the sustainable development of fisheries and coastal areas.

C.2 eGovernment and the civictechs

In 2017, the "eGovernment Declaration"[45] engaged European countries towards ensuring high quality, user-centric digital public services for citizens and seamless cross-border public services for businesses.

Nevertheless, digital transformation should not lead to digital divide, which may stress the social divide. Nowadays, 169 million EU citizens lack even basic digital skills, accounting for 44% of Europeans aged between 16-74. Hence, the digital transition should be well accompanied by public authorities at all levels. A mobilising, integrative and inclusive approach to participation is also necessary to balance the opinion making in society.

Since mid-2010s, numerous renowned start-ups have harnessed digital solutions to revitalise democracy, through bottom-up process, and enhance governmental services across Europe[46]. They provide crowdsourcing application to directly report problems or insights to the municipality. They also strengthen the decision-making process by integrating consultation, participatory budget, questionnaire or call for projects. Recently, they also mix people actions in real-time with existing open-data, by using AI to identify patterns into big data flows.

Good Practice example	
Project designation	**FUTURE POLICY MODELING (FUPOL)**
Location	Pilot sites - Barnsley, Mtwapa, Peyaia, Skopje and Zagreb
Thematic	Governance
Synthesis of the Project	FUPOL provides a completely new approach to traditional politics building on major innovations like multichannel social computing, crowd sourcing and simulation. The project has developed a comprehensive new governance model to support the policy design and implementation lifecycle. The innovations are driven by the demand of citizens and political decision makers to support the policy domains in urban regions with appropriate ICT technologies. The outcomes of the project include a new governance model to engage all stakeholders in the whole policy design lifecycle, a policy knowledge database, a cloud computing based comprehensive ICT Framework, multilingual training, piloting in Europe and China, large scale dissemination and a sustainable exploitation strategy. The FUPOL consortium consists of 17 partners from 10 countries and comprises innovative multinational companies, leading research institutes, high-level political organizations as well as strong pilot partners. It has a good balance of research partners, IT-industry

[43] https://urbact.eu/urbact-local-groups
[44] https://webgate.ec.europa.eu/fpfis/cms/farnet2/about/at-a-glance/farnet_en
[45] https://ec.europa.eu/digital-single-market/en/news/ministerial-declaration-egovernment-tallinn-declaration
[46] https://www.eu-startups.com/2019/05/govtech-10-european-startups-that-are-making-governments-more-efficient-and-democratic/

	industrial, governmental partners and political cluster organizations capable to ensure wide-spread dissemination and exploitation. FUPOL components have been tested in several pilot sites (Barnsley, Mtwapa, Peyaia, Skopje and Zagreb) to ensure they meet the demands of users in practice. FUPOL was shortlisted at the 2017 World Summit Award Jury and has received several awards at national level in Europe. In 2013, UN-Habitat entered into a partnership with FUPOL to address the issue of e-participation in developing cities.
Instrument used	Program: FP7 (2007-2013) - 7th Research Framework Programme of EU
Financial data	Total 9M euros of which EU 6,5M€. Partners: 17 (EU + China) : 2011-15
Website info	http://www.fupol.eu/en

C.3 Empowering the civil society

Representative democracy is being questioned and traditional representation mechanisms are no more sufficient to ensure a proper democratic participation.
Regarding deliberative process, intermediate bodies – industry, labour, professional associations, non-governmental organisations … – are progressively involved at different scales.

Example. At national level, the French government, for instance, leads open multi-party dialogue, which brings together representatives of national and local levels as well as intermediate bodies on an equal footing, with the goal of unifying a position on a specific theme, such as the Grenelle Environment[47] (2007) or the more recent Foundation of maritime economy[48] (2019). At regional level, the Economic, social and environmental councils[49] (CESER) can also influence the Region's policies through positions or independent studies. Moreover, network of locally based Development councils, involving volunteers, could organise regional events, such as the Citizens' foundation of sea and coast[50] (Brest, 2019).

In the last two decades, innovative solutions deepening citizen participation or empowerment have spread in Europe. Participatory budgeting, in which community members directly decide how to spend part of a public budget, has since largely spread in European cities. The largest metropolises – Paris, Madrid, Lisbon or Milan – have implemented it as well as around 3,000 smaller cities (e.g. Rennes, Brest or Viana do Castelo), involving millions of European citizens. In the last decade, this effort was fostered by the use of digital platforms along with new methodologies.
A few start-ups have also invested social networks for neighbourhoods that concretely aim to help newcomers, share different tools or even lobby local authorities. The American start-up Nextdoor supports nowadays over 220,000 neighbourhoods around the world, except in Europe where a German start-up Good Hood GmbH[51] is well established on the market. The Breton start-up Smiile is acknowledged as its main outsider with half a million members in France, primarily targeting small and medium sized cities and the social housing segment in particular[52].

An on-going study by OECD is analysing over 700 cases - report "Catching the deliberative wave: innovative citizen participation and new democratic institutions"[53] (June 2020) assesses the mini-publics use, principles of good practice, and routes to institutionalisation. In France, the French government supports mini-publics debate, which are gaining momentum: the National Grand Debate 's Citizens regional conferences (2019) or the Citizens' convention on climate (2019-20). For

[47] https://en.wikipedia.org/wiki/Grenelle_Environnement
[48] https://fr.wikipedia.org/wiki/Assises_de_l%27%C3%A9conomie_de_la_mer
[49] https://www.vie-publique.fr/fiches/19629-le-conseil-economique-social-et-environnemental-regional-ceser
[50] http://www.conseil-developpement-brest.fr/actualites/179-assises2019.html
[51] https://www.lakestar.com/news/2019/social-networks-for-neighbours
[52] https://www.esteval.fr/article.21937.75-pourcents-des-utilisateurs-de-reseaux-sociaux-heureux-dans-leur-quartier
[53] https://www.oecd.org/gov/innovative-citizen-participation.htm

the first time, a panel representative of the diversity of French citizens will be directly involved in the preparation of a national law.
However, cities are gradually promoting mini-publics debates. In 2019, Madrid City Council even passed a regulation establishing the "Observatorio de la ciudad" (The City Observatory) as a permanent organ of citizen participation.

Good Practice example	
Project designation	**SOCIAL NETWORKS FOR NEIGHBOURHOODS**
Location	Several EU Cities: Nebenan (Germany), Mesvoisins (France), Vicinimiei (Italy) and Tienessal (Spain).
Thematic	Empowering Civil Society
Synthesis of the Project	Established in 2015, Good Hood GmbH lowers the hurdle to meet the people living around and help neighbours to connect in real life, creating social and sustainable communities at local level. The Berlin based start-up leads several national platform-based services in Europe: Nebenan (Germany), Mesvoisins (France), Vicinimiei (Italy) and Tienessal (Spain). Germany is still its leading market with 7,000 neighbourhoods and 1,2 million verified people. Good Hood experiments a business model based on individual memberships or through local shops and municipalities contracts. Cities could poll residents on public services, get feedback and raise awareness about its activities. Therefore, Good Hood has also a subsidiary not-for-profit company that can receive donations, focusing on three social causes: social integration, democracy and hyper-local engagement.
Financial data	24 M€ investment
Website info	https://goodhood.eu

Good Practice example	
Project designation	**NANTES, A MASSIVE PUBLIC DEBATE**
Location	Nantes (FR)
Thematic	Empowering Civil Society
Synthesis of the Project	In France, the Loire river is part of the daily life of the people of Nantes, it is a strong symbol put forward by the inhabitants in 2012 during the “Nantes 2030, my city tomorrow” initiative. In 2014, the metropolitan council unanimously adopted the principle of launching a major debate around the Loire and its uses. The "Nantes, Loire and Us" debate took place from October 17, 2014 to May 30, 2015 (8 months). It was attended by 40,000 people, most of whom were residents of the Nantes conurbation, with a more direct involvement of 5,000 of them. The debate was processed through different approaches to allow anyone to find the best way to participate and express their point of view, by promoting innovation and new modes of expression with the use of digital tools. By its form and its scale, this great public debate illustrated a new way of exchanging and deciding: to seek the visions of the living forces of the territory, to open a large-scale dialogue, to solicit a citizen voice on everyday uses, inform decisions based on listening and the animation of collective intelligence. As a result, the elected representatives of the Metropolis made 30 commitments for the future, which constitute a roadmap and will result in concrete achievements at the level of 24 municipalities. These joint actions will make it possible to take a new step to respond to the desire for the Loire that has been expressed, but also to make it a lever for a balanced and harmonious development of the metropolitan territory at the benefit of all the inhabitants. The 30 commitments have been grouped into 6 categories and 12 priority projects have been identified.
Website info	https://debat.nanteslaloireetnous.fr/

2.3. Green growth and eco-innovation

The following thematic is worked out: Re-greenery the city, Protect and increase biodiversity and ecosystem services, nature-based solutions, eco-innovation experiences and new green economy examples.

2.3.1 Green Growth and Eco-innovation

A. Green Growth

There is no standard definition for green growth, so far, resulted from the public and policy debate. For the purposes of this review, we define green growth to mean "fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies." (Organisation for Economic Co-operation and Development, http://www.oecd.org/).

Two further definitions of "green growth", taking a more holistic view of the relationship of economic production and environmental sustainability are the following:
"A general concept of "environmental carrying capacity" that seeks to reconcile economic growth to an assumption of limited ability of the environment to support human economic activity." (e.g. Daly 1991, OECD 2010, World Bank 1992).
"A notion of the dynamic ability of the environment to respond to growth-induced shocks." (e.g. Arrow 1995).

All the above approaches to "green growth" cover a spectrum from narrow concerns about climate change on the one hand, to larger critiques of the environmental sustainability of modern capitalism on the other. Our main scope is to examine how the move to a low-carbon economy may impact growth, and whether the investment and innovation that move will require can act as an engine for job creation or economic growth more generally. (Mark Huberty, Huan Gao, Juliana Mandell, John Zysman, 2011)

Aims of Green Growth:

The policies related to Green growth are an essential part of the structural reforms needed to foster strong, more sustainable and inclusive growth. These policies can reveal new growth engines by:

- Increasing productivity by creating incentives for greater efficiency in the use of natural resources, reducing waste and energy consumption, unlocking opportunities for eco-innovation and value creation, and allocating resources to the highest value use.
- Boosting investor confidence through greater predictability in how governments deal with major issues related to environment.
- Opening up new markets by stimulating demand for green goods, services and technologies.
- Contributing to fiscal consolidation by mobilising revenues through green taxes and through the elimination of environmentally harmful subsidies.

- Reducing risks of negative shocks to growth due to resource bottlenecks, as well as damaging and potentially irreversible environmental impacts. (Organisation for Economic Co-operation and Development, http://www.oecd.org/)

What needs to be highlighted is that the strategies related to greener growth need to be customized to fit each country's unique circumstances. Each country needs to carefully consider how to manage any potential trade-offs and best exploit the synergies between green growth and poverty reduction. The strategies related to Green Growth recognize that by focusing on GDP and treating it as the main measure of economic progress generally overlooks the contribution of natural assets to wealth, health and well-being. Therefore, they need to rely on a broader range of measures of progress, encompassing the quality and composition of growth, and how this affects people's wealth and welfare. (Mark Huberty, Huan Gao, Juliana Mandell, John Zysman, 2011)

B. Nature Based Solutions:

The current levels of intensive and rapid urbanisation are placing great pressure on the natural environment, including from increased pollution, resource depletion, flood risk, elevated temperature and decreased biodiversity. To plan and design sustainable urban retrofitting actions to counteract these effects is a complex task. Interactions between the natural environment, and social and economic conditions need to be examined in a more holistic way. (Yangang Xing, Phil Jones and Iain Donnison, 2017)

The concept of Nature-based solutions has emerged as both a challenge and an opportunity to assist urban communities in the transition to sustainability. But Nature-based solutions are still a complex problem for many city-makers, and there are still many obstacles (physical, cultural, ecological, legal, etc.) to embedding these kinds of solutions into urban planning, policy frameworks, and innovative city design. (ConnectingNature, Horizon2020) A number of cities have been experimenting and testing, individually, various site-specific solutions and strategies over the years, from micro to macro scale that continue to be successful examples of effective urban transition strategies.

The main aim and philosophy behind NBS are to work with nature, rather than against it, can further pave the way towards a more resource efficient, competitive and greener economy. Hence, nature- based solutions (NBS) are designed to bring more nature and natural features and processes to cities, landscapes and seascapes. These innovative solutions also support economic growth, create jobs and enhance well – being. (https://ec.europa.eu/) These kinds of solutions provide sustainable, cost-effective, multi-purpose and flexible alternatives for a variety of objectives.

B.1. Urban knowledge

The knowledge on NBS is unevenly spread across the urban areas and there is a clear need in connecting and sharing this knowledge. (Frantzeskaki N, Kabisch N, 2016). In 2015 the EC established four goals within an innovation agenda for future nature-based solutions and re-naturing (re-greening) cities (European Commission, 2015:73). These four goals may be recognized within seven nature-based innovation actions:

a) urban regeneration;

b) improving wellbeing;
c) building coastal resilience;
d) watershed management and ecosystem restoration;
e) sustainable use of matter and energy;
f) enhancing insurance values of ecosystems; and
g) carbon sequestration

As it is examined, a large number of European cities are poorly represented in nature-based solutions research, innovation and demonstration programmes, which have often focused on particular areas. In addition, while the majority of European urban zones are either small or medium sized, there are many large cities that are also in need of a largescale response to the challenges of climate and water stress. (ConnectingNature, Horizon2020)

The importance of the Nature-Based Solutions and the multiple benefits arising from their application is highly recognised in the EU. Specifically, the EU Research and Innovation policy agenda on Nature-Based Solutions and Re-Naturing Cities aims to position the EU as leader in 'Innovating with nature' for more sustainable and resilient societies. (European Commission, https://ec.europa.eu/). In this context, EC defines nature-based solutions to societal challenges "*as solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions*." Therefore, nature-based solutions must benefit biodiversity and support the delivery of a range of ecosystem services.

B.2. Good Practices (GP) related to Nature Based Solutions:

Good Practice example 1

Connecting Nature (Horizon 2020 Innovation Action Programme)	Connecting Nature is a five-year project of €12m funded by the European Commission's Horizon 2020 Innovation Action Programme. A consortium of 31 project partners coming from industry, local authorities, local communities, NGO's and research. The project partners come from 16 countries of Europe and Brazil, China, Korea & The Caucasus. The aim of the project is to position Europe as a global leader in the innovation and implementation of nature –based solutions. The project has formed a community of cities that foster peer to peer learning and capacity building among the front runner cities, who are experienced in delivering large scale Nature-based solutions, and the fast follower cities, who have the desire to implement large scale Nature-based solutions but lack the expertise. When the knowledge and expertise increase between these two categories, the community of the cities will include new members, the multiplier cities. In parallel, the project partners are developing policy and practices necessary to scale up urban resilience, innovation and governance using Nature-based solutions. The project approach is to be open and innovative, fostering the development of co-operation between local governments, SME's, academic research and community partners to produce a tool kit and guidebook for cities seeking to deliver nature-based solutions in their locales.
Website info	https://connectingnature.eu/

Good Practice example 2

Nature4Cities (Horizon 2020 Innovation Action Programme)

Nature4Cities is a Horizon 2020 EU-funded Research & Innovation project, creating a comprehensive reference Platform for Nature Based Solutions (NBS), offering technical solutions, methods and tools to empower urban planning decision making. This is aiming to help address the contemporary environmental, social and economic challenges faced by European Cities. The main aim is to bring Nature back into innovation, planning and implementation driven thinking. This new technical and governance approach implies collaborative models driven by citizens, researchers, policy makers, and industry leaders, relying on participative processes and sharing of Best Practice.

The Objectives of the project

- Improve the Integration of NBS in urban and spatial planning
- Build a new and active community network around NBS
- Offer high quality decision-support tools for re-naturing cities
- Build a holistic assessment framework for NBS
- Develop a reference knowledge base on NBS and Best Practice sharing
- Propose new governance, business and financial models for NBS implementation

Website info: https://cordis.europa.eu/project/id/730468

Good Practice example 3

ReNature: Promoting research excellence in nature-based solutions for innovation, sustainable economic growth and human well-being in Malta.

ReNature project aims to establish and implement a nature-based solutions research strategy for Malta with a vision to promote research and innovation and develop solutions in a pursuit of economic growth, whilst at the same time improving human well-being and tackling environmental challenges. The strategy will be complemented by a newly-developed research cluster to act on it, with a vision to stimulate both scientific excellence and innovation capacity towards achieving the goals of sustainable development.

In particular, challenges that can be addressed through nature-based solutions are those associated with the attainment of sustainable urbanization through the design of cities that support communities, promote public health, cultural identity and social cohesion. Simultaneously, nature-based solutions provide new opportunities for climate change.

Website info: http://renature-project.eu/

C. Eco-Innovation

The population of the planet is increasing by 140.000 people per day, fact that leads to a significant pressure on resources and environmental challenges. Aiming to achieve sustainable green growth and remain at the same time competitive, it is a necessity to get more out of each tonne of materials, each hectare of land and each joule of energy. By investing in eco-innovation is crucial to ensure the leading role of Europe in creating a resource efficient society.

Eco-innovation can help in the creation of new business opportunities, jobs and growth in Europe. The specific sector seems to have an estimated annual turnover of €227 billion or around 2.2% of

the EU's gross domestic product – outperforming the European aerospace or pharmaceutical industries. This links to the fact that it directly employs 3.4 million people. Close to half of European companies active in manufacturing, agriculture, water, and food services have recently eco-innovated and benefited as a result. (European Commission, https://ec.europa.eu)

"The European Commission. Taking into account the important role of the sector, has developed an Eco-innovation Action Plan (EcoAP) which fosters a comprehensive range of eco-innovative processes, products and services and includes a pilot programme to help cutting-edge green technology reach its market. By providing external, expert verification of the performance and environmental benefits of a technology, the EU Environmental Technology Verification (ETV) pilot programme can be particularly useful to small and medium-sized enterprises (SMEs)." (European Commission, https://ec.europa.eu)

Good Practices related to Eco-Innovation Based Solutions:

Good Practice example 1

Waste synergy in the production of INnovative CERamictiles (WINCER)

The project aims to develop innovative ceramic tiles containing more than 70 wt% of recycled materials from urban and industrial wastes. The specific objectives are related to: - contribution to sustainable waste management by recovery of the amount of soda lime glass (SLG) cullet waste that today is not re-introduced in glassware (about 30% of the total glass waste); - reduction of the use of natural resources thanks to: the use of SLG, coming from urban collection, and the reuse of green scrap tiles, generated during the industrial process; - improvement of the environmental performances of the ceramic tiles sector by reducing CO_2 emissions, energy consumption and methane use. The combination of these different wastes with natural clays enables the production of innovative ceramic tiles with similar or improved mechanical properties respect to the traditional ones. The productive cycle is similar apart two main innovation aspects concerning the body mix preparation (more than 70wt% of recycled wastes in substitution of natural raw materials with the possibility to define 100% waste-based innovative body mixes) and the firing cycle (the maximum sintering temperature is reduced).

The main forecast Environmental benefits include:

- Reduction of Greenhouse gas emissions
- Reduction of energy consumption
- Saving of Natural resources
- Contribution to sustainable waste management in terms of the recovery of the amount of glass cullet waste
- Reuse of industrial waste (green scrap tiles).

Results:

- Recycling of waste and saving of natural resources, reduction of energy consumption, reduction of GHG emissions.
- Achieved results go far beyond the initial target of 70%, reaching 85% of recycled material. This industrial product obtained the UNI Keymark.
- Contribution to the improvement of the European ceramic industry through the acquisition of the world leadership in waste-based ceramic materials, the widening of the ceramic products spectrum by including more sustainable ones in substitution to other materials, and the reduction of energy consumption of the milling and firing processes.

Website info: https://ec.europa.eu/environment/eco-innovation/projects/en/projects/wincer

Good Practice example 2

Recycling steel making solid wastes for added value Energy Efficiency building products (REWASTEE)

The REWASTEE project aims at the industrial validation, market deployment and replication of a patent protected manufacturing process for the valorisation of steelmaking wastes into multifunctional building products that provide acoustic insulation and enhanced thermal inertia. In specific, REWASTEE offers an alternative for the inertization, stabilization and valorisation of Electric Arc Furnace Dust (EAFD), a hazardous waste according to the European Waste Catalogue (EWC). The REWASTEE approach will reduce the economic costs associated with steel waste, the environmental impact of its entry into landfills, and provide added value as a product for sustainable construction which demonstrates a better use of resources and raw materials. Market demand is present for such a material as the insulation, retrofit and construction markets are recovering following the economic downturn in 2008/2009. Indeed, energy saving and sustainable products are recovering first. Furthermore, government efforts to reduce energy consumption will lead to the adoption

REWASTEE	of new building codes and increased energy saving standards. The manufacturing and market deployment of REWASTEE materials will start in Spain followed by the identification and construction of opportunities in the Italian, French and UK markets. In doing so, business models and stakeholder relationships will be established for REWASTEE products across key European markets. *Benefits:* ○ Offer an alternative for the inertization, stabilization and recycling of EAFD in view of its reintegration into a productive chain. ○ Reduction of environmental impact of the steel sector, using tons of waste diverted from landfills. ○ Introduce into the market an innovative building material and set up the industrial methodology required for the efficient processing of steelmaking waste. ○ Contribute to greater efficiency in buildings through the use of alternative building products. *Results:* ○ 'REWASTEE': a rubber-like flexible mat with a high surface density ideal for use as acoustic insulation. ○ 'REWASTEE plus': to be used for acoustic insulation but also provides thermal inertia via Phase Change Material. Both membranes can be used for as either a simple membrane for coating (e.g. applied directly to surfaces) or layering applications. Alternatively, they can be integrated into manufactured building products such as sound insulation panels and multilayer wall partitions.
Website info	https://ec.europa.eu/environment/eco-innovation/projects/en/projects/rewastee

D. Green growth in coastal/port Cities.

The blue growth in the new green deal. Blue sectors contribute to the recovery and pave way for EU Green Deal.

There were 5 million people working in the blue economy sector in 2018, representing a significant increase of 11.6% compared to the year before. Although sectors such as coastal and marine tourism, as well as fisheries and aquaculture are severely affected by the coronavirus pandemic, the blue economy as a whole presents a huge potential in terms of its contribution to a green recovery.

Greening is also ongoing in other sectors. Fuelled by the International Maritime Organization's 2020 sulphur cap, maritime transport is looking increasingly towards less carbon-intensive energy sources. In addition, a network of "green ports" is reducing the ecological footprint of these economically important hubs between the ocean and the mainland.

2.4. Circular economy

A. Circular Economy: the role of decentralized authorities

2.4.1 The new Circular Economy Action Plan

The CEAP - Circular Economy Package establishes a concrete and ambitious programme of action, covering entire materials cycles, from production and consumption to waste management and the market for secondary raw materials.

Many key points of the CEAP have a direct impact with the local/regional policy making level, such as:

- The new CEAP stresses the importance of the producer responsibility principle as an instrumental approach to managing product value chains across the board. It is worth to mention the emphasis that the plan places on prevention, which should underpin all

circular economy efforts, and the right to repair. For instance, the recommendations regarding the setting of waste reduction targets for complex waste streams and the revision of the existing legislation concerning specific product value chains to place more importance on prevention. In order to put these suggestions into practice, the European Commission should set ambitious, yet feasible prevention targets in the near future;

- Common measurement tools and a strong monitoring framework need to be established alongside circular economy targets in order for them to be meaningful. As far as production is concerned, the CEAP covers a wide range of product value chains (e.g.: for vehicles, batteries, construction material, packaging, plastics, etc.);
- The importance of digitalization to the development of circular business models and of materials and product databases is another welcome addition to the plan;
- The new CEAP makes manifest the fact that consumers need to be empowered to make sustainable choices through access to clear information (e.g. green labels), repair kits, and other tools. Important work remains to be done on embedding systems thinking and sustainability in education and training in order to sensitise consumers in general and the young generation in particular to these topics;
- The CEAP finally states a clear connection with the European regional and social funds, as well as with the cohesion policy, which are some of the main levers that local and regional authorities have to steer local economies.

Through the new CEAP, the European Commission is giving a new sense of urgency to the importance of upscaling best practices in circular economy. There are many examples of innovative solutions that save money and resources at the local level in the EU. It is now time for these practices to become standard practices.

Local authorities can facilitate the implementation of the CEAP in their role as facilitators and regulators overseeing local fiscality and legislation in general; as influencers that can inspire behavioural change in citizens towards greater prevention and sustainable consumption; that can steer the producers on their territories through suggested voluntary actions and conditional permits; and as the institutions that often manage municipal waste management.

A useful tool to expedite the transition towards circularity at the local level are targets for waste prevention and reuse, building on the targets for recycling and preparation for reuse stipulated in the amended Waste Framework Directive. Likewise, more funds and effort need to be invested in documenting the impact of the circular economy on climate change mitigation and adaptation. Quantifying this impact will provide useful indicators and instruments to local authoritiess to enable them to shape their regional circular economy strategies.

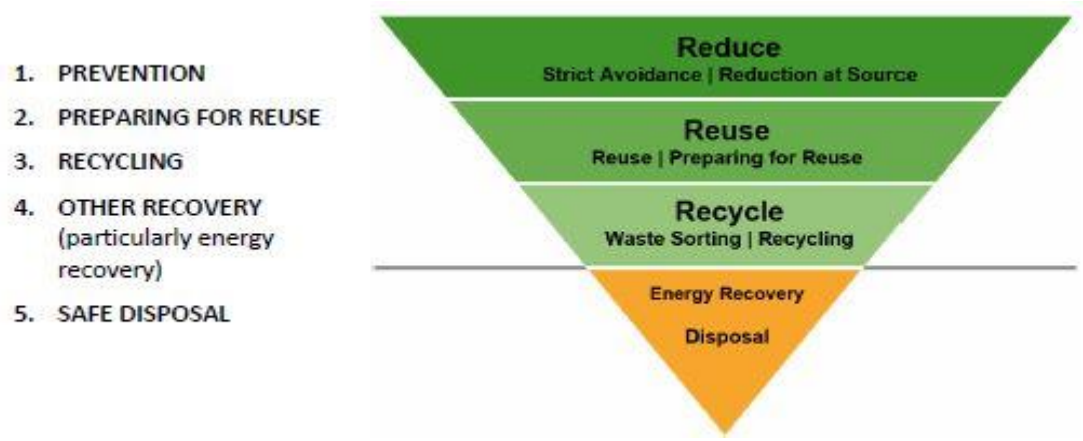
Taxation is an important instrument to motivate economic actors to shift to different modes of production. Modulating taxes based on virgin material content, recycled content, and the presence of hazardous chemicals can be effective ways to trigger changes at source. In practice, we anticipate that such a policy would be made difficult by the difficulty in monitoring and complications related to the traceability of materials. A source of inspiration for fair green taxation could be some of the extended producer responsibility (EPR) schemes in Europe, such as the French one, which is a progressive fee system that takes repairability into account for streams like electric and electronic equipment.

2.4.2 Fundamental principles to build circular economy strategies at a local level

The circular economy strategies developed by cities and/or regions should be guided by some fundamental principles that could be summarized as follow, keeping in mind that the list is not exhaustive. It is also important to keep the public debate open while elaborating the strategies:

- **The multi-R hierarchy**

  The Waste Framework Directive 2008/98/EC adopts the 3R principle (Reduce, Reuse, Recycle) and integrates it in a five-level hierarchy, as illustrated below:



(Waste hierarchy pyramid – Source: ACR+)

In the context of an optimal circular economy policy, the 3R concept (Reduce, Reuse, Recycle) can also be extended into a "Multi-R" hierarchy. In fact, the management of a product which produces waste, as well as the management of natural resources from which products are manufactured, should be based on a series of "R" actions put in a hierarchical order.

The graph below illustrates the "Multi-R" hierarchy, which should be respected by the different actors of the products and services chain, and which should be favoured by public authorities, particularly local and regional ones.

(Multi-R approach diagram – Source: ACR+)

Taking the recycling sector as example, the kind of recycling that should be favored is the one which consists of recovering and reusing the material to manufacture a product similar to the one that is being recycled (thus allowing for the reproduction of such recycling process a large number of times), as opposed to other ways of using the recovered material which will limit the possibilities for its subsequent recycling (i.e. downcycling). Even more, when possible, the recycling phase should give the opportunity to make a product with a better quality or for a better environmental value than the original (i.e. upcycling).

- **Territorial hierarchy**

The circular economy must be combined with the development of territorial economies keeping in mind the multiple scales design of territories. Indeed, the circular economy will only grow properly if translated into short circuit actions: it starts in a district then spreads to the municipality, then the city or metropolis and regional level, before extending to the national and international level. This means that Cities and Regions take responsibility for a rational and efficient use of their own resources while coordinating between each other and the lower levels.

Moreover, the authorities at local and regional level touch the relevant stakeholders (in sectors such as permitting, funding, organising, awareness raising) occupying a position to give the circular economy a concrete form.

Consequently, it is important to work at an appropriate level of intervention: in other words, to introduce policies for sustainable cities (featuring e.g. eco-neighbourhoods) and regions, before considering the national and international level. Indeed, a regional or urban territory, due to its size and geography, usually boasts a great number of natural resources, for which it is possible to plan a "short" loop (or local) recovery. It also often includes very good practices at the very local level that could easily be replicated or put in contact to have a stronger and larger impact.

- **Shared governance**

Shared governance is necessary at all levels of the value chain, as well as in the elaboration of a territorial strategy of circular economy, including the stages of design, implementation and follow-up. In fact, a successful development of circular economy implies contribution from all stakeholders active in the chain (e.g. product designers, mining operators, producers, distributors, consumers, collectors of end-of-life products, recyclers, etc). In addition, actors that can have a direct influence or be directly impacted by the circular economy strategy should also be involved (e.g. residents in the concerned area, local authorities in charge of proper implementation, academic establishments, financial institutions, etc.).

It is up to public authorities to organise a balanced engagement of all these stakeholders, or even to coordinate and facilitate the creation of a "public-private forum", which would contribute to the co-creation of eco-innovative actions based on synergy and complementarity.

In addition to such participatory strategies, the territorial actors should also be able to access information on the available resources (e.g. maps of C&D material), as well as on their needs and those of their peers (e.g. by promoting contacts between producers and recyclers of product components). Such transparency requires a relationship based on trust and cooperation rather than competition. Here public authorities have a role to play,

especially when it comes to facilitating the access to information or acting as an intermediary, given their neutral status with regards to sensitive information.

- **Integrated planning**

  Planification and implementation of circular economy needs to consider all policy instruments available, as well as all themes related to circular economy at the level of local and regional authorities. Policy instruments refer to legal and economic instruments, as well to measures related to research, education and communication. These instruments are often managed by different services or bodies within the local and regional public authorities that do not talk to each other. The goal is therefore to make all the actors involved to communicate and collaborate in order to ooptimise the use of these potential instruments.

2.4.3 A circular planning

Local and regional authorities have the key role of developing circular economy action plans: indeed, it is at this level that a large number of material resources activities can be implemented. A clear signal from local and regional authorities needs to be sent to the various stakeholders, covering in particular the regulatory and political framework and planning, taxes and economic incentives, infrastructures especially with regards to waste management.

The following graph illustrates the great number of political instruments which are potentially available for cities and regions to act in favour of the circular economy.

For many cities and regions, the main evolution is to move from waste planning towards a “material resources” planning. Indeed, the strategy for circular economy could be qualified as “a zero waste programme” which takes into account all the environmental impacts throughout the life cycle. Concretely, the waste management plans and waste prevention programmes could first be reviewed and expended by the competent public authorities.

B. Governance of circular economy strategies at the city level: case studies (Good Practices)

2.4.4 Good Practice: Brussels good food strategy

General information

Main responsible administrations: **Bruxelles Environment – Brussels Environment** (Environment public administration of Brussels-Capital Region); **Bruxelles Economie-Emploi** (Economy and jobs public administration of Brussels-Capital Region)
Main Partners :**Le RABAD ; Début des Haricots** ; **Maison Verte et Bleue** ; **Terre-en-vue**, **etc.**
Financial support of: **Governmen**t; **ERDF: Boeren Bruxsel Paysans**

The objective of the Regional Programme for a Circular Economy (Programme Régional d'Economie circulaire – PREC) is to encourage the transformation of the linear economy into a circular economy. It is a sectoral policy that aims at using environmental improvements in order to create economic revenues and employment opportunities for the city. This programme is based on an urban metabolism study, i.e. a review of processes through which the Region mobilises, consumes and transforms natural resources, which focuses on some of the main sectors for Brussels including sustainable food. Moreover, the food topic is specifically addressed by the GoodFood strategy for a more sustainable system of food consumption and production. By rethinking the food chain, the GoodFood strategy (also called 'GoodFood Brussels') aims to reduce waste and increase the amount of food grown locally.

The 7 themes around which the programme is organized, gave birth to different actions trying to develop the supply and stimulate the demand, in particular by changing behaviour.

1. The first one is "Increase local sustainable food production", and provided actions such as the involvement of professionals and citizens in deploying urban agriculture (individual or collective vegetable gardens, urban farms on the ground or on rooftops, orchards and chicken coops). This should help achieve the 2020 targets:
    a. 100% of new professional agricultural production projects will be efficient on an environmental, economic and social level;
    b. the regional natural areas managed by Brussels Environment will have **twice the number of vegetable plots** (compared to 2015);
    c. 30% of household producing some of their own food.

2. The second theme is to "Support relocation and the transition to a more sustainable supply for all", that led to the actions for proving availability and accessibility of more good food (for example speeding up the transition of canteens and restaurants towards a more sustainable offering). This by offering Brussels and Belgian's products more visibility, in particular from organic farming, and providing geographic and costs access for residents;
3. The third theme is "support the transition of the demand for all", aiming to inform the residents from all generations and origins. Related actions provided information and involvement through workshops, education, and complementary activities (tastings, cooking);

4. "Develop a sustainable and desirable good food culture" is the fourth topic around which actions were developed, for instance the creation of the GoodFood. Brussels concept and labels, and sharing good practices thanks to the same website platform;
5. The following theme is "reduce food waste", that started from the consideration of 134,000 tonnes of organic waste per year ending up in the waste bin. The first action in this regard, certainly is boosting the prevention of food waste, for example providing practical information tools and offering citizens trainings and school workshops. The objective is by 2030, to reduce by 30% the waste in food. Along with this target, several initiatives were fostered, such as Good food canteens, Rest-o-Pack and so on;
6. The theme number 6 is "design and promote the food systems of the future", taking up the challenge of innovation for sustainability, by promoting research and innovation projects, together with monitoring;
7. Lastly, the seventh topic is "ensure strategic implementation", based on governance that fosters partnerships with food chain stakeholders and authorities.

The goals for 2020 reflect the Brussels government's ambition:

- 30% of households to include healthy food options, as part of their diet;
- 30% of Brussels will experience the concept "GoodFood" and change their eating behaviour;
- 50 school canteens and 40 public canteens to include the "GoodFood" strategy;
- Double the number of vegetable gardens in schools;
- 50 "GoodFood" restaurants in Brussels;
- 30% reduction of food waste;
- On average, reducing greenhouse gases by 10% per meal.

Governance of the circular economy strategy

In Brussels, food represents ¼ of the ecological footprint of a household. Brussels Environment has been working on a sustainable food system for several years. In 2015, there were already many initiatives in school restaurants and companies' cafeterias to make food consumption more sustainable. However, Brussels Environment felt the need to create a more-widespread approach involving other institutions in Brussels and covering the entire food chain. That is why the GoodFood Strategy has been implemented from 2016 on.

Timeline

The Brussels-Capital Region has created a programme to shift towards a sustainable food system, through the concept of "produce better, eat well", operating this transition at several levels, including citizens, economic actors, private and public entities and associations. Consequently, the GoodFood Strategy is built on various previous studies and research and on consultations throughout the Employment-Environment Alliance (2013-2014). 112 bodies (37.5% public and 62.5% private) were involved in this process; three working groups met 4 times during 6 months, and they drafted a common vision of the food system by 2035. Brussels Environment also led an Urbact project called Sustainable Food in Urban Communities (2013-2015). The main objective of this project was to define a local action plan in each project partners' region. Brussels Environment commissioned external consultants (2015) to carry out a participatory and co-construction process, with more than 100 stakeholders, for the design of the strategy on sustainable food and urban agriculture in the Brussels-Capital Region. Through a launch event and 6 co-construction workshops, consultants are designing tools, methodologies (visioning and backstaging,

participatory and co-creation methods, work in groups) and implementing them in order to build a strategy that fits the reality and needs of those first concerned by it. Mid-December 2015, the government of the Brussels-Capital Region approved the GoodFood Strategy, with the core goals of: developing environmental-friendly local food production and encouraging innovation; informing and involving citizens; reducing food waste; and developing actions according to the social and multicultural environment of the city.

GoodFood Brussels will run for five years. It is tailored to Brussels' specific dynamics and is supported by multiple public institutions and social groups. It also provides a platform to connect existing initiatives, increasing their visibility and inspiring others to take part. It is based on 7 main themes that should be developed according to 5 guiding principles: inclusion; exemplarity of local authorities; partnership; changes in behaviour; and independence.

Instruments and actions

In order to achieve the set goals, the Brussels-Capital Region took advantage of different existing systems, programmes and tools. For instance, amongst instruments used, there are: Agenda 21, Sustainable Urban Neighbourhoods, good practices in communication, etc.

- One of those is **"Goodfood – sustainable canteens",** a project that supports institutional kitchens (kitchens in nurseries, schools, companies, care homes and other administrations whether they be under their own management or that of an outside catering company) in a shift towards sustainable food in the Brussels-Capital Region. In addition to the programme that started in 2008, also the **'Good Food Canteen'** label was launched in March 2016. By end of 2017 17 canteens have received the labels from 1 to 3 forks, and they serve around 10,000 meals per day;
- **Rest-o-pack**, which is a re-think of the doggy bag, was promoted since 2014 as part of the fight against food waste. These are special cardboard boxes that Brussels Environment makes available to restaurants so customers can take their leftovers at home. In 2016, the boxes have proven to be a huge success, with more than 10,000 Rest-o-pack bags distributed to around 100 restaurants; and more and more activities are asking for them;
- Concerning other actions, Brussels Environment launched a new label for restaurants, starting from end of this year: the Good Food Resto. Through his label, clients can identify and choose sustainable restaurants, that work accordingly to the guiding principles of the Good Food Strategy. The label attributes grade to the restaurants from 1 to 3 toques, which is valid for a three-year period;
- **Boeren Bruxsel Paysans**, a horticultural project supported by the European Regional Development Fund launched in the Brussels municipality of Anderlecht. The grounds are not far from the busy Brussels Ring road. The aim of the initiative is to turn a plot of land next to the municipal sports fields into a substantial urban garden.

2.4.5 Good Practice: The Paris strategy on Circular Economy

General information

Main responsible administrations: City of Paris; Greater Paris Metropolis

In July 2017, ACR+ member the City of Paris adopted a plan for the development of the circular economy on its territory. To ensure this necessary transition to a less resource-intensive economy, the city aims to support the development of businesses that do not generate waste or that avoid the production of waste by offering a second life to objects. The plan is declined in multiannual roadmaps focusing on specific actions, coming in particular from the proposals made in the "white paper for circular economy of Greater Paris Metropolis" adopted in 2015.

Governance of the circular economy strategy

Several elements at national, European and international levels, provided a good ground for the development of Paris' circular economy strategy, in particular:

- Section 4 of the **French energy transition law**, adopted by the National Assembly on 22 July 2015, has the following dual objective: "Combat waste and promote the circular economy." With respect to the messages or proposed initiatives of this White Paper that have a national scope, Greater Paris could be considered as the voice and testing ground of France;
- The **European Commission initiative**, "Towards a circular economy: A zero waste program for Europe", and the subsequent circular economy package provided an overall orientation for European territories to switch to more circular patterns of production and consumption;
- The **Paris Climate conference** held in December 2015, COP21, which aimed to lead to an international agreement to limit global warming to less than 2 degrees Celsius by the end of the century.

The **political commitment** to reduce waste and tend to a zero-waste trajectory was already expressed by elected representatives of the City of Paris in 2014, as a continuation of the work done via the local plan for waste prevention 2011-2015. Co-organized by several Île-de-France region authorities at the initiative of the City of Paris and supported by the Île-de-France regional office of the ADEME (French agency for environmental management), the **General Assembly on the Circular Economy of Greater Paris** was launched on 11 March 2015. Its purpose was to bring together a wide spectrum of stakeholders (government authorities, business, associations, NGOs, academia, research, etc.) to work on tackling the circular economy's challenges for the Greater Paris Metropolis.

To this end, seven Working Groups (WG) met three times during workshops organized between April and June 2015. These groups gathered more than 240 persons, representing over 120 different organizations from the above-mentioned stakeholders.

This consultation resulted in a set of recommendations, compiled in a "white paper for circular economy of Greater Paris Metropolis" under 65 proposed initiatives presented in September 2015. These proposals are addressed to public decision-makers of the Parisian metropolis, as well as to economic players and citizens. The white paper represented a first step in developing the Greater Paris region's circular economy.

The second step was the adoption of **Paris' plan on circular economy 2017-2020** in July 2017. The plan includes the following elements:

- Stakes for the Greater Paris area are linked to: the various territorial scales of the area (City of Paris, Greater Paris Metropolis) and Paris' urban metabolism (highlighting in particular the key topics of food, construction and demolition, the land scarcity, logistics, and short loops optimisation).
- Synergies with local plans (on waste management, climate, mobility, housing and urban planning) and the levers to foster territorial innovation (shared governance, transversal approach, knowledge of the territorial metabolism, co-construction with end-users, experimentation, and others).
- Examples of actions already initiated on the Parisian territory.
- How new actions will be adopted and scheduled via the co-construction of several roadmaps, and link with the national monitoring framework, covering in particular the following indicators:

avoided waste (in particular thanks to reuse, repair and upcycling); turnover and jobs of circular economy activities; reduction of in-out flows on the Paris territory; increase of material valorisation.

- Finally, the plan on circular economy defines the governance for its implementation:
  - A **permanent open forum** aimed at gathering expectations and ideas of citizens and stakeholders via digital means and an annual event, in order to propose actions;
  - A **technical committee** involving departments and services of the Paris administration related to circular economy, and coordinators/implementers of actions, in order to prepare the implementation and follow-up (the City of Paris' Environmental Department is in charge of overall coordination);
  - A **steering committee** chaired by Paris Vice-mayor in charge of circular economy and involving other mayors and elected representatives of the Paris area, in order to validate new actions and monitor the implementation of the strategy.

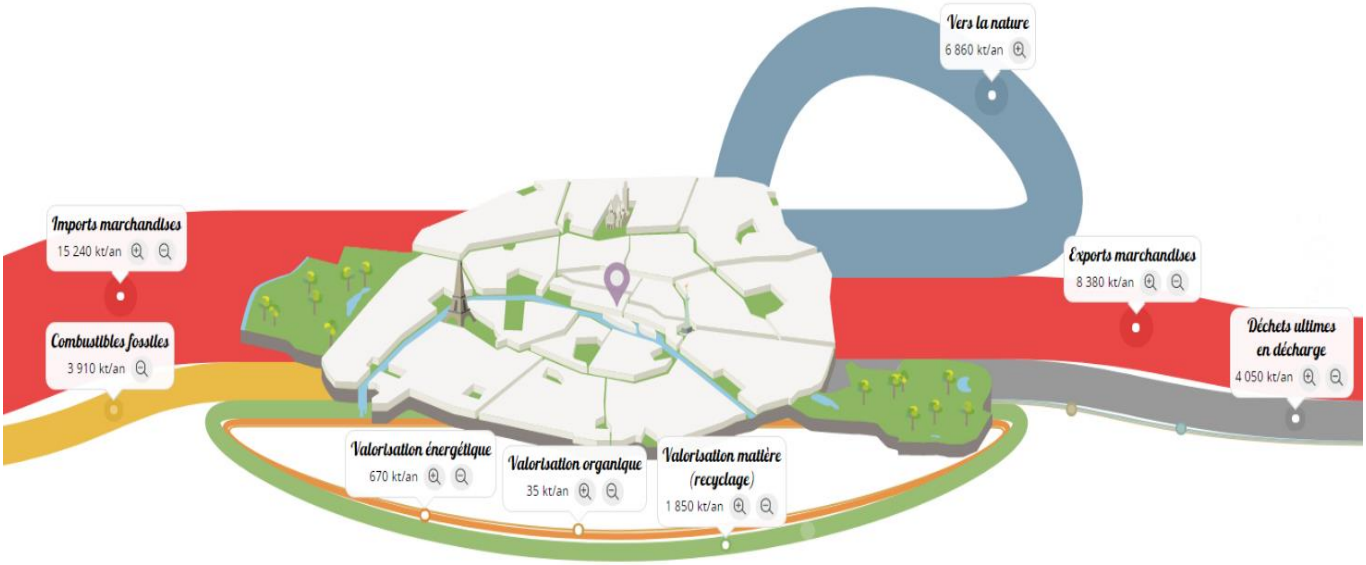
On the basis of the white paper and proposals coming from the open forum, priority actions have been identified and detailed in two **roadmaps**: for 2017 and for 2018-2019. Each action included in the roadmap's benefits from a co-constructed phase of diagnosis and feasibility studies. This phase involves local stakeholders and enable to define implementation approaches, potential issues to address and success factors.

Monitoring circular economy in Paris

The following **indicators** have been set for evaluating the circular strategy, and the first measures of success are currently being collated: material recovery (from exchange, repair, reuse and recycling), money saved, CO2 avoided, waste reduction, networking of actors, synergies between actors, awareness-raising/information sharing, job creation. The City of Paris also adopted more ambitious **targets and deadlines** than the ones set by French Law on energy transition and green growth regarding **waste and material resources** (addressing: household waste reduction, bio-waste sorting at the source, sorting of all plastic packaging, material recovery of construction and demolition waste, end of single-use plastics, use of recycled paper included in public procurement).

In order to have a better understanding of incoming, outgoing and stored flows on the Paris territory and enable a better management of resources, the City of Paris' Urban Ecology Agency created at the end of 2014 a data visualization of **Paris urban metabolism**, which provides a better understanding of interactions between the city and its environment.

Based on the method developed by the National Observatory of Jobs and Trades in the Green



Economy (Onemev), the City of Paris assessed the number of **jobs related to circular economy on Parisian territory**. This method considers:

- the activities of the heart of the circular economy, divided according to the 7 pillars defined by ADEME (sustainable supply, eco-design, industrial and territorial ecology, functional economy, responsible consumption, longer use and recycling);
- the so-called "related" activities that contribute to saving energy or resources (energy management, renewable energies, waste incineration with energy recovery and part of the activities related to transport infrastructure).

The results show that the number of direct jobs in the circular economy in Paris in 2016 is 66,500 FTE (full-time equivalent). These jobs in the circular economy represent 2.9% of Parisian jobs (compared to 3.4% at the national level). And they generate an annual added value of EUR 7 billion.

Instruments and actions

Two roadmaps (2017 and 2018-2019) define the actions to be implemented according to three territorial levels:

- Actions internal to the administration (exemplarity), e.g. via public procurement, management of city owned assets (buildings), etc.
- Actions implemented as part of the competences of the City of Paris (public policies), e.g. support to reuse organizations, sustainable events, waste management, etc.
- Actions at metropolitan scale, requiring specific partnerships and governance, e.g. logistics, new policies for built environment and the economy, etc.

For each of the action, a factsheet is drafted including the level of implementation, a stakeholders mapping, the initiator and potential partners, the operational development, and the implementation schedule.

The **roadmap 2017** includes 15 actions covering the following topics:

- **Planning & Construction**:
  1. Building materials: develop territorial organization for the recovery and reuse of materials
  2. Building sites: diagnosis, sorting and recovery of site resources
  3. Sustainable and circular construction: lay the foundations of new economic models

- **Reduction Reuse Repair**:
  4. Waste reduction: reduce disposable packaging in food shops and markets
  5. Repair: promote the repairing of objects with a set of complementary initiatives
  6. Re-use: creation of a central municipal workshop for the reuse of building materials
  7. Re-manufacturing in Paris: develop charity shops and reuse centres in Paris
- **Support for actors:**
  8. Incubator: create an innovation platform for the circular economy
  9. Sharing: organize sharing of premises for actors in the circular economy and social and solidarity economy
  10. Promote and raise awareness: create a place in Paris for actors of the circular, solidarity and innovative economies: Les Canaux (co-working)
  11. Inter-company synergies: develop territorial synergies between economic actors (industrial symbiosis)
  12. Network: create an online platform for information on the circular economy
- **Public procurement:**
  13. Sustainable purchases: increase the share of Eco designed products in public purchases and develop a product-service systems approach in public procurement contracts
  14. Clothing: reform of clothing for City of Paris staff, extension of useful life and end-of-life recovery uniforms
- **Responsible Consumption:**
  15. Food waste reduction and responsible consumption

An assessment of this 1st roadmap has been published mid-2019 showing that all actions were launched in 2017 and that 10 actions were already in a final phase.

The **roadmap 2018-2019** includes 15 actions covering the following topics:

- **Exemplary administration:**
1. Reduce the digital impact of Paris administration
2. Organize a donation and reselling scheme for the City of Paris
3. Support re-use of public furniture and equipment
4. Reduce the use of plastics within the administration
- **Responsible consumption:**
5. Develop spaces for sharing and donation in private and public areas
6. Promote responsible and circular fashion in Paris
- **Culture:**
7. Develop circular economy in cultural places
- **Events:**
8. Eco-design of events in Paris and assess their environmental impact
- **Awareness raising, training and education:**
9. Develop specific actions about circular economy for secondary school
10. Creation of a toolbox for educational establishments
11. Organize the lifelong learning of municipal staff regarding circular economy
12. Zero waste street, to experiment, engage and communicate about waste prevention and valorization
- **Territorial synergy:**
13. Develop local solutions to valorize recovered energy and water
14. Support the uptake of collected items and stocks and their re-use
15. Develop solutions for collection, storage and sorting for construction VSMEs

Examples of actions

- Les Canaux, House of Social and Innovative Economies: open in 2017, this place is dedicated to experience sharing and mutualization regarding sustainable and social initiatives. It is also a model of experimentation of circular economy since 20 Parisian startups participated in the development of the site and 95% of waste associated with the renovation of the building were sorted, recycled and re-used.
- On the topic of **construction**: several pilot experimentations have been launched to re-use demolition waste; criteria on circular economy have been included in public tenders of Parisian administrations in charge of housing and construction; a re-use shop dedicated to construction material was open and connected to several deconstruction operations.
- Regarding **waste reduction and food**: a zero-waste house opened in 2017; a "zero waste family" campaign was launched in 2018; food markets have to cooperate with charities in order to support collection and redistributing

of unsold food; home composting and collective composting is supporting via campaigns and distribution of composters.

- As for **re-use and repair:** several deposit-refund systems are supported in Paris; support has been provided to the opening and functioning of many re-use centres, as well as of repair workshops; a specific collection campaign of used uniforms was launched in 2017 in cooperation with SNCF, La Poste, the Ministry of the Interior and the French Army in order to support the structuring of a professional clothing recycling sector.
- **Innovation, synergies and collaboration**: an incubator dedicated to circular economy opened in 2017 within Paris&Co bringing support to about 50 startups already; a collaborative platform on circular economy has been launched by Greater Paris Metropolis, CIRIDD and INEC; the City of Paris is working to facilitate temporary use of spaces and buildings.
- **Circular procurement**: over 60% of tenders of Paris department for finances and procurement include environmental specifications or criteria, 2/3 of them being related to circular economy.

Financial tools to support circular economy

Every year, the City of Paris launches a **call for projects "cap sur économie circulaire"** in order to encourage the transition of local stakeholders. Several topics are covered every year, for instance:

- 2017: planning and construction; re-use; support to local actors; public procurement; responsible consumption.
- 2018: deposit-refund systems to reduce the use of single use packaging; awareness raising, education and training.
- 2019: reduction of disposable plastics; behaviour change about plastics.

In addition, the city has launched other **specific calls for projects** (with other administrations and bodies) for instance to support 100% bulk stores and shops dedicated to repair (2018). In this case, the city offers different forms of support:

- assistance in finding premises;
- an investment grant intended to finance construction work or the acquisition of material (not exceeding 80% of public funding);
- start-up assistance through networking with potential investors or a subsidy helping to start functioning.

Paris also dedicate 5% of the city's investment to projects selected by the Parisian inhabitants via a **participative budget**. The Parisian participative budget counts in total 21 participative budgets: 1 per district for local projects (20 district participatory budgets); and 1 for the entire city of Paris dedicated to major projects, replicable projects or wide influence places. The process is organised as follows:

1. Generating and collecting Projects;
2. Feasibility studies and cost evaluation by municipal engineers;
3. Vote by the Parisian citizens;
4. Implementation of the laureate projects the following year.

Participatory budget already financed projects related to circular economy like co-working areas, community compost and shared gardens.

2.4.6 Good Practice: The circular economy in the food sector – The Milan Food Strategy

As defined by the FAO High Level Panel of Experts on food security and nutrition "a sustainable food system (SFS) is a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised" (HLPE, 2014). In other words, a SFS could be described

as a food system that reduces as much as possible its impact on the environment, while providing healthy food to all with fair economical cost and benefits for the various actors of the food chain. The Milan Food Policy guidelines 2015-2020 are the result of the Memorandum of Understanding that the Municipality signed with Fondazione Cariplo in 2014. The first phase provided an analysis of strengths and weaknesses of the city's food system. During the second phase, local citizens, the municipality's administration, universities, NGOs and food companies were involved in public consultation to draft the Milan Food Policy priorities, which are:

- To ensure healthy food and sufficient drinking water for everybody;
- To promote the sustainability of the food system;
- To boost awareness around sustainable consumption;
- To reduce waste;
- To support and promote scientific research on the agri-food sector.

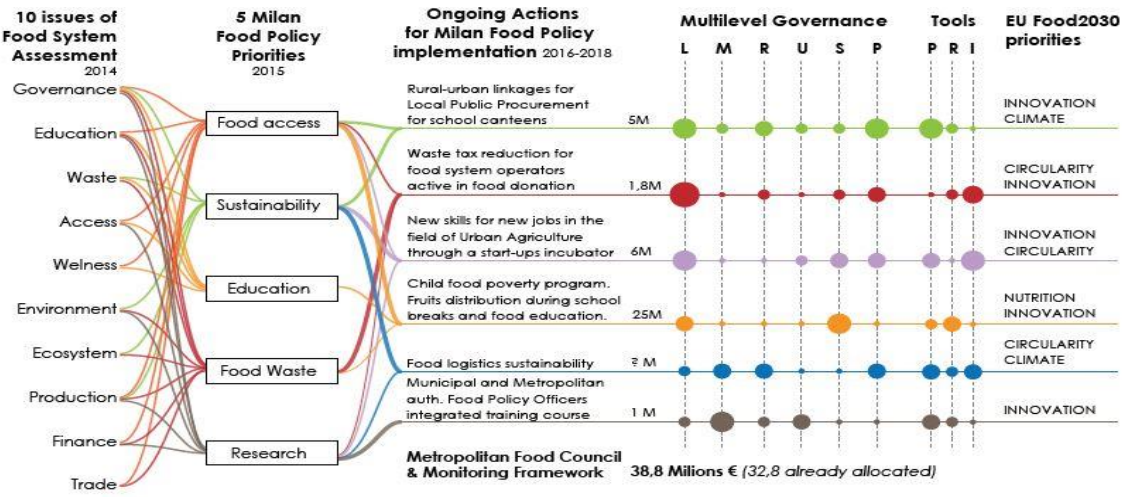
The process lasted five months and involved around 700 stakeholders. The third phase resulted in the approval and adoption of the Food Policy by the municipality, and the last phase regards the pilot projects born from the set goals.

Together with the 2015-2020 Food Policy Guidelines, the city of Milan launched, the Milan Urban Food Policy Pact, the first international protocol on urban food policies. The Pact represents the most important legacy of Expo Milan 2015, dedicated to food security and sustainable development. So far 209 cities from all over the world have signed the Pact, committing to make their food systems more equitable and sustainable according to their abilities and possibilities. The Pact contains a Framework for Action with a set of 37 recommendation structured in 6 areas intended as a voluntary guide to actions:

- Governance: sharing information, mapping the territory and engaging all the local actors;
- Sustainable diets: supporting healthy food regimes;
- Social and economic justice: supporting the most vulnerable classes of the population through common canteens and shared food gardens;
- Food production: promote urban and peri-urban food production;
- Food distribution: planning logistics with low environmental impact, and district or farmer markets development;
- Food waste: adopting policies to favour reduction of food waste along all the food stream production and consumption.

The ongoing actions of Milan Food Policy are characterized by a process that follows the Milan Food System Assessment. Each action implements one or more of the 5 Milan Food Policy priorities and is developed under a multilevel governance that engaged different municipal departments (L), metropolitan (M) and regional (R) authorities, universities (U), social (S) and private (P) actors. The approach defines 3 kinds of tools: new projects (P), reorientation of ordinary actions (R) or new incentives (I)[54].

[54]http://mediagallery.comune.milano.it/cdm/objects/changeme:94565/datastreams/dataStream1112173130827997/content?1518607131605



Milan Food Policy - Working on a new approach in local food system management going beyond the silos mentality 2014-2018

2.4.7 The circular economy in the construction sector - The Brussels Regional Program for a Circular Economy

The construction sector plays a central role in the European economy generating almost 10 % of GDP and providing 18 million direct jobs. On the other hand, it is one of the most resource-intensive sectors. It accounts for roughly half of all extracted materials, half of energy consumption, a third of water consumption, and 40% of all greenhouse gas emissions.

The circular economy principles can play much of a role in this transition. Current literature on sustainable construction covers energy efficiency extensively and often exclusively. Circular economy can facilitate the process only if it is embedded in other dimensions (social, local development, health and safety, etc.). Otherwise, resources circularity as a stand-alone objective could generate negative consequences (e.g. low social acceptance, safety and quality of reused or recycled materials)[55].

On 10 March 2016, the Government of the Brussels-Capital Region adopted the Brussels Regional Program for a Circular Economy 2016 – 2020 (BRPCE), with a budget of €12.8 million for the year 2016. The programme has three general objectives[56]:

- To transform environmental objectives into economic opportunities;
- To relocate the economy to Brussels in order to produce locally whenever possible, reduce travel, optimise land use and create added value for Brussels inhabitants;
- To help create employment.

In this plan, which contains 111 measures, construction is one of the four priority sectors. Holding a significant place in the Brussels economy, the construction sector consists of a variety of occupations and businesses, greatly varying in size and objectives. The "Urban Metabolism of the Brussels-Capital Region" study, conducted in 2014, describes the construction sector as one which[57]:

[55] Sustainable construction Guidelines for Public authorities – ACR+
[56] http://www.circulareconomy.brussels/a-propos/le-prec/?lang=en
[57] https://www.circulareconomy.brussels/wp-content/uploads/2017/05/be_prec_construction_sector_EN.pdf

• consumes resources: 20% of incoming material flows;
• produces a large quantity of waste: over 30% of the region's non-household waste;
• accounts for the largest holdings of material stock: around 84% of the total mass in the region.

Applying it to the design of new construction or renovation projects, making better use of existing buildings, and creating local economic value must become the starting point for any new construction or renovation project. Re-using existing nearby materials, transforming them to extend their lifespan, and pooling resources are all practices that will help the construction sector achieve a circular economy. Providing high quality jobs to trained workers so that they can respond to changing occupations, and thus creating local jobs, will allow the implementation of circular-economy principles in Brussels.

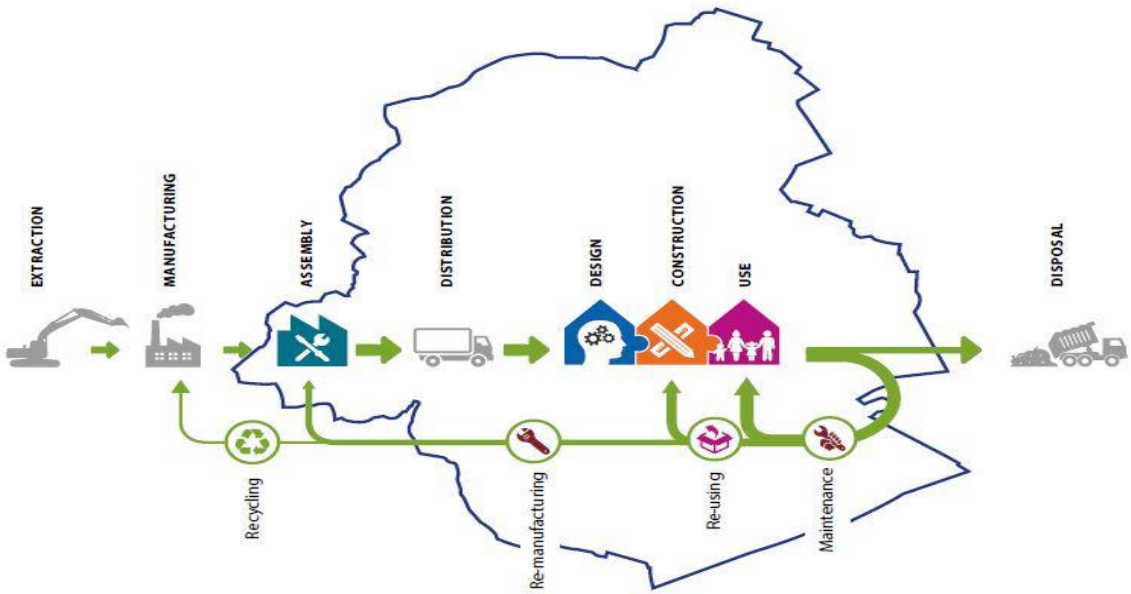
The strategy focuses on four thematic areas:

- Buildings;
- Resources;
- Businesses;
- Jobs & training.

The Regional Programme presents Brussels' vision of a circular with a draft proposed by the Government in Brussels' 2025 Strategy, adopted on 16 June 2015.

"*The aim is to encourage the transformation of the linear economy into a circular economy by developing a strategic and operational vision of the environment as a resource for creating local jobs. In particular, this involves anchoring economic activities through narrow closed loops to obtain a value chain that is as complete as possible within our region*".

In this new model, waste materials become resources, minimising the harvesting and extraction of new resources and re-use what is already in use. Unlike the linear model where all resources and products are eliminated after use, the circular model keeps them in the loop through strategies (figure below).



- **Circular buildings**

Designing buildings to be versatile over the course of their lifecycle is a key principle of circular building. As early as the design stage, buildings are thought out to be adaptable and flexible, facilitating deconstruction and the preparation of various materials and products for reuse. During the building stage, materials must be chosen with this in mind. Finally, the occupants are encouraged to practise sustainable consumption and take care to maintain and renovate their property in order to extend its lifespan.

- **From waste management to resource management**

  Thanks to inventories of available resources being organised, the re-use of existing stock is be-coming more common. We can find examples of selective deconstruction, preparation for re-use, documentation and the inventorying of resources. Recycling is facilitated by sorting materials when deconstruction takes place and a newly defined end-of-waste status allows certain materials to be recycled on site.

- **New business models and new ways of working together**

  Optimising economic resources in the Region to prevent waste and save energy in existing companies. Businesses that innovate in terms of governance and management models.

- **A local economy that creates new and innovative employment opportunities for Brussels residents**

  Circularity will contribute to job creation. This should minimise the waste of human resources, and enable students, job seekers and workers to obtain and retain high-quality jobs. Access to new skills will be favoured, examples being product-service maintenance and upkeep solutions, conducting pre-demolition inventories, dismantling end-of-lifecycle materials and products, re-use preparation, using reuse materials and products, designing and making new products from recuperated materials, etc.

2.4.8 Good Practice: Resource Wisdom strategy in the City of Jyväskylä

General information

Main document on circular economy: **Finnish roadmap to a circular economy 2016-2025**
Main responsible administrations: City of Jyväskylä
Main partners: Sitra, Finnish Innovation Fund
The City of Jyväskylä implemented a strategy focused on Resource Wisdom – "a scalable operating model for cities and regions to create sustainable well-being from a circular and carbon-neutral economy". The strategy focuses on renewable energy, sustainable transport, waste as a resource, local and healthy food, valuable water and sustainable communities.

Governance of the circular economy strategy

The City of Jyväskylä is one of Finland's fastest growing cities, leading in the field of education, expertise, culture and sports.

The City, together with nine other Finnish municipalities – Ii, Kuopio, Lahti, Lappeenranta, Porvoo, Riihimäki, Rovaniemi, Turku and Vantaa – has been nominated forerunner of the circular economy

by the Finnish Environment Institute SYKE and Motiva, on the basis of commitments and measures taken to promote the circular economy.
These nine municipalities form the first Finnish municipal network committed to achieving ambitious circular economy performances, such as recycling at least 55 per cent of municipal waste, re-using at least 70 per cent of all building and demolition wastes and reducing the amount of waste to the 2000 level by the year 2020.

A Roadmap to a circular economy – developed by the Finnish Innovation Fund Sitra in collaboration with Jyväskylä - was adopted in Finland for 2016-2025 with a focus on five areas: sustainable food systems, forest-based loops, technical loops, transport and logistics and common action.

In line with the national strategy, Jyväskylä has made circular economy a priority in its strategy for 2017-2021. The City's motto is "Together Towards Resource Wisdom! Jyväskylä closely cooperates with public organisations, companies, civil society, research institutions and educational organisations to encourage a wise use of resources and a bold business policy to guarantee the well-being of its citizens.

Instruments and actions

Jyväskylä has adopted a **long-term development plan** to become a Resource-wise City. The concept of "**Resource Wisdom**" came initially from a join project (2013-2015) with the Finnish Innovatio Fund Sitra. Resource Wisdom is now part of the City's strategy can be defined as "a scalable operating model for cities and regions to create sustainable well-being from a circular and carbon-neutral economy". In other words, the ability to use different resources in a careful manner which promotes sustainable development.

The model has three ambitious goals: no over-consumption, zero waste and zero CO_2 emissions. This will be done through 4 phases:

- Baseline assessment;
- Roadmap 2030/2050;
- Implementation;
- Network membership;
- Monitoring and reporting.

Coherently with the national Finnish Roadmap to a circular economy, the **City's Roadmap** to a circular economy has set the following priorities:

- Renewable Energy;
- Sustainable Transport;
- Waste as a Resource;
- Local and Healthy Food;
- Valuable Water;
- Sustainable Communities.

For each sector, short-term, mid-term and long-term goals have been set. The vision for 2050 is a carbon-neutral city with maximal circulation of materials, a healthy and sustainable food system and an appeal for people and business.

A key tool of the City's strategy is "**Learning by experimenting**". Experiments, which involve stakeholder groups, are used to prototype and test sustainable actions in various areas (energy,

transport and traffic, waste, food and water). Experiments allow to engage residents and encourage co-creation via an interactive platform, promoting the acceptance of sustainability and challenging "business as usal".

A very successful example was an experiment about selling **leftover lunches** in schools for local residents for a very low price (1,50 €). This allowed to save 1,3 kg CO2 / meal, 4,3 kg resources / meal and 50,000 meals / year. The project had a huge media impact and was then scaled-up to 20 Finnish cities.

Another success was the "**Bus Leap**" which consisted in promoting one day of free public transportation. On this day the number of passenger's doubles, and CO_2 emissions were cut by 60%.

The experiments were also carried out in the framework of the EU-funded CIRCWASTE project.

Other main projects in Jyväskylä are:

- The **rehabilitation of Kangas**: this area, formerly a paper mill, was transformed in a high quality and sustainable environment for residents and enterprises. This was done through smart solutions such as solar energy pilots, integrated waste management, recycled building materials, smart care and senior housing. The area has green spaces for growing local food and green houses, as well as river shores, and it is having an attractive pedestrian and cycling environment. People are put first and they can experience a sense of community and vibrancy.
- **Mustankorkea biogas plant**. This plant, owned by the municipality, can treat 13,000 t/a of bio-waste and 6,000 t/a of sewage sludge. It can produce gas for more than 1,000 cars. Many leading Finnish biogas companies are active in Central Finland and are supported by public bodies such as municipalities, the Regional Council of Central Finland, the Finnish Innovation Fund Sitra, the Centre for
- Economic Development, Transport and the Environment of Central Finalnd and local development companies.
- **WeeFINer**, a technology to recover precious and rare materials from electronic waste. This pilot project is part of the Finnish roadmap to the circular economy and shows the huge business potential of circular economy.

Jyvaskyla's philosophy is to do more with less, and in partnership with private, public and civil society actors. Participation to get new ideas from citizens is warmly encouraged through communication activities.

2.4.9 Good Practice: Improvement of the plastic packaging waste chain from a circular economy approach

Project Designation	**Improvement of the plastic packaging waste chain from a circular economy approach**
Project name	PlastiCircle
Location	Alba Iulia in Romania, Valencia in Spain and Utrecht in the Netherlands
Thematic	Waste management/recycling
Synthesis of the Project	PlastiCircle aims to develop and implement a holistic process to increase recycling rates of packaging waste in Europe. This will allow to reprocess again plastic waste in the same value chain (i.e. Circular economy; closure of plastic loop). This process is based on four axes: collection (to increase quantity of packaging collected), transport (to reduce costs of recovered plastic), sorting

	(to increase quality of recovered plastic), and valorization in value-added products (i.e., foam boards, automotive parts like engine covers/bumpers/dashboards, bituminous roofing membranes, garbage bags, asphalt sheets/roofing felts and urban furniture like fences/benches/protection walls). The target is to increase collection from 81.7% to 87% and valorization in a 9.8%. The implementation of PlastiCircle approach in Europe have the potential to increase collected plastic in 861,250t (reaching 14.14 Mt) and valorization in 1.59Mt. The valorization of this new material, represents a market value of €2.86bn-€7.95bn. Taking into account current figures of the plastic sector (turnover €350bn, 62,000 companies, 1.45M employees), this could imply creation of 500-1400 new companies and the generation of 11,900-33,000 new jobs in the medium to long term if PlastiCircle approach is extended in a EU level.
Results achieved	Ongoing Project
EU Instrument used	Horizon2020
Financial data	Overall budget € 8 674 540,89 EU contribution € 7 774 016,75
Website with complementary info	https://plasticircle.eu/home/
Project contacts	Calle Albert Einstein 1 Parque Tecnologico De Valencia 46980 Paterna Spain

C. Use of economic instruments to boost circular economy: key examples

2.4.9 Waste collection charges

Waste fees can be designed in several different ways, but they are most often either by weight, by volume, and frequency- and/or bag-based. In short, this means that households pay a fee directly proportional to the quantity of waste they produce which is collected and treated. In foreign literature this type of fee is often referred to as so-called “Pay As You Throw “-schemes (PAYT) or DVR Charging (Direct and Variable Charging). The instrument must be combined with information to create the behavioural changes, but if it is designed so that it creates clear incentivises, it has in some cases been found to have a reducing effect on waste.

Seventeen European Member States established one or more waste management systems based on waste fees. The system is usually designed using a fixed price combined with a variable price for the quantity or size of the containers, so as to ensure that all costs are covered. There seems to be a correlation between weakest incentivise waste prevention strategies and volume-based fees.

The determination of an appropriate fee system has a delicate balance. On the one hand, charges must be high enough to create a waste prevention incentivise, but on the other hand charges must not be so high that they encourage illegal disposal of waste. The highest waste preventive effect is achieved by means of the weight-based waste charge, followed by the volume-, frequency- and bag-based systems. The weight-based system is also the most expensive, but is expected to be justifiable given the better effect. However, the fee must be combined with a general information campaign to promote the desired effect.

Pay-As-You-Throw (PAYT) charging systems show high potential because they address two important environmental challenges for waste management: making individuals responsible for the waste they create, thus fully integrating the Polluter Pays Principle (PPP), and rewarding less

wasteful behaviour, as opposed to concealing it beneath the conventional flat fee (Dohogne, Labriga, & Longworth, 2016). This step of clearly placing responsibility for waste and pollution and the larger challenge of addressing increasing levels of production and consumption represent one of the critical global trends that affect sustainability. Connecting consumption with environmental impact will make up a critical part of addressing this challenge, and PAYT offers a potential piece of this puzzle by giving citizens an incentivise to reduce waste. PAYT is not a standalone policy measure. PAYT should always be incorporated in a mix of environmental policy measures such as prevention/recycling targets, EPR, bans/taxes and public information campaigns. There is no one-size fits-all approach in different countries/ municipalities and for different waste streams. In general terms, if backed by sufficient recycling infrastructure PAYT has a strong potential to reduce waste and increase recycling.

The design of the fee structure, or mix of fixed and variable fees, is critical to fully incentivise changes in waste behaviour: the fee structure should correctly reflect the costs of the waste services for the municipality, but also hold the proper balance of fixed and variable parts to encourage reductions. This means the municipalities need to have a solid understanding of the costs involved with their waste collection infrastructure.

PAYT schemes appear to be most effective when the fees payable by households are at levels high enough to encourage reflection by householders on their waste generation behaviour. They have to be sufficiently well-balanced in order to avoid providing a strong incentivise for illegal dumping. Potential barriers to success include lack of diversion goals, lack of corresponding recycling infrastructure expansions, limited outreach to customers about how to change purchasing habits, and charging of a separate fee for recycling.

With regards to waste prevention, weight-based systems are most successful, followed by combined volume and frequency-based/bag-based systems, and then volume-based systems (i.e. schemes where households simply choose a specific size of container). Care should be taken for PAYT and producer responsibility schemes to be complementary.

2.4.10 Modulating waste charges: the case of Vilablareix, Girona (ES)

Population	*2.789 (municipal register 2018)*
Households (hhld)	*985 total HH*
Surface (km^2)	*6,20 (municipality) / 1,19 (built surface)*
Density (inhabitants/km^2)	*434 (municipality) / 2.261,3 (built surface)*
Urbanisation class	*25 % of multi-family houses, no urbanisations*
Type of action	*Payment per participation for Biowaste and Light Packaging*
Year of introduction	*2018*
Scale (pilot or municipal scale)	*Municipal Scale*
Action target (e.g. number of inhabitants or businesses involved)	*2.789 inhab. +45 commercial activities*
Status	*Ongoing*

This Catalan municipality introduced Door-to-Door collection in 2013 and decided to apply a Pay per Participation taxation system in 2018 to reflect the extent of the use of the system. The objectives of the new tax were to further improve selective collection rates, take joint responsibility

of proper waste management, and have a fair system based on the formula that, the more you recycle, the less you pay. To pave the way for the new tax, an information campaign was carried out to explain to residents how it would work in practice. Together with a smartphone app about separation at source, the outreach efforts boosted the uptake of the system.

Scheme design

	Households	Businesses
Waste streams covered by tax	Biowaste (BW); light packaging (LP)	BW, LP, paper, glass, residual waste
Type of collection system	Door-to-door for BW, LP, paper & glass, and residual waste. Bring points with access control for low density areas.	Door-to-door
Measurement system	Per no. of caddy deliveries	Per volume of container used
Tools needed	Caddies for BW (20L, brown) and LP (40L, yellow) with LF identification system	Containers/bins for each fraction
Frequency of pick-up	3 days/week for BW; 2 days/week for LP	3 days/week for BW; 2 days/week for LP
Fee	4 price ranges for each of 2 fractions; the rate increases when less annual deliveries are made	Tax is calculated based on the volume of the container used to dispose of the various fractions (price per unit x volume in liters).

Communication

Vilablareix ran a communication campaign for residents and businesses between October and December 2017. It consisted in the following activities: 1. an informative meeting about the new rate held in October; 2. Information made available on the web; 3. information shared during a Catalan TV show ("En Directe" on 8tv channel) in October; 4. articles in the municipal magazine (October and December); and 5. letters sent to residents to let them know about the new app and rate (December). In 2018, the campaign continued with quarterly letters detailing the content of the invoice and an article in the municipal magazine in December. Just like Argentona, Vilablareix appointed a permanent educator at the city hall to engage with residents and conduct visits and inspections. Its residents also had access to a customer service office that answered questions about the door-to-door collection system.

Achievements of the system

An important achievement of the pay per participation and door-to door collection systems was that, between 2012 and 2018, the percentage of separately collected waste increased from 38.71% to 89.34%. Other observed benefits were:

- an increase in the participation in the door-to-door system;
- an increase in the amount of the separately collected fractions;
- a drastic reduction in waste tourism;
- an improvement in the quality of the selectively collected waste;
- an eight-fold reduction in the residual waste generation between 2012 and 2018 down to 78.48 tonnes;
- a reduction in the amount of total municipal waste from 1,034.67 tonnes in 2012 to 736.4 tonnes in 2018;
- the involvement of 50 households in municipal composting;
- involving everyone in the collection system as a first step to put in practice the polluter pay principle;
- there was no need to change the door-to-door collection system because the caddy identification technology used had been put in place from the beginning.

Barriers and challenges

The main barriers perceived were:

- the medium-term investment costs;
- the difficulty in calculating the tax in a fair way for special cases like households that engage in significant waste prevention; and/or have a low production of LP and BW; households with only one inhabitant; and households that are only used for sleeping.

Cost and waste fee calculation

The initial investment in setting up the new system was €55,846.2. The amount covered the following activities: a feasibility study prior to the implementation of the tax; integrating a new module in the existing data management application; the development of a web application; the interconnection with the water company; drafting a differentiated tax ordinance; informative material; and the communication campaign. The cost was partially offset through a €34,489.57 grant from the Catalan Waste Agency. The maintenance cost of the system (data readers & data management platform) is €682/year. All the activities were performed by existing municipality staff.

The average waste fee for residents evolved as follows:

Year	2013	2014	2015	2016	2017	2018
Waste fee (€)	150.65	145	137.75	130	120	101.5

The waste fee for residents was calculated based on a fixed fee that decreased as the number of disposals of light packaging and bio-waste increased. Number of disposals of light packaging. For instance, if a household generated 40 containers of light packaging and 52 of bio-waste in a given year, it would pay 50+70=€120 that year. Using this system, households could pay as little as €80 per year for the collection and treatment of the two waste streams if they were able to meet the minimum for the highest range; this would represent savings of over €70/year compared to what they paid in 2013, when households were charged a flat fee of €150.65. Every quarter, all the hhouseholds made a €20 euro deposit, which they paid together with their water bill. During the last quarter of the year, their fee was adjusted based on their participation in the system.

The exceptions to this system were:

- home composters paid the smallest fee for their bio-waste;
- isolated homes without access to door-to-door collection paid a flat fee of €120/year;
- likewise, empty homes paid a flat fee of €120/year.

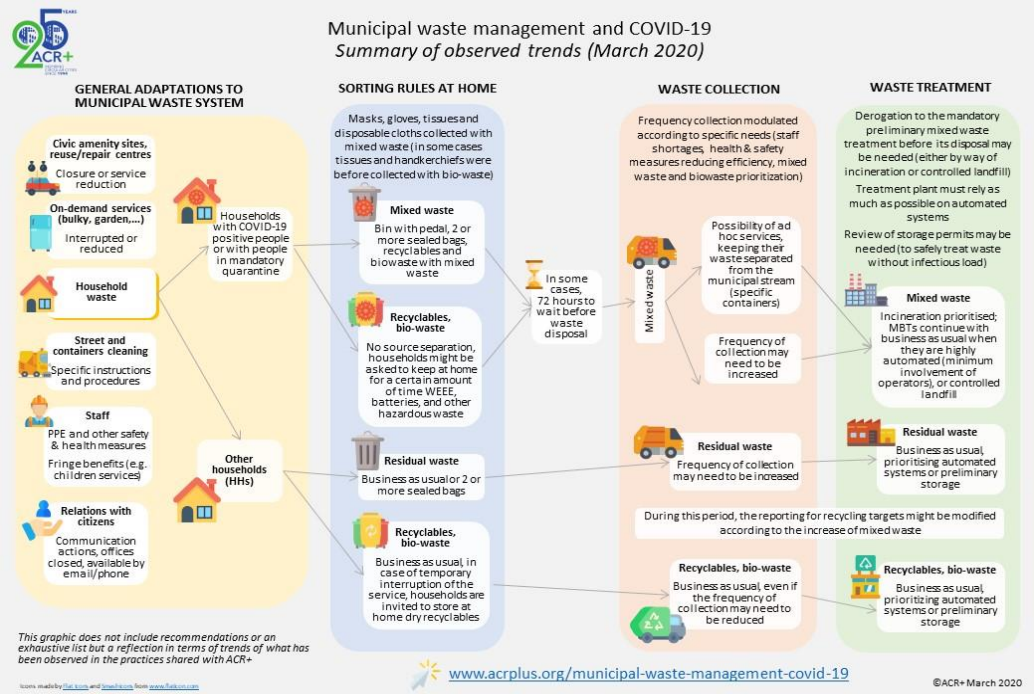
The results thus far were that 91.94% of the users, or 843 households, paid the lowest or second lowest fees for the collection of their bio-waste and light packaging, meaning that their yearly fee ranged from €80 to €120. Some 3.4% of users, or 31 households, paid between €120 and €270/year. And 4.7% of residents, or 43 households, paid €270/year (the highest amount possible). The fee for businesses was calculated based on the volume of the waste container they solicited for each waste stream. The overall fee was a summation of the fees paid for each stream. The municipality established a minimum annual fee of €120 and a maximum one of €2,500.

The impact of covid19 on resource management policies

The covid19 pandemic has a global dimension, but it also has a strong local dimension, even stronger when it comes to waste management. Indeed, in most of the European countries municipal waste management is under the responsibility of local authorities, especially when it comes to the collection and some of the stages right after the collection, such as sorting, treatment and in several cases also recovery and disposal operations. So, how quickly and effectively decentralized authorities have been adapting to the emergency, makes much of a difference. ACR+

is a network of local and regional authorities, whose mission is to support our members in accelerating the transition to a circular economy on their territories. So, we publish studies, take part in projects, facilitate the exchange of experience between our members. But as local and regional authorities, in charge of waste management, our members have been greatly impacted by the COVID-19, and that's why as ACR+ we started collect information from nodes of our network to get an accurate snapshot of the waste management situation during the first two months of the pandemic spread.

We summarized the trends we observed in the following infographic: it is important to point out that the purpose of the scheme is not to provide guidelines, rather than to schematize the main trends of instructions delivered by National and Local authorities to citizens and waste operators.



In terms of general adaptations, we have observed significant impacts to the civic amenity sites and reuse centres: several local authorities decide to reduce or in many cases also interrupt the services, to avoid gathering of people. Specific on-demand services such as bulky and garden waste collection have been interrupted, to prioritize other services such as residual and biowaste collection.

Street cleaning operations have been also in the focus: in several cases we have noticed the release of specific instructions and procedure to guarantee the cleaning of street containers, also taking into account the bins for littering.

In some countries, public healthcare institutions have released general guidelines to properly drive the local adaptations.

Concerning household waste management, the main trends observed rely on addressing specific instructions to the households with infected or in self/mandatory quarantine people. The instructions are about to stop taking out source separate waste, asking the households to get rid only of the residual waste in two (or more) tear proof and tightly closed bags (the first one containing the mixed waste fractions, the second one to line and secure the first bag). Some countries have ruled a minimum home storage time before put the waste out for collection. This

time varies across the countries, from one day (France) to few days (e.g. UK, Estonia). In some local authorities a specific service to household with Covid-19 has been set up, in order to keep separated the waste streams (e.g. Tuscany Region in Italy). This choice implies many challenges, in terms of logistic and data management (cross-data between sanitary units, local authorities and waste operators).

For the other citizens the trends are about trying to keep on operating the source separation, taking into account potential reductions in terms of collection frequency, prioritizing residual waste and biowaste collection.

In case of temporary interruption of separate collection, citizens are asked to cooperate trying to keep as much as possible at home dry recyclable fractions such as glass, paper, cardboard. Of course, local conditions play much of role: rural areas are more resilient in adapting to this fluctuation, due to space to store waste at home.

When it comes to waste treatment, automated operations have to be preferred, to minimize the direct contact with waste of the operators.

Logistic operations such as transfer and storage of waste are also impacted. Some regions have set derogations to permitted capacity storages, in order to guarantee a bit more flexibility in the logistic of the supply chains. Then, it is necessary to deal with issues such as sanitary conditions, fire risks, etc.

In terms of decision-making processes, we observed a wide range of adaptation, either resorting into top down or bottom up approaches. In some countries the preparation of contingency plans started with guidelines issued at the national level by healthcare institution. Then, they were translated and adapted to local implementation plans.

The three gears of national authorities, decentralized authorities and local communities have to roll out in the same direction, to guarantee that the actual implementation follows the policy.

The info we have received from the field have been showing variable shortages and bottlenecks along the recycling and composting routes. This is posing issues regarding the cost coverage. Capacity of safe disposal of infectious waste from hospitals and healthcare centers it is also very much part of the game.

To reply to these challenges some local authorities have been issuing specific communication to the citizens, supporting prevention as a way forward to increase the resilience of the local systems.

Resiliency of municipal waste management is required not only to guarantee safety to workers, but also to adapt to waste fluctuation both in terms of quality and quantity. This is due to lockdown, posing issues regarding change in the habits of people (for instance interruption of commuting, all the daily meals at home, but also in terms of purchasing choices, either for shortages in some supply chains and hygiene perception).

Finally, we will have a lot of lessons to learn from this experience. Since we are working closely with local authorities, in particular with the departments responsible for the municipal waste management, getting some figures afterwards could be useful to see how well the systems worked or not and how to improve their resilience. There will probably be strong interest in documenting how municipal waste systems were impacted and future waste plans might be requested to include provisions and strategies for pandemics.

As the lockdown or other restrictive measures are progressively lifted, a second phase is starting and new challenges are appearing. Public authorities and municipal waste operators do not have to act to face an urgent situation but they now have to deal with the impacts of the different measures of the so-called first phase and with the necessity to re-assess the situation. Adaptation is needed once more, this time to search for stabilized operation. The crisis is also moving along the value chain reaching new actors such as recyclers. As it did during the first phase, ACR+ is gathering data on the situation in different countries to monitor the effect of the COVID-19 pandemic on different waste management systems. The aim is to gather and exchange practices, being aware that situations are diverse and dependent on the national and local constraints as well as means available.

In several countries, surveys are conducted (at national, regional or local level) to assess the situation and provide a summary and statistics on waste collection and treatment activities during the lockdowns. Currently data are available for the city of Milan, Catalonia, England and France.

3. ROLE AND SUPPORT OF EU PROGRAMMES

All Member states have at least an urban or territorial policy. It depends on the degree of decentralization and on the administrative culture and tradition. And all of them have, somehow, national / regional and local legal and financial instruments to invest on urban issues, which constitutes part of the national counterpart of EU funding.

During the 2014-2020 programming period, cohesion policy has made Sustainable Urban Development (SUD) compulsory (5% of European Regional Development Fund, ERDF, earmarked for SUD in each Member State) and the strategic dimension of the integrated approach has been affirmed. Moreover, new territorial instruments have been introduced to implement strategies in urban areas, namely integrated territorial investment (ITI) and community-led local development (CLLD). These emphasise respectively the importance of integrating multiple funds, and of engaging with the local community.

These key characteristics of SUD will be maintained in the upcoming programming period 2021-2027, when the minimum percentage of ERDF to be earmarked for SUD was proposed increase to 6% (EU COM proposal) and increased to 8% at least during the Inter-Institutions negotiations of December 2020.

3.1. Role and Objectives of the EU Financing

For the period 2014-2020 Cohesion Policy has set **11 thematic objectives**[58] supporting growth.

ERDF	support all 11 objectives, but 1-4 are the main priorities for investment.
ESF	main priorities are 8-11, though the Fund also supports 1-4.
COHESION FUND	supports objectives 4-7 and 11.

1. Strengthening Research, technological development and innovation	2. Enhancing access to, and use and quality of, information and communication technologies	3. Enhancing the competitiveness of SMEs	4. Supporting the shift towards a low-carbon economy
5. Promoting climate change adaptation, risk prevention and management	6. Preserving and protecting the environment and promoting resource efficiency	7. Promoting sustainable transport and improving network infrastructures	8. Promoting sustainable and quality employment and supporting labour mobility
9. Promoting social inclusion, combating poverty and any discrimination	10. Investing in education, training and lifelong learning	11. Improving the efficiency of public administration	

For Urban Development the aims of the programming period 2014-20 were:

[58] https://ec.europa.eu/info/eu-regional-and-urban-development/topics/cities-and-urban-development_en

"The 2014-2020 period has put the urban dimension at the very heart of Cohesion Policy. At least 50% of the ERDF resources for this period will be invested in urban areas. This could increase even further, later in the period. Around 10 billion euros from the ERDF will be directly allocated to integrated strategies for sustainable urban development. And about 750 cities will be empowered to implement these integrated strategies for sustainable urban development",

having in mind that integrated sustainable urban development means that:

- ✓ The various dimensions of urban life – environmental, economic, social and cultural – are interconnected and success in urban development can only be achieved through an integrated approach. Measures concerning physical urban renewal must be combined with those promoting education, economic development, social inclusion and environmental protection. And that it also calls for strong partnerships between local citizens, civil society, industry and various levels of government.
- ✓ Such an approach is especially important at this time, given the seriousness of the challenges European cities currently face, ranging from specific demographic changes to the consequences of economic stagnation in terms of job creation and social progress, and to the impact of climate change.

3.2. Funding EU programming 2014-20 and beyond

A. 2014-20 Programming period

3.2.1 Objectives and Financing

EU Funds allocated to Regional Policy for 2014-20, so called ESI Funds were for 2014-20:

In Euro millions

FUND	ALLOCATED AMOUNT	%
ERDF – European Regional Development	**201.227**	**43.5**
EAFRD - European Agricultural Fund for Rural Development	**100.079**	**21.6**
ESF – European Social Fund	**83.881**	**18.1**
CF – Cohesion Fund	**63.279**	**13.7**
YEI - Youth Employment Initiative	**8.907**	**1.9**
EMMF - European Maritime and Fisheries Fund	**5.686**	**1.2**
TOTAL	**463.059**	**100**

Source: Regio data 31.1.2020

Based on the following concepts, EU approved the policy and financing for 2014-20 programming period for Sustainable Urban Development (SUD).

ERDF Regulation specifies that:

- ✓ **For Sustainable Urban Development (Art 7)**

  In each EU Member State, a minimum 5 % of the ERDF must be invested in integrated Sustainable Urban Development with deployment decided and directed by urban authorities. Three different arrangements could be used within the operational programmes:

  - A specific priority axis of an operational programme dedicated to Sustainable Urban Development

- A specific operational programme dedicated to Sustainable Urban Development
- Integrated Territorial Investment (ITI): a certain part of the financial allocation of one or more priority axes of one or more operational programme can be implemented through ITIs.

✓ **For Urban Innovative Actions (Art 8)**

Cities need to do more with less, responding to growing challenges but with lower budgets. This calls for innovative approaches. The Urban Innovative Actions initiative has been created to identify and test new approaches to the challenges faced by cities (through pilot projects). A total of EUR 371 million is earmarked for 'innovative actions' in the field of Sustainable Urban Development over a seven-year period.

The aim is to generate knowledge of what works and what does not and why, what should be done differently, etc. Projects are selected through calls for proposals with an ERDF contribution not exceeding EUR 5 million per project, a unique co-financing rate of maximum 80%, and maximum three-year duration. The topics of the calls are defined annually by the Commission. The management of Urban Innovative Actions is delegated to the Nord-Pas de Calais Region in France. The support is given to an urban authority of more than 50.000 inhabitants, or a grouping of urban authorities with a total population of a least 50 000 inhabitants, located in one of the 28 EU Member States.

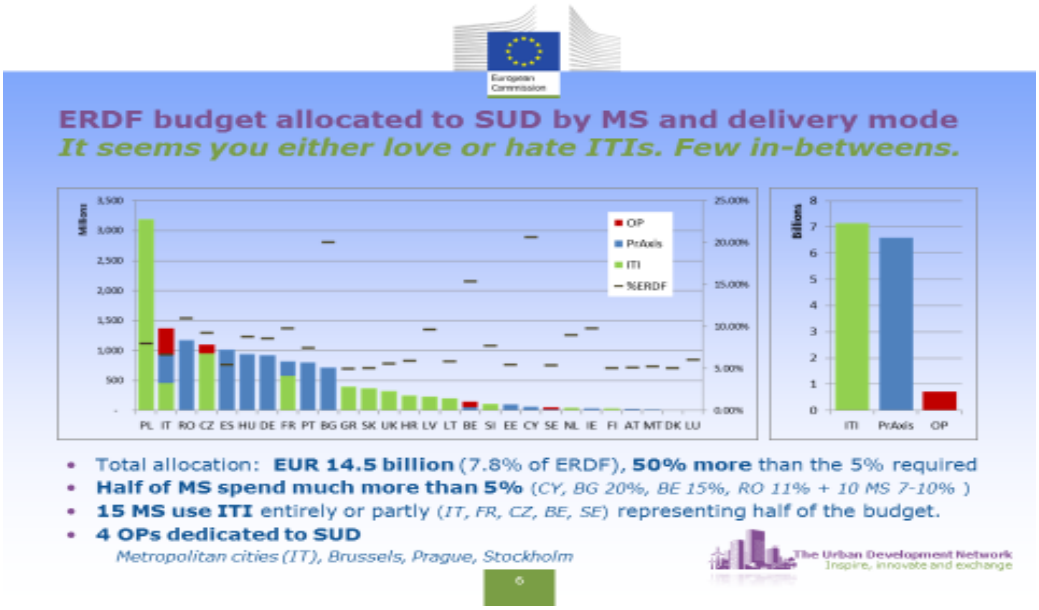
The support[59] for integrated territorial development in the implementation of ESI Funds.

The ESI Funds are the EU's main instrument to foster integrated territorial development in the Member States and the regions. More than 3,800 territorial, urban and local strategies receive EU funding. In addition, the ESI Funds help Member States implement measures to address the needs of specific territories such as areas affected by poverty or social exclusion, sparsely populated areas, mountainous regions, islands and the outermost regions. This tailored approach has been strengthened in the Commission's CPR proposal for 2021-2027, in particular through a stronger focus on functional territories (e.g., river basins, coastal areas, mountain ranges, etc.) to overcome administrative silos, and on local initiatives.

Integrated investments in cities - the *stronger focus on urban matters under this programming period, coupled with the unique political momentum triggered by the Urban Agenda for the EU[60], have empowered cities to draw up their own integrated urban strategies with ESIF support. Of the €81 billion invested in urban areas by the end of 2018, cities have chosen projects worth around €10.8 billion, to be implemented through more than 900 integrated urban strategies. It is also worth mentioning the success of the urban innovative action's initiative, which has helped urban areas test innovative solutions for sustainable urban development through 75 actions[61]*.

€15 billion of the ERDF was dedicated to sustainable urban development[62] (see graphics below), which 50% more than the 5% established as minimum. ERDF (and in a less measure ESF) is financing SUD via several instruments (national and Regional programs; ITI's inside these programs, community initiatives like UIA and Interreg programs…).

[59] Strategic report 2019 on the implementation of the European Structural and Investment Funds [Brussels, 17.12.2019 COM (2019) 627 final].
[60] https://ec.europa.eu/futurium/en/urban-agenda
[61] https://www.uia-initiative.eu/en
[62] https://ec.europa.eu/knowledge4policy/territorial/topic/urban_en



As mentioned above at least 50% of the ERDF resources for this period will be invested in urban areas. And around 10 % of ERDF on direct Financing to Cities. Nevertheless, this percentage varies from Country to Country, since the priorities on thematic given by member states and regions to this financing is not uniform and of course varies in function of the degree of development existent and on the amounts of credits available for this EU funding.[63]

SUD in some Member states

COUNTRY	RATE (%)
Belgium	**9,9**
Czech Republic	**8,5**
France	**10**
Germany	**8,2**
Italy	**7**
Spain	**6,52**
Portugal	**8,4**
United Kingdom	**more than 5 %, with more than 10 % for England and Wales**

Most of the planned and implemented interventions mentioned in the Partnership Agreements 2014-20 covers Energy efficiency in housing and urban enterprises, Sustainable mobility (inter-

[63] https://epthinktank.eu/2015/02/11/partnership-agreements-within-cohesion-policy-2014-2020/

modal, cycling, smart mobility), Social inclusion (often combined with additional resources from the ESF), Urban renewal and urban quality of life (green spaces and pedestrian areas), digital agenda (smart cities), waste cycling concerns, Economic activities in urban centres (in particular employment and micro enterprises).

Good Practices examples

Italy - there is a National program concerning the 10 metropolitan areas[64], and 2 Regional programs concerning 4 metropolitan areas in Sardegna and Sicilia[65].

France - the urban dimension is implemented in the ERDF-ESF programs through 200 integrated urban strategies developped by cities or intercommunalities, and mainly in favor of priority neighbourhoods defined in the national urban policy.

Germany - SACHSEN Lander - 8% of ERDF funds will be used to tacle the concentration of social, economic and environmental problems in urban areas, with a focus on disadvantaged districts. In this context, one of the objectives is to rehabilitate 820,000 square meters of open space in urban areas.

3.2.2 The Success of ITI's – Integrated Territorial Investments

Integrated territorial investments ('ITIs') and the community-led local development ('CLLD') instrument were introduced to encourage integrated territorial development strategies beyond the traditional national and regional levels. ITIs have been used to implement over 200 urban strategies and 120 territorial strategies, mobilising a total of €15.9 billion in ESIF funding.

We can consider this approach a success. The introduction of ITI in the EU funding implementation, and the appropriation by Regions and Cities demonstrated the adequacy of the idea to the reality on the ground, the interest of Cities and its potential for the future 2021-27 programming period of Cohesion Policy.

Multi-fund SUD strategies have been drafted by 15.7% of cities in the 2014-2020 programming period. Of those, 13% drew from two funds, including ESF or European Agricultural Fund for Rural Development (EAFRD), while only 2.6% (26 cases) drew from more than three different funds. ERDF covers the bulk of funding needs in all cases. The Member States where multi-fund strategies are deployed more often are mainly those which joined the EU after 2004, especially Poland, Hungary, Czech Republic, Lithuania, Slovenia.

Other Countries also used ITI like Belgium, France, Germany, Italy, Netherlands, Sweden, Romania and UK. And some cross-border projects emerged.

Overall, 109 strategies used an ITI as a territorial instrument, while 31 strategies used a multi-fund PA and 14 cases used a multi-fund OP. The ITI was the most frequently utilised instrument in the few cases where more than 2 funds were used. In particular, 86 out of 134 strategies which utilised CF funds used an ITI, while the rest used a multi-fund PA[66].

Even if only at the end of the exercise (evaluation ex-post by around 2023) we can evaluate in detail the final results of the ITI experience, the number of Projects emerged, can be considered as a good start and an added value to the Policy. Which made the EU Commission announces that the

[64] Bari, Bologna, Génova, Firenze, Milano, Napoli, Roma, Torino, Venecia and Regio Calabria.
[65] Cagliari, Messina, Catania and Palermo.
[66] https://urban.jrc.ec.europa.eu/documents/handbook-of-sustainable-urban-development-strategies.pdf

new policy approach introduced by the Commission in its CPR proposal for 2021-2027 builds on the positive experiences of ITIs and CLLD, and makes territorial investments simpler and more efficient.

The following examples of ITIs in Europe shows how partnerships used it and adapted it to their realities. It is a process on 'improving by doing', and could be source of inspiration for others joining in the future.

Hereafter some examples of ITI's in Europe.

3.2.2.1 EIXO ATLANTICO (ES)

A. DUSI PONTEVEDRA (Galicia - ES)

Even if the example presented is not an ITI, in the strict sense of the ERDF Regulation: this DUSI is a new phase of a general city strategy that has been developping since 1999 (+15 years); the city / citizens have had a clear identification with it; the different phases have been financed by European funds, the first already with an URBAN; it has had a long continuity in time and different phases, something strange in Spain; it has had numerous national and international recognitions and awards.

All these reasons have led us to select this example as a success story.

The characteristics established in Spain for the DUSI (Desarrollo Urbano Sostenible Integrado) - Integrated sustainable urban development, for the 2014-20 EU programming period, included the following typology of the FUAs – Functional Urban areas:

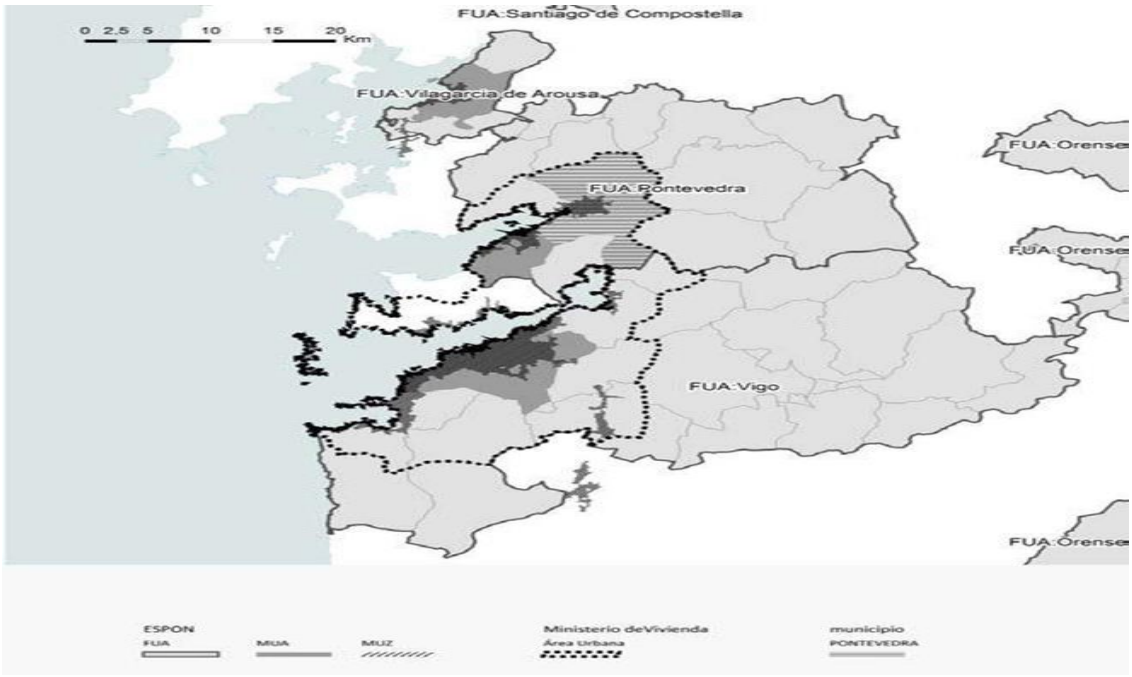
• Urban areas made up of a single municipality with a population greater than 20,000 inhabitants.
• Grouping of municipalities with a population in each of them greater than 20,000 inhabitants.
• Urban areas formed by a municipality or conurbation with more than 20,000 inhabitants and peripheral municipalities with less than 20,000 inhabitants.
• Conurbation with a population greater than 20,000 inhabitants, made up of groups of less than 20,000 inhabitants.

In the call for proposals, it was established that the Strategies have to address at least two of the Thematic Objectives OT2, OT4, OT6 and OT9, being mandatory that there be actions by OT4 and OT9. It also establishes financing ranges to be dedicated in each OT:

- Promotion of Local Electronic Administration and Smart Cities (OT2)
- Promotion of carbon reduction strategies for urban areas (OT4) (mandatory)
- Action to improve the urban environment, including the enhancement of Cultural Heritage and the improvement of the Urban Environment (OT6)
- Support for the physical, economic and social regeneration of deprived urban areas (OT9) (mandatory)

Typology of Functional Area chosen for the Pontevedra DUSI Strategy. The DUSI Strategy "+ Pontevedra Urban Model" sets its scope of action in the municipality of Pontevedra and

corresponds to urban areas made up of a single municipality with a population greater than 20,000 inhabitants. It is a functional area greater than 50,000 inhabitants, since the population of the municipality exceeds 82,000 inhabitants.



Specific scope of action: Edge and Peripheral Crown of the compact city. This specific scope of action, in which certain lines of action of the DUSI Strategy applied, includes the peripheral neighbourhoods of the city and the continuum of medium density of rural origin whose territorial matrix has given rise to spaces of a hybrid nature and that are it corresponds to the parishes that surround the city. Therefore, it is made up of the peripheral neighbourhoods and parishes bordering the compact city. The peripheral neighbourhoods of Pontevedra arise from the superposition of old rural settlements with linear growths or isolated buildings, both residential, industrial, commercial or of facilities, which are supported by the historical mesh of roads. To the north of the city O Burgo and Monteporreiro stand out, to the east the neighbourhoods of A Seca, O Castañal, Salgueiriños and A Parda and to the south the neighbourhoods of Campolongo and Mollavao. These neighbourhoods have been the ones that have accumulated absorbed the growth of the city in the last five years. Pontevedra has 15 parishes, of which 5 of them make up the peripheral crown and the medium-density continuum of the compact city and its peripheral neighbourhoods. These urban spaces, originally rural, have given spaces of a hybrid and transitional nature from the dense city to the diffuse city that configures the rest of the municipal territory.

The Pontevedra DUSI Strategy.

The Integrated Sustainable Urban Development Strategy presented by Pontevedra is committed to extending and deepening the people-centered urban transformation model that the City Council has been implementing for more than 15 years in the city and whose approach has been oriented towards achieving a city more friendly, comfortable, safe, of high urban quality, accessible, without noise or atmospheric pollution, egalitarian, cohesive and that also facilitates

the autonomy of people. This model responds to a strategy in which its fundamental principle is to understand public space as a place of coexistence for people.

The DUSI Strategy "+ Pontevedra Urban Model" has as its main challenge to deepen the urban transformation model of Pontevedra centered on people, continuing, reinforcing and adapting its model not only in the urban centre, but also in urban spaces on the edge and crown peripheral urban area that surrounds the compact city, spaces in which there are social, urban quality, sustainability and functional deficits. This occurs because the urban expansion of the historic compact city, which was configured until the 60s of the last century, has led to the development of areas where the urban fabric and the dispersed rural settlement model converge and overlap in the same space creating new spaces with their own particularities.

The main general principles of the Strategy are:

• Extension and adaptation of the people-centered urban transformation model: extending it to the peripheral neighbourhoods and the peripheral medium-density crown that surrounds the compact city, to achieve a city better connected with its peri-urban environment, to achieve more friendly urban spaces, comfortable, safe and accessible and of high urban quality that meet the standards achieved in the most central mesh of the city.

• Commitment to natural and cultural heritage and climate change: developing actions to improve Pontevedra's environmental behaviour and gain new natural and heritage spaces for visitors and citizens, so that they improve their quality of life and contribute to a better connectivity of the compact city with its peripheral urban continuum

• Economic and social cohesion: to overcome social and functional differences, achieving a more economically dynamic municipality based on economic and business development initiatives and projects that value endogenous local resources and that take advantage of the synergies generated by the city model. All this from a perspective of equality, participation, cohesion and that facilitates the autonomy of people.

The urban transformation model of Pontevedra is a practical experience applied since 1999 without interruption with which it is pursued a profound improvement of the urban environment and to achieve a high urban quality in all its facets. We can summarize it in the following objectives:

• In the environmental field: drastically reduce air, noise and water pollution

• In the social field: achieve an inclusive, inclusive city, in which barriers of social class, physical condition or disability are mitigated or eliminated, by age, by sex or any other diversity

• In mobility: eliminate the dangers of traffic and promote non-motorized mobility, inverting priorities and placing walking as a central element of urban mobility

• In public spaces: turn urban public spaces into a center for socialization, with integrated plural uses

• Promote the autonomy of boys and girls and their integration into urban life

Once the problems and challenges of the territory for the coming years have been considered, the Strategy "+ Pontevedra Urban Model" establishes a total of 8 strategic objectives (OES) to contribute to the challenges of the municipality and achieve the defined results. In particular, the strategic objectives were materialized through 21 operational objectives (OO), with which the results to be achieved are specified to a greater extent, defining the 32 lines of action (LA) of the Strategy.

The Strategy includes 5 horizontal objectives: Equality between Men and Women and non-discrimination; Sustainable development; Accessibility; Demographic change; Climate Change Mitigation.

And in fine establishes a model of Governance with citizens 'participation in the decision-making process:

- Referring how civil society and different institutions partipate in the DUSY Strategy design
- Proposing the constitution of the GAU (Urban Participation Group), which will be the body for consultation, participation and social coordination of the Strategy "+ Pontevedra Urban Model".

EU Financing

Is a strategy with a Budget of €85 million.
The Municipality of Pontevedra is implementing part of this Strategy with an ERDF cofinancing:
Total Cost 18,7 € million
ERDF 14,9 € million (80%)
Own resources 3,8 € million (20%)
The financial path between 2016 and 2022 concentrates spending especially in the years 2017, 2018 and 2019 with 21%, 30% and 22% respectively.
For more information: http://www.pontevedra.gal/web2016/wp-content/uploads/2016/01/URBAN_Mais-Modelo-Pontevedra.pdf

EU OBJECTIVES		Lines of Action	Cost (€Million)	RESULT INDICATORS	
Thematic	Specific			Designation	value
TO 2 (ICT)	SO 2.3.3	-ICT tools to support the participation, relationship and information of the territorial and sectoral councils -Strengthening the electronic administration of Pontevedra -Management of accessible public services, information and cooperation with the private sector through ICT	0,05 1,7 0,45	-N ° of users that are covered by a certain level of electronic public services of Smart Cities -Number of users who have access to or are covered by electronic administration applications / services	95,000 50,000

		-Technological applications to facilitate access to information and enhancement, promotion and development of natural, historical-artistic, cultural heritage and other local resources for citizens and visitors	0,5		
TO 4 (low carbon economy)	SO 4.5.1. SO 4.5.3	-Parochial plans for the modal adaptation of roads, highways, streets, tracks and squares as means of coexistence for mobility (pedestrian, cyclist and motor) increasing comfort and road safety -school roads program in the peripheral crown of medium density -Interparochial pedestrian network in the continuum of medium density that surrounds the central city, which allows the autonomy of the child, youth and third-age population -Implementation of a model of collective transport on demand using low capacity vehicles -Plan to improve the energy behaviour of social facilities	2,3 0,4 0,3 0,3 1,2	-Estimated annual reduction of greenhouse gases (GHG) -Reduction of the annual consumption of primary energy in public buildings -Reduction of final energy consumption in public infrastructures or companies -Length of cycle tracks and trails -Number of users who have access to or are covered by intelligent transport services	418.50 TeqCO2/yr 24,000 kwh/yr 0.01ktep/yr 25.5 km 8,000
TO 6 (urban environment and heritage)	SO 6.3.4 SO 6.5.2	-Landscape, environmental and patrimonial restoration of places of touristic, cultural and environmental interest in natural river areas -Recovery of peri-urban forest spaces for the prioritization of citizen and tourist use -Program for the revitalization and urban valorization of parochial centrality nuclei in the first peripheral crown of the city -Program for environmental and urban improvement of urban spaces in degraded peripheral neighborhoods	0,9 0,56 1,4 2,9	-Increase in the number of visits to places belonging to the cultural and natural heritage and subsidized attractions -Total area of rehabilitated land - Length of cycle tracks and trails	49,295 visits/yr 7.0 ha 5.5 km
TO 9 (social inclusion)	SO 9.8.2	- New social infrastructures through the creation of multipurpose sports spaces and facilities for the practice of traditional sports -Cconditioning and provision of spaces and equipment in the Centro Sud social building, intended for groups that provide social services -Implementation of an equality plan -Childhood Laboratory -Market of new creators through the rehabilitation of commercial spaces to contribute to the commercial dynamization of the old town -Plan to revitalize the Plaza de Abastos as a new recreational-gastronomic space (Food Lab Market) -Promotion of retail trade in the Historic Complex of Pontevedra with the aim of improving its competitiveness	0,7 2,32 0,2 0,2 0,7 0,87 0,05	-People benefited by operations of physical, economic and social regeneration of the environment -Public or commercial buildings constructed or renovated in urban areas	29,320 2,400 m2
TOTAL			**18,0**		

B. North of Portugal

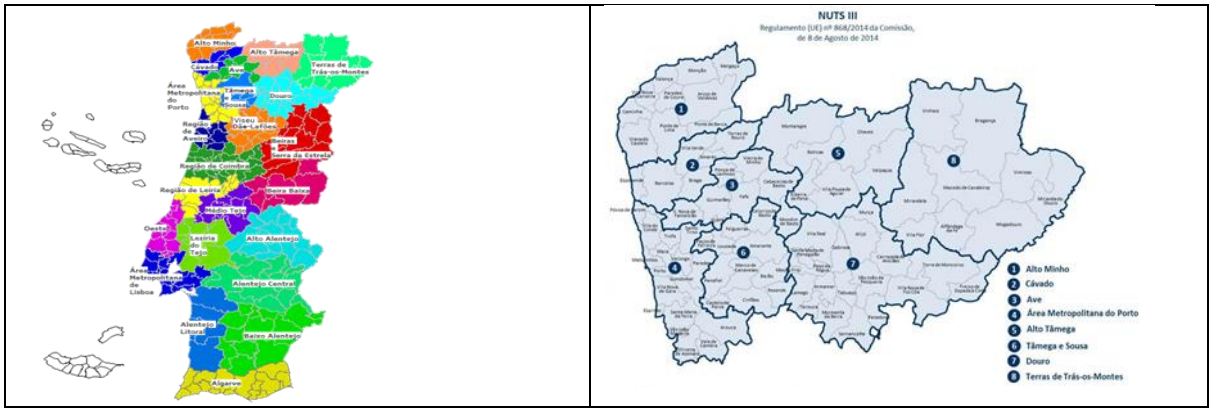
In the 2014-2020 period, efforts were made to reinforce the logic of regional programming at the level of NUTS II and to propose the NUTS III scale (or contiguous NUTS III clusters) as a territorial reference for the realization of Integrated Territorial Investments (ITI), through Pacts for o Territorial Development and Cohesion, without prejudice to the possibility of implementing ITI in

other territorial configurations, aimed at operations in limited and selected domains (example ITI Sea).

Pactos para o Desenvolvimento e Coesão <> ITI

Among the central elements of the territorialization of interventions, the centrality of the urban system defined in Law stands out: Lisbon and Porto Metropolitan Areas. Urban system that structures the remaining regions and Areas of low density markedly rural

The scale of the NUTS III, more specifically its Territorial Development Strategies, also serve as a reference to ensure the strategic coherence of other interventions of a local nature, in urban, rural territories or in the spaces of articulation between the two.



In this way, the creation of a complete and clear sub-regional strategic framework is sought, which guarantees the coherence of interventions, regardless of the way they are implemented (ITI or DLBC), and which allows explicitly assuming rural development, urban development and the development of coastal areas as an integral part of regional development.

In these Territorial Cohesion and Development Pacts - ITI NUT III:
- the main challenges identified were:
  - ✓ Structuring the national urban system and attractiveness of urban areas
  - ✓ Modernization of local public administration
  - ✓ Promotion of low carbon strategies
  - ✓ Environmental protection and adaptation to climate change
  - ✓ Sustainability and quality of employment
  - ✓ Cohesion and social inclusion
- the territories covered: NUT III or contiguous NUT III groups, throughout the national territory
- responsible entity: Intermunicipal Communities (CIM) and Metropolitan Areas (AM)

Across the continental part of Portugal, at the level of NUTS III (or contiguous NUTS III clusters), Pacts for Territorial Development and Cohesion were implemented, using the regulatory instrument of Integrated Territorial Investments (ITI), which cover the interventions of municipal entities and intermunicipal services essential to the implementation of the strategy, with a special emphasis on reorganizing the supply of public and collective services, whether in the area of inclusion or education and training, as well as increasing the quality of the provision of those same

services or services provided directly by municipal and intermunicipal entities, namely through measures that promote administrative modernization and the qualification of these services.

Among the territorial development strategies adopted in Portugal, the following stand out:

Territorial development Strategy	Logo	Number	Value in 1.000 €
Pacts for o Territorial Development and Cohesion	***ITI***	***22***	***1.161.628***
Local Development Strategies	EDL	82	306.200
Strategic Urban Development Plans	PEDU	105	773.971
Urban Regeneration Action Plans	PARU	170	203.096

According to the PT Partnership Agreement and what was approved in the operational programs, the ITI should contribute to the following thematic objectives (TO), Investment Priorities (IP) and Actions typology:

TO / IP / ACTION	DESIGNATION
TO2 /IP 2.3	Improving access to ICT, as well as its use and quality: support for the modernization of local administration
TO4 / IP 4.3	Support the transition to a low-carbon economy in all sectors: support for the use of energy efficiency and renewable energy in public infrastructure, namely in public buildings of local administration, excluding the housing sector
TO5 / IP 5.1	Promote adaptation to climate change and risk prevention and management: support for investment to adapt to climate change
TO5 / IP 5.2	Promoting investments to address specific risks, ensuring resilience to disasters and developing disaster management systems, in accordance with the measures identified in the respective emergency and civil protection plans
TO6 / IP 6.1	Investments in the waste sector (support for municipal or intermunicipal investments when the geography of the intervention coincides with ITI and only for educational and environmental awareness actions)
TO8 / IP 8.3	Promote sustainability and job quality and support worker mobility: support for self-employment, micro-entrepreneurship and business creation
TO8 / IP 8.8	Development of business incubators and support for investment in self-employment, micro-enterprises and business creation
TO9 / IP 9.1	Promote social inclusion and combat poverty and discrimination: support for active inclusion measures for marginalized communities and groups at risk
TO9 / IP 9.4	Improving access to sustainable, high-quality and affordable services, including healthcare and social services of general interest
TO9 / IP 9.7	Investments in social infrastructure and equipment
TO10 / IP 10.1	Investing in education, training and vocational training for skills acquisition and lifelong learning): support for interventions to reduce and prevent school drop-out and promote equal access to education
TO10 / IP 10.5	Investments in pre-school and basic education infrastructures

The 8 ITI approved for the North of Portugal Region, for a total amount of 545 million euros of funding contracted were the following ones:

CIM / AM	Funding contracted (€)
AM Porto	138.769.553
CIM Alto Minho	59.259.458
CIM Alto Tâmega	45.488.663
CIM Ave	60.680.428
CIM Cávado	49.557.045
CIM Douro	67.522.337
CIM Tâmega e Sousa	66.026.861
CIM Terras de Tras os Montes	58.122.943
TOTAL	**545.427.288**

3.2.2.2 ASEV Agency for the Development of the Empolese Valdelsa (IT)

Regione Toscana (Tuscany Region), in accordance with the principles, strategies and objectives outlined by the European Commission and by the Partnership Agreement, in the light of the experiences of the two previous programming periods, has included a specific axis in its ERDF operational programme for the period 2014-2020 dedicated to Sustainable Urban Development, Axis VI Urban Development.

The document "**Guidelines for interventions in urban areas. Urban Innovation Projects (PIUs)** of the ROP ERDF 2014-2020 for Tuscany", approved by the Regional Executive Committee with **Deliberation No. 57 of 26 January 2015**, traces the programme references for the implementation of the urban axis. In particular, the axis "has the objective of pursuing sustainable urban development through an integrated and multi-sectoral approach that enhances the strengths of the city, in terms of opportunities for growth and development, and acts on its weaknesses to overcome critical issues hindering economic and social development".

The Regional Guidelines for interventions in urban areas outline the following characteristics of an Urban Innovation Project (PIU):

- a coordinated and systemic set of operations of tangible and intangible infrastructural nature, whose implementation is intended to achieve the urban development objectives in terms of smart quality (smart city, smart community and smart grid), with a view to social, economic and environmental sustainability;
- it is based on a systemic, multidisciplinary and participatory approach;
- it is implemented through a participatory implementing design process and is an instrument of local development and multidimensional urban regeneration (physical, social, economic, environmental);
- it consists of actions of recovery, regeneration, re-organisation and enhancement of the existing public building heritage, intended also to improve relations with the surrounding urban fabrics or re-composition of urban fringes.

The budget allocated to promote urban development actions is about €46 million, the equivalent to 6% of the total budget of the ROP ERDF 2014-2020.

The selection of the urban areas eligible for the financial support was designed as a two-step process. (i) The first one was based on the analysis and classification of the regional Functional Urban Areas (FUAs) and was conducted by the Regional Institute of Economic Programming (IRPET); (ii) the second step was a competitive selection between the local urban strategies ("Progetti di Innovazione Urbana", PIU, or Urban Innovation Project) submitted by the municipalities belonging to the FUAs which was selected in the first round.

In the Italian statistical and administrative planning literature the FUAs correspond to the areas of the daily commuting for work or the Local Labour Systems; these areas must exceed the demographic threshold of 50 thousand inhabitants for the total area, and 15 thousand inhabitants for the central municipality (nucleus of the commuter movement).

Moreover, in order to further concentrate the interventions, the Municipalities with less than 10,000 inhabitants which are included in the selected FUAs were excluded from the policy scheme, so as the peripheral and outermost municipalities, the internal areas and the municipalities included in the area of intervention of the Rural Development Program 2014-20, the FUA of

Florence which was eligible for the interventions of the National Operative Program "Metro" aimed at intervening in the national metropolitan areas. The process of selection of the 21 regional FUAs identified 14 FUAs (Function Urban Areas).

The 42 Municipal Authorities belonging to selected FUAs were invited to submit their project ideas (PIU) in a Masterplan through an expression of interest (Decree n.3197 of July 10, 2015). For each operation included the Municipalities had to provide a feasibility study and a document which described the participative process with stakeholders, local authorities and organized citizenship.

In the call for expressions of interest for the presentation of Urban Innovation Projects (PIU) 32 eligible Municipal Authorities responded with 21 strategic project proposals for actions in urban areas, some drafted by multiple associated entities, for a total of 223 infrastructure operations.

The Decrees of the Regional Executive Committee Council approved the Partnership Agreements between the Regione Toscana and 10 Municipalities of Prato, Lucca, Rosignano Marittimo, Pisa, Cecina, Empoli, Poggibonsi and Colle Val d'Elsa, Montemurlo and Montale, for the implementation of the respective Urban Innovation Projects. *It is expected that the Programme Agreement for the implementation of the Capannori PIU willl be signed in the first months of 2020*.

Empoli was selected for its PIU project – Home of People and Equality, including 3 operations:

Operation	Total Cost (Million €)	ROP 14-20 (ERDF) M€	Thematic
St Giuseppe Complex	4,391	2,404	Social inclusion, smart library, eco-efficiency, collective spaces
Complex Piazza XXIV Luglio	2,874	2,147	Health care house and solidarity-based condominium
System of open spaces	0,862	0,249	Urban regeneration of historic centre
TOTAL	**8,127**	**4,800**	-

3.2.2.3 Municipul ALBA IUIA (RO)

In 2014-2020 programming period, Romania used three major tools a dedicated axis for supporting sustainable urban development withing the Regional Operational Program, ITI for the Danube Delta region and CLLD (Community-Led Local Development).

Regional Operational Program, Priority Axis 4: Supporting sustainable urban development, with a total amount allocated of **1386.86 million** euros pre-allocated, is the is the successor of the Regional Operational Program 2007-2013 and one of the programs through which Romania is able to access the European structural and investment funds from the European Regional Development Fund (ERDF), in the period 2014-2020. Beneficiaries were 39 urban areas, county capitals.
To access these pre-allocated funds under Axis 4, in the current programming period, the local administrations had to prepare Integrated Urban Development Strategies and Sustainable Urban Mobility Plans, and to identify a list of priority projects to be financed.

Integrated Territorial Investments (ITI) Romania chose to dedicate this tool to the Danube Delta region because it is considered to be a unique area with very specific features: isolated population, economic specialisation and poor access to services. This tool allowed Romania to group funding from several priority axes of one or more operational programmes to ensure the implementation of an integrated strategy for Danube Delta. The Romanian government has allocated 1.3 billion euros to ITI from various operational programmes for a wide range of interventions in this area. In order to access the funding an Integrated strategy for sustainable development of the Danube Delta was prepared.

Community-Led Local Development (CLLD) is an integrated tool that can be used to respond to complex development issues and requires a cooperation of several stakeholders from the public, non-governmental and private sector. To access the funding, the stakeholders have to form local action groups (LAGs).
CLLD aims to develop marginalised areas and involves mobilising disadvantaged communities and local organisations and is an ideal complementary tool for sustainable urban development plans implementation, helping to address targeted issues.

3.2.2.4 LUBELSKIE Voivodeship (PL)

The Ministry of Regional Development delivered a document "Rules of implementing Integrated Territorial Investments in Poland" that became guidelines for preparation and implementation of ITI in Poland. The aforementioned document specified a list of conditions obligatory for ITI implementation:

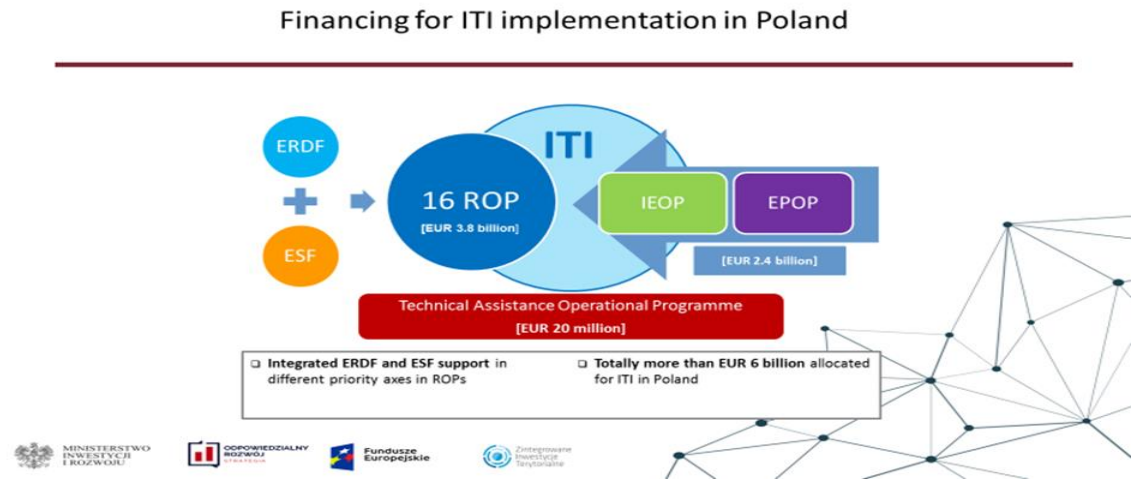
- Institutionalized form of partnership (ITI Authority);
- Preparation of ITI Strategy;
- Adequate institutional capacity;
- Signing agreement concerning ITI implementation in the voivodship (regional level) between ITI and the ROP Managing Authority (ROP MA);
- Including specific provisions in the Regional Operational Programme (ROP) fulfilling criteria of the EC and compliant with the Partnership Agreement provisions;
- Reserving funds for a regional ITI from a basic ROP allocation.

ITI implementation area was specified on a national level based on a document "Criteria of urban functional areas delimitation in voivodship centres". It was assumed that ITI would be suitable for areas including a voivodship city, other cities and towns from a functional area together with reaming communes located within a functional area.

The guidelines presented potential co-operation areas:

- Development of sustainable, efficient transport joining a city with its functional area
- Regaining socio-economic functions for degraded urban functional areas
- Improvement of environment with urban functional area
- Supporting urban Energy efficiency and promoting low carbon strategies
- Strengthening development of symbolic functions creating international character and supraregional importance of urban functional area together with improvement of access to and quality of public services within the whole functional area
- Strengthening research, technological development and innovation.

In practice majority of investments focused on public transport, Energy efficiency, social infrastructure, environmental projects and construction of bike routes. Some of ITIs included also projects for entrepreneurs or support in creation of investment areas.



Example: Lublin and Suburban areas

Based on the Regional Development Strategy 2014-2020 (with a perspective to 2030) they were defined
following operational objectives:

- Developing Lublin's metropolitan functions
- Supporting supralocal functions of cities
- Improving Lublin's connections with metropolitan areas in Poland and abroad.

Strategic Intervention Areas (SIA) were defined in the strategy where interventions should be concentrated to maximize development results and where growth poles should emerge what would positively influence neighbouring areas and give them development impulses. SIAs should focus on existing potentials and transform them into competitive advantages. Sustainable use of resources is the main way of securing long-term growth therefore building a wide co-operation schemes is crucial.

Two of SIAs were solely focused on urban areas – Lublin Metropolitan Area and Subregional Cities. In both cases areas were defined with specific criteria for boundary delimitation and the main objectives for support were presented. In the case of Lublin, they focused among others on improving transport links, developing scientific and cultural institutions and conducting revitalization. Subregional cities should also focus on their transport links, carry out revitalization and mostly use their indigenous potential.

ROP allocation for ITI in the Lublin Functional Area

Fund	Indicative amount of the ERDF support for sustainable urban integrated actions under Article 7(2) and the indicative allocation of ESF support for integrated actions	Share of column 2 of the total allocation of the Fund to the operational programme
ROP 3 April 2020		
Total ERDF	107 270 543	6,69 %
Total ESF	16 124 622	2,57 %
TOTAL ERDF+ESF	**123 395 165**	**5,53 %**

ROP allocation for subregional cities

Priority Axis	Fund	Estimated allocation (EUR) – Version dated 12 February 2015	Estimated allocation (EUR) – Version dated 3 April 2020
2 Digital Lubelskie	ERDF	160 000.00	1 304 754.00
3 Competitiveness of enterprises	ERDF	32 710 000.00	6 335 595.00
4 Environment-friendly energy	ERDF	220 000.00	
5 Energy efficiency and low carbon economy	ERDF	12 910 000.00	12 366 447.00
6 Environment protection and efficient use of resources	ERDF	1 070 000.00	
7 Protection of cultural and natural heritage	ERDF	6 350 000.00	15 725 625.00
9 Labour market	ESF	1 350 000.00	740 599.00
10 Adaptability of enterprises and employers to changes	ESF	1 110 000.00	
11 Social inclusion	ESF	2 830 000.00	319 495.00
12 Education, qualifications and competences	ESF	1 477 000.00	
13 Social infrastructure (including urban regeneration)	ERDF	3 020 000.00	11 373 428.00
Total		**63 207 000.00**	**48 165 943.00**

ITI of Lublin Functional Area

ITI Strategy is a document presenting a coherent set of different activities aimed at long-term improvement of social, economic, environmental and demographic conditions of the functional urban area. It specified objectives, development directions, co-operation rules and the important activities and planned undertakings.

The overall objective is the improvement of social, economic and spatial cohesion in the Lublin Functional Area.

The development objectives were defined as:
-Increasing quality and accessibility of education, labour market, social inclusion and innovativeness in the Lublin Functional Area.
-Increase of transport mobility, low-carbon economy together with preservation and promoting natural heritage in the Lublin Functional Area.
-Acceleration of sustainable development through spatial and social revitalisation using information and communication technology in the Lublin Functional Area.

List of projects for ITI Lublin Functional Area, in € Million

Name of the project	Estimated Total cost	Priority Axes of ROP LV	Partners	Short description
E-communes in the Lublin Functional Area	1	Digital Lubelskie	4	Introduction of new services available on-line, digitalization of documents
Mobile Lublin Functional Area	21	Energy efficiency and low carbon economy	12	Construction of transport hubs, park & ride lots, bike routes, buses for public transport, enery-efficient lighting
Construction, modernization of bus stops and transport hubs integrated with other transport means within the Lublin Functional Area	9.5	Energy efficiency and low carbon economy	City of Lublin	Construction of transport hubs, park & ride lots, bike routes, buses for public transport

Name of the project	Estimated Total cost	Priority Axes of ROP LV	Partners	Short description
Integrated Transport Hub for the Lublin Functional Area	44.8	Energy efficiency and low carbon economy	City of Lublin	Construction of the biggest transport hub in the Lublin Functional Area and in the whole area, next to existing railway station
Environmental revitalisation of the People's Park located within the vicinity of the Integrated Transport Hub	2	Protection of cultural and natural heritage	City of Lublin	Revitalisation of the already existing park which is located in the close vicinity to planned integrated hub and close to the river Bystrzyca; currently area a little abandoned
Green Lublin Functional Area	5	Protection of cultural and natural heritage	5	Revitalisation of green areas in chosen communes being a part of the Lublin Functional Area; bike infrastructure, recreational facilities etc.
Optimization of transport connections between express road s17/12 and the Airport through construction of Kusocinskiego street	6	Regional mobility and ecological transport	Swidnik	Construction of a road
Improvement of spatial, social and cultural cohesion of the Lublin Functional Area through revitalisation	7.8	Social infrastructure	9	Revitalisation activities in several communes being a part of the Lublin Functional Area: creation of social infrastructure, creation of new premises for economic activities
Revitalization of the part of the Lublin city centre.	13.5	Social infrastructure	City of Lublin	Revitalisation of the main square in the city of Lublin

Strategic Territorial Investments in subregional cities. STIs are implemented in four subregional cities: Biala Podlaska, Chelm, Pulawy and Zamosc. As mentioned previously they are identified as strategic intervention areas in the regional development strategy and their development is crucial for the whole region.

3.2.2.5 PILSEN (CZ)

ITI in CZ	Population	No. of Core / Statutory Cities in Metropolitan Area	No. of Municipalities in Metropolitan Area
Prague	2 000 000	2	515
Ostrava	990 000	5	233
Brno	610 000	1	167
Usti-Chomutov	520 000	5	75
Olomouc	440 000	3	230
Hradec Kralove-Pardubice	330 000	2	145
Pilsen	310 000	1	117

ITI in number of 7 are implemented through integrated territorial strategies. The above-defined metropolitan area / agglomeration submitted one integrated territorial strategy based on partnership approach in region for the approval and implementation.

The main themes linking the core cities of agglomerations with their functional hinterland include transportation, labour market, interconnection of research capabilities and utilization of their outputs in practice, innovation and entrepreneurship, and the environment, including technical

infrastructure. Further the field of public services could be solved (mainly social, health and education services). Integrated territorial investments are mainly focused on the implementation of larger, strategic projects that have a significant impact to the respective territory. Smaller projects will be supported by as well, if they properly complement the larger projects to achieve the desired synergy effects.

These metropolitan areas contribute more than 55% of the country's GDP, they contain more than 45% of the population, and the agglomerations are of key importance for the Czech Republic in terms of economic growth and international competitiveness. The highest order functions are concentrated here (e.g. administration, financial sector, science, research and development, higher education, infrastructure, culture and management structures). An important trend in the development of their spatial structure consists of intensive suburbanization, but with a number of negative consequences, which affect their overall development.

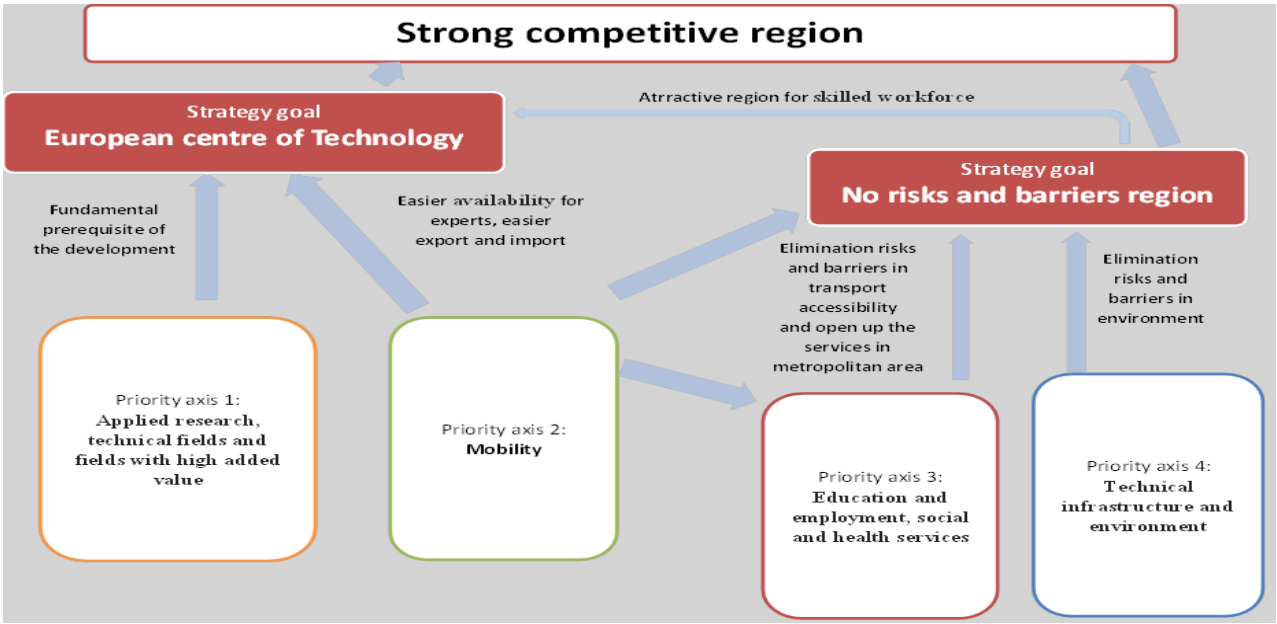
The Integrated Plans for Territorial Development (IPTD) are specific plans for a sustainable development of towns in the Czech Republic. The plans can be implemented (but they are not mandatory) in České Budějovice, Jihlava, Karlovy Vary, Liberec, Mladá Boleslav and Zlín, and their facilities. Mladá Boleslav is an important industrial centre and a major source of growth of economy in the Czech Republic. The other 5 towns[67] are important regional agglomerations that are characterized as regional growth poles and a natural catchment area. In these areas it is essential to focus on interventions to create the necessary infrastructure that is essential for the follow-up development and without which there is a threat that the actual regional centre, and the surrounding region, would lag behind.

Fund	Indicative allocation of resources at the national level on integrated activities for sustainable urban development (EUR)	The share of the total allocation for the fund (%)
ERDF	min. 2.26 bilion EUR	18.9%
(ESF)	min. 0.148 bilion EUR	4.3%

Positive aspects: Strengthening the role of cities; Cities take into account the needs of their territory; Cities address the problems beyond their administrative boundaries (use of FUA concept); Cooperation of agglomeration/metropolitan areas; Exchange of experience; Partnership principle; Realization of strategic projects (but not only).

Example: Pilsen

[67] České Budějovice – sídlo samosprávného Jihočeského kraje, Jihlava – sídlo samosprávného kraje Vysočina, Karlovy Vary – sídlo samosprávného Karlovarského kraje, Liberec – sídlo samosprávného Libereckého kraje a Zlín – sídlo samosprávného Zlínského kraje) a statutární město Mladá Boleslav.



3.2.2.6 NICOSIA (CY)

1.Hocare Project: (Interreg Europe): Delivery of Innovative solutions for Home Care by strengthening quadruple-helix cooperation in regional innovation chains, Programming Period: 2014-2020.

The aim of the project was to positively influence efficiency and impact of Structural Funds. It has additionally three thematic sub-objectives related to the natural generation of innovation for Home Care in regional innovation chains. The first sub-objective is to focus on generation of innovation through addressing unmet needs identified by stakeholder groups in quadruple helix model means by formal careers (i.e., hospitals, social houses, elderly houses) and informal carers (i.e. family members). The second sub-objective is to focus on generation of innovation through public driven innovation processes and the third sub-objective is to bring innovative Home Care solutions quicker to the market by using, again, quadruple helix approach.

Specifically, for Cyprus – further funding from Structural funds: Establishment of Home Care Services e-platform

The aim is to digitally transform the Home Care Service workflow to support innovation through the quadruple helix approach method. The proposed solution will empower the government (Nurses, Doctors and Caregivers), businesses (Healthcare Private Sector), citizens (Patients or the Elderly) and Academia to improve, in terms of efficiency, quality of service and cost effectiveness, and scale out @Home Care services. The general project's objective is to facilitate the easier, faster, smoother and more qualitative provision of home care services to those in need by the Ministry of Health.

2.Acquisition of an integrated information system for the Municipalities of Cyprus

Programming Period: 2014-2020 (Structural Funds). Establishment of a unique central system for e-government on national level. Every municipality will be able to be linked and use this tool and furthermore develop its individual e-services according to the local needs.

3.Project Title: COproductioN with NaturE for City Transitioning, INnovation and Governance (Acronym: CONNECTING) Programming Period: 2014-2020

The overarching objective of CONNECTING is to position Europe as a global leader in the innovation and implementation of nature-based solutions. The project partners will form a community of cities fostering peer-to-peer, transdisciplinary capacity-building between front-runner, fast-follower and multiplier cities within a 'transitioning, innovation and governance academy'. This academy will co-develop the policy and practices necessary to scale up urban resilience, innovation and governance via nature-based solutions. An open innovation ecosystem approach bringing together city governments, SMEs, academia and civic society will be used to co-produce usable and actionable knowledge in all cities. CONNECTING will provide the reference framework for a new generation of urban nature-based solution processes and empower transitioning ambassadors who will globalise this approach through a strategy targeting multiplier cities. This novel approach, coupled with the high capacity of the consortium, makes CONNECTING an exciting prospect. In addition, linking all open-sourced data to the OPPLA platform will ensure perpetuation beyond the end of the project.

For the Case of Nicosia, we have developed an urban Network of open and green spaces in the district of Nicosia connecting them with an integrated bicycle and pedestrian network using as a core the National Forest Park of Athalassa.

Cyprus projects **'000 Euros**

PROJECT	TOTAL COST	ERDF	NATIONAL
Homecare	400	340	60
Integrated info system for Municipalities	2 410	2 048	362
Connect	213	181	32
TOTAL	**3 023**	**2 569**	**454**

3.2.2.7 ATLANTIC CITIES (FR)

The Brittany region, as managing authority for the major part of European funds, has strengthened this partnership by providing the territories European funds dedicated to local development.

Britany region develops a local form of agreement and delegation of European Regional Development Funds (ERDF) through the so called "ITIS" (integrated territorial investment).

Integrated Territorial Investment (ITI) is a new European instrument created to promote the use of European credits for the benefit of multi-sectoral development strategies and partnerships, at the level of coherent local territories. . This tool thus makes possible to mobilize support from the European Regional Development Fund by combining several axes of Brittany Operational programme for the 2014-2020 period.

The delegation of European Regional Development Funds operates through two territorial divisions called "Métropole" and "Pays". Brittany region counts with 2 "Métropoles" and 21 "Pays". Two forms of governance which federates groups of municipalities. These territorial divisions operate as an intermediary body in the framework of a common development project to support and meet at local level ERDF objectives. The delegation is forged under an agreement between the Brittany region and the "Métropoles" or the "Pays". The region regulates the conditions of implementation. In particular, this common project supports under a common envelope different kind of actions.

Example. Pays de Guingamp has counted with an indicative envelope of 2.695.524 € for 2014-2020 programming period and it was supported 4 types of actions:

- → Digital uses and culture: € 171,429
- → Renewable energy production devices from biomass: € 178,571
- → Energy rehabilitation of the social housing: € 345,524
- → Development of inter and multi-modality: € 2M.

The Pays de Guingamp therefore provides leadership, information and the selection of operations to implement the territory's strategy set out in the Europe / Region / Country partnership contract. The main role of the intermediary body is to ensure the coordination, information and selection of operations to put in place.

To this end, the "métropoles" and the "pays" are responsible of providing information to potential beneficiaries and supporting project leaders in the preparation of their request. A Selection Committee, set up at the local level, is responsible for examining and selecting projects requesting support from the ERDF at with regard to the development axes of the metropolitan contract and the Brittany Operational Programme.

Example. Two examples of planned projects by Brest Métropole: le téléphérique Siam – Capuccins (4M€ ERDF) from a provisional ERDF amount of 10 million euros for the OP 2014-2020.

In Bretagne region, the ITIs mobilize axis 1 (digital) for action related to digital uses and axis 3 (energy and ecological transition) for actions related to renewable energies, the rehabilitation of housing and sustainable mobility. The mobilization of axis 1 on digital uses is mandatory. European regulations require that an ITI concerns at least two axes of the OP, and only action relating to digital uses can be mobilized within the framework of the ITI.

ITI FUNDING REQUESTED TO EC

ITI	2 Metropolises (urban)	21 Pays (rural)
ERDF Axis 1		4M euros
ERDF Axis 3		34M euros
TOTAL	26M euros	38M euros

3.2.2.8 RIGA (LV)

Delegation Agreement between the Ministry of Finance and Municipality of Riga on ensuring the selection of applications for integrated territorial investment (ITI) projects, Municipality of Riga shall ensure the selection of project applications for ITI. The objectives are:

- ✓ *To promote increase in energy efficiency in municipal buildings in accordance with the integrated development programmes of municipalities*;
- ✓ *To preserve, protect and develop important cultural and natural heritage, as well as to develop related services*;
- ✓ *Revitalization of areas through regeneration of degraded areas in accordance with the integrated development programmes of municipalities;*
- ✓ *To improve study environment of general education institutions*

Example:

Skanstes Neighbourhood revitalización. The overall goal of the project is to revitalize Skanstes neighbourhood degraded area, promoting environmentally friendly and sustainable growth of the area's economic potential and creation of new jobs. The specific goal of the project is to build new streets with engineering communications under them, creating a well-connected neighbourhood with other parts of the city with a regional / national sports, entertainment, conference and cultural event centre, complemented by balanced business buildings with high-quality offices and high-quality jobs, maintaining a pleasant, diverse and balanced environment. Project results: a) At least 130 new jobs created; b) brownfields of at least 19 ha revitalized; c) private investments, at least EUR 10,261,699.00 attracted.

3.2.2.9 CROSS-BORDER

Two examples of Cross-Border ITI's included in the **Cross Border programme Italy-Slovenia.**

2 ITI Projects, were approved in 2017 with acronyms "Isonzo-Soča" and "Salute-Zdravstvo". These unique projects are implemented in the framework of the Integrated Territorial Investment of the cross-border area of EGTC named "GECT GO / EZTS GO", which includes the Municipalities of Gorizia (Italy), Nova Gorica (Slovenia) and Šempeter-Vrtojba (Slovenia).

The Soča or Isonzo is a 138-kilometre long river that flows through western Slovenia and northeastern Italy. An Alpine river in character, its source lies in the Trenta Valley in the Julian Alps in northwestern Slovenia, at an elevation of 876 metres (2,874 ft).[1] The river runs past the towns of Bovec, Kobarid, Tolmin, Kanal ob Soči, Nova Gorica (where it is crossed by the Solkan Bridge), and Gorizia, entering the Adriatic Sea close to the town of Monfalcone.

Project summary (Isonzo-Soča)

The goals of the project are the conservation, protection, recovery and development of the natural and cultural heritage of the cross-border area along the Isonzo-Soča river, as a homogeneous tourist-recreational destination. A network of pedestrian and cycle paths and tourist-recreational infrastructures will be set up, as well as an integrated communication and promotion plan. By 2021 substantial infrastructure works will be carried out, which will improve the usability of the area and increase its attractiveness for citizens and tourists.

Project summary (Salute-Zdravstvo, Gorizia – Nova Gorica)

1. **CUP**: cross border health services;
2. **Mental health**: publication of the call for projects "individual health budget", cross-border agreement and training course for workers who are not responsible for mental health issues;
3. **Autism**: training course on the ESDM method, medical protocol for the treatment of autistic children and adaptation of rooms in Gorizia for the operation of integrated teams;
4. **Normal pregnancy**: cross-border agreement;

5. **Social inclusion**: training event, three thematic workshops and start of work for the construction of an info-point in Gorizia.

Italy - Slovenia

ITI	Population	Partners (1)	Thematics
Isonzo - Soca	**53.729**	**Gorizia IT** **Nova Gorica SLO** **Šempeter-Vrtojba SLO**	Construction, of a cross-border network of cycle and pedestrian paths along the Isonzo river and along the State Border that connects Salcano to Šempeter-Vrtojba.
Salute-Zdravstvo	**53.729**	**Gorizia IT** **Nova Gorica SLO** **Šempeter-Vrtojba SLO**	Establishment of joint cross-border medical teams in the field of mental health, autism and normal pregnancy, as well as the creation, on an experimental basis, of a Single Centre for cross-border (in Zdravstemi Dom – SLO) reservations. In the perspective of integration with the social-assistance sphere, the project dedicates a pilot action to cross-border services and interventions for the inclusion of vulnerable groups in the population.

B. 2021-27 Programming period

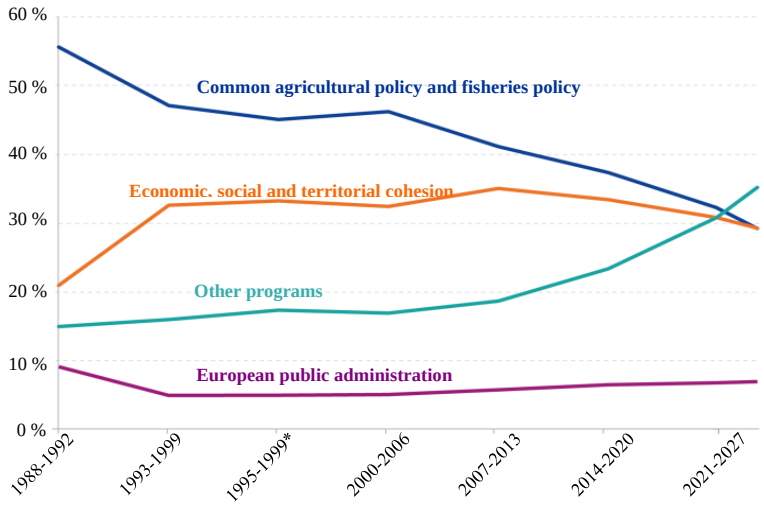
The 27th May 2020 EU Commission proposal - The revised Multiannual Financial Framework (MFF) for 2021-2027 is reinforced through a Recovery Instrument that can fill sectoral and regional financing gaps, irrespective of the country they stem from. The creation of a Recovery Instrument linked to the EU budget of €750bn (Next Generation EU), equivalent to around 5¼ % of annual EU GDP, to the EU's capacity to finance the recovery.

This is the result of the normal cycle of EU funding including a response to the serious economic and social crisis caused by the measures taken to end the Covid 19 pandemic.

For the next programming period strategies in urban areas will be promoted through an integrated and place-based approach to territorial development, where integration means multi-sectoral policy, multi-level and multi-stakeholder governance, and multi-territorial and community-led strategy (Commission proposal for 2021-27). This is the proposal of the European Commission that has been agreed during the negotiations between Commission – Parlement – Council of the EU in December 2020.

During negotiations the SUD – Sustainable Urban Development allocation was increased to **8%** changing the Commission proposal presented below

As usual it was a long process of negociations started with the first Commission proposal of May 2018, but confirms in real terms the tendency observed in the last programming periods as described below



* Adjusted for the 1995 enlargement

With the new proposal from the European Commission presented to the European Parliament on 27 May 2020[68], the general framework of proposals until the agreement was reached can be summarized as follows.

Evolution of MFF, in Billions of Euros, 2018 prices

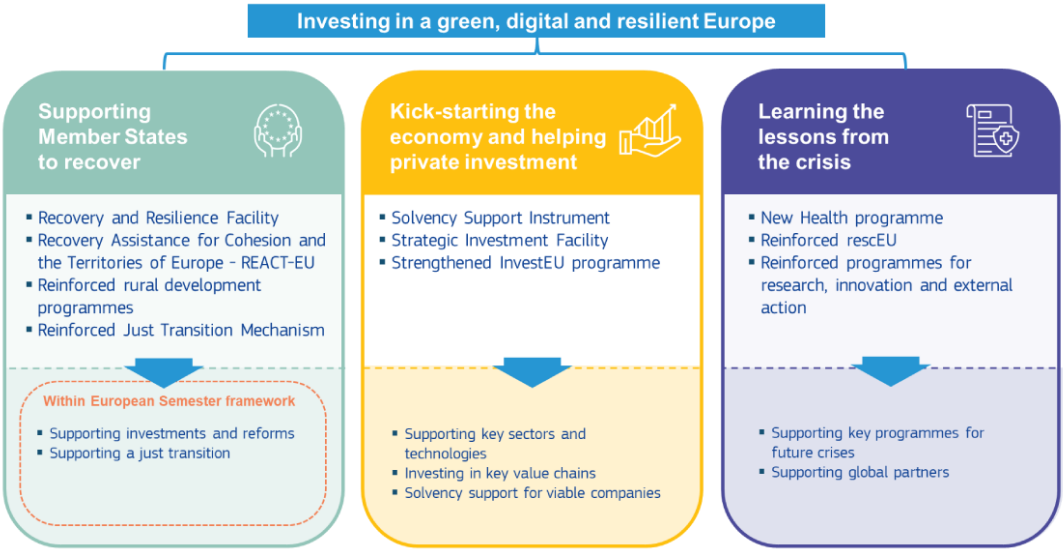
	2014-20[69]	**Proposal COM May 18**	**Proposal of EP[70]**	**Proposal COM May 20**
Multiannual Financial Framework	1.082[71]	1.279[72]	1.324	1.850
% of EU GNI 27	1,0	1,114	1,3	2,0

With this new proposal, the European Commission proposes to reinforce the EU Budget for the coming years, with the aim of immediately repairing the unprecedented economic and social damage due to the health crisis, placing the total amount of new credits for EU recovery effort in around 2,4 Billion Euros

	Billion Euros
Multiannual Financial Framework	1.100
Loans package -SURE 100 Bn € - European Stability Mechanism 240 Bn€ -EIB : Support to SME 200 Bn€	540
Next Generation EU (temporary backup)	750
TOTAL	**2.390**

[68] https://ec.europa.eu/info/sites/info/files/communication-europe-moment-repair-prepare-next-generation.pdf
[69] https://op.europa.eu/en/publication-detail/-/publication/d2cf202e-f36a-45b2-84e7-1ac6ad996e90
[70] https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/646131/EPRS_BRI(2020)646131_EN.pdf – 2018 prices
[71] Commitment credits - EU 28
[72] 1,100 billion MFF + Development Fund (ACP countries).

The innovative part of this package concerns the Next Generation EU, that will be launched on 3 pillars, through 500 billion in subsidies and 250 billion in loans to member states (all to be repaid over a long period in future EU budgets, not before 2028 and no later than 2058) and within the framework of European programs:



Source: European Commission

4. FINDINGS & RECOMMENDATIONS

Previous chapters on Thematic and Role of EU funding showed the positive evolution of EU Urban Policy on the ground, the existing gaps, and the different approaches. They showed as well how much is still to be done to improve this policy. This analysis is even more relevant in the context of the search for the improvement of future policy instruments aiming at a more effective and efficient resolution of urban problematics which are more and more complex as concentration of population develops in urban and coastal areas along last decades.

The next tables summarise the main strengths and opportunities as well as weaknesses and threats that should be addressed to support project proposals and actions with potential to successfully contribute to a correct management of EU Sustainable Urban Development. And finally, this chapter makes a set of recommendations to improve the Policy, taking into account the "transformative power of cities" as mentioned in the New Leipzig Charter, adopted on December 2020.

4.1. Synthesis of strengths, opportunities, weaknesses and threats

4.1.1 Strengths and opportunities

Urban Resources Efficiency

Thematic	Strengths	Opportunities
Sustainable land use and urban renewal	The use of available soil is vital for people's habitat, economic activity and mobility	A correct planning of the use of soil is a pre-condition to respond to people's living quality and a sustainable economic development
Water	Without adequate (quantity and quality) water supply urban areas cannot survive	Water supply is a pre-condition for urban development and economic attractivity
Waste	EU waste legislation is driving considerable improvements in waste management. Improving waste management leads to a healthier life, to reduce environmental issues and to reduce the CO2 emissions and to keep the waters and air clean. Improved waste management system helps to reduce greenhouse gas emissions, reduce health and environmental problems, reduce greenhouse gas emissions and minimize negative impacts at local level such as landscape deterioration due to landfilling, local water and air pollution, as well as littering. Waste can be recycled and therefore reduce pollution in the underground water sources. Waste can be recycled and therefore reduce pollution in the underground water sources.	priority objectives for waste policy in the EU: - To reduce the amount of waste generated; - To maximize recycling and re-use; - To limit incineration to non-recyclable materials; - To phase out landfilling to non-recyclable and non-recoverable waste; - To ensure full implementation of the waste policy targets in all Member States. Waste recycling is a source of sustainable development and Jobs creation
Urban renewal	To dericlited soils and constructions in urban areas can be given new useful and sustainable uses	Dericlited areas can be a source, by renewal, of new housing, economic activities, social spaces, and create new jobs
Energy Transition	Energy efficiency Measures for housing, transportation, public offices and other economic activities can reduce energy consumption	Energy efficiency Measures and the use of renewables can impact positivelly on jobs 'creation in urban areas
Sustainable urban mobility	In Europe, guidelines and best practices could already be used for the preparation of efficient sustainable urban mobility plans (SUMPs) in any cities. Moreover, multimodal and new mobility	A new phase should come up by engaging structural policies supported by public-private partnerships – multimodality and electrification – to accomplish a true

	services are locally implemented, particularly in bigger cities. In terms of technologies, intelligent transportation systems are already deployed (traffic, public transport) and their outcomes well identified. European cities have also rather well rolled out mass transit solutions such as tramways.	transition towards sustainable urban mobility. The forthcoming European Green Deal should offer a new strategic framework to reach sustainable targets, particularly zero-emission vehicles. Besides, the new Directive on the Deployment of Alternative Fuel Infrastructure will be decisive for electrification (charging infrastructure). The current debate on urban planning is oriented towards an ideal city where all the services are available in a time distance of 15 minutes, by walk, bike or public transport. This imply a renewed attention to urban planning which tries to reduce the mobility and at the same time promoting a kind of place-based solution to the needs of the citizen.

Environmental Management Performance

Thematic	Strengths	Opportunities
Air and Noise quality	Control and monitoring of air and noise pollution can reduce this one and improve people's health and quality of life	Increase of use of new and more healthy means of transport
Climate adaptation	The awareness and planning of Measures to mitigate impact of sea raising level on coastal areas, and to control unpredictable floods on river basins, can save lives, reduce negative impact on social and economic patrimony and save jobs.	Correct implementation of urban and regional plans and the use of existent technologies to mitigate the threats can be an opportunity for urban renewal and new constructions in safe areas, creating as well jobs opportunities.
Social inclusion	EU is facing social exclusion enforced with COVID 19 social economic impact, and is aware and proposing measures to mitigate it.	Creation of employment possibilities (like local economy initiatives), social housing, education and other socioeconomic initiatives, it can be a source of integration by the economy: creating new activities and jobs (including self employment).
Governance for sustainable urban development and Participation	The UN's 2030 agenda for sustainable development implies clear strategic goals and targets (SDGs), with a sense of urgency. In Europe, appropriate indicators are now available for monitoring local policies as well as guidelines for the preparation of voluntary local review (VLR). As a result, cities have hence a standard framework to support a holistic and integrated vision, engaging multi-level governance at urban functional scale. Besides, citizens request to be more engaged into deliberative processes.	A shift to smart cities offers a real opportunity to monitor the urban flows thanks to open-data collection in a range of domains. In Europe and worldwide, open-source urban data platforms are promoted by organisations. Helping visualise, monitor and support public decision-making through a holistic and integrated vision, they also provide transparent information to civil society (businesses and citizens). Civictechs foster citizens' engagement but deliberative mini-public debates might become a major trend.

Green Growth and Eco-innovation

Thematic	Strengths	Opportunities
Green Growth and Eco-innovation	Greater efficiency in use of natural resources; unlocking opportunities for eco-innovation and value creation; opening up of new markets by stimulating demand for green goods, services and technologies; nature based solutions for urban communities to be sustainable in both coastal areas (coastal resilience) and elsewhere.	Fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. Natural based solutions can help to create new jobs and economic growth through the manufacture and delivery of new products and services which enhance the natural capital rather than deplete. Eco-innovation can have an estímate annual

	turnover of €227 bn (2,2% of EU GDP) and employs directly 3,4 million people.

Circular Economy

Thematic	Strengths	Opportunities
Circular Economy	Circular economy means waste reduction in several production sectors, recycling and re-use, creating a residual safe disposal. But the circular economy will only grow properly if translated into short circuit actions: it starts in a district then spreads to the municipality, then the city or metropolis and regional level, before extending to the national and international level. This means that Cities and Regions takee responsibility for a rational and efficient use of their own resources while coordinating between each other and the lower levels. Using innovative technologies and resource efficiency improvements along all value chains could reduce material inputs in the EU by up to 24% by 2030. Switching to a circular economy in the food, mobility and built environment sectors is estimated to generate a prospective reduction in greenhouse gas emissions of 48% by 2030 and 83% by 2050 compared with 2012 levels. The annual net benefits for EU-27 businesses from implementing resource-efficiency/circular economy measures such as waste prevention, the recovery of materials, changing procurement practices and the re-design of products are estimated to range from EUR 245 billion to EUR 604 billion, representing an average of 3–8% of annual turnover. The European Commission's impact assessment on a legislative proposal on waste found that increased recycling/preparing for reuse targets for municipal and packaging waste, in combination with reduced landfill could result in the creation of up to 178,000 new direct jobs by 2030 .	The recycling phase should give the opportunity to make a product with a better quality or for a better environmental value than the original (i.e. upcycling); which means creation of new sustainable activities and jobs, and a positive impact on the local authorities' budget. A circular economy approach improves resource security and decreased import dependency, reduces environmental impact: including a drastic reduction in greenhouse gas emissions. It also offers economic benefits: including new opportunities for innovation and savings related to improved resource efficiency and social benefits: from new job creations to changes in healthier consuming behaviours.

4.1.2 Weaknesses and Threats

Urban Resources Efficiency

Thematic	Weaknesses	Threats
Sustainable land use and urban renewal	Urban sprawl is still too extended in many Cities to accomodate growing population.	The increase of urban sprawl in suburban areas of Cities is a threat for future settlements, delivery of appropriate infrastructures, and for the use of soil in a sustainable way for needed economic activities like agriculture.
Water	Many urban systems still not responding to efficient use of scarced water available.	Lack of water for urban areas if not correctly planned.
Waste	Even though the waste management constantly improves, according to the European Commission, altogether, the EU produces up to 3 billion tons of waste every year. And most of it is not yet recycled. Municipal waste represents only around 10 % of the total waste generated in the EU, but it is one of the most complex streams to manage due to its diverse composition, its large amount of producers and fragmentation of responsibilities	Waste not recycled and put in landfills can be a threat for underground water supply sources. And a threat for public health. Plastic waste has grown exponentially in a few decades. The low share of plastic recycling in the EU means big losses for the economy as well as for the environment. It is estimated that 95% of the value of plastic packaging material is lost to the economy

		after a short first-use cycle. Only 42% of plastic packaging being recycled in 2017.
Urban renewal	Not yet everywhere there is a counsciousness and enough investment and planning to use this instrument.	Not using appropriate planning and renewal can contribute to increase unsustainable urban sprawl
Energy transition	Not yet everywhere there is a counsciousness to implement energy efficiency measures	In a situation where energy efficiency is not used in a large scale, and in a real scenario of energy consumption increasing, there is a threat to keep using energy on the basis of energy production based on fossiles.
Sustainable urban mobility	In cities, a silo-based organisation could hinder transports integration towards multimodality. In small and medium sized cities, private cars are still massively used and SUMPs could better include them in policies: urban vehicle access, parking management or road safety (with active mobility). To compete with private cars and not public transport, new-shared mobility services don't have today dedicated lanes. In small and medium sized cities, light-railed solutions deployment is rather expensive. Regarding public procurement, European industry is not yet well adjusted to compete with Chinese companies in the electrified buses market.	A lack of public leadership could lead operators to push certain solutions or technologies out of the general interest. About multimodality, the necessary transportation integration could be hindered if systems are not interoperable. Regarding business models, new mobility services are still struggling and public-private partnerships are not yet mature. Investments could be huge, and particularly with mass transit systems or even charging infrastructure. In Europe, many cities don't even have enough budgets to implement SUMP. Lastly, people's mobility preferences could depend on global issues, such as oil price.

Green Growth and Eco-innovation

Thematic	Weaknesses	Threats
Green Growth and Eco-innovation	A large Number of European Cities are poorly represented in nature based solutions research, innovation and demonstration programmes in particular major Cities.	Natural assets are not infinite. If nothing is done the limited natural resources will suffer and there is a risk for their adequate availability for human's future well-being.

Circular Economy

Thematic	Weaknesses	Threats
Circular Economy	Only a few big Cities in Europe took conscious of the need to implement an overall Circular Economy Plan from Tri-Collection-Recycling-Re-use of waste. Current patterns of linear economic activity depend on a permanent output of materials that are extracted, traded and processed into goods, and finally disposed of as waste or emissions. This model ignores the high economic, environmental and social costs related to the extraction, transformation and disposal of resources, and is therefore unsustainable in the long term (lack of availability of natural resources). A circular economy is not something that any single institution or company can do alone. By its very nature, circular economy needs connections across individual stakeholders and sectors.	If a majority of European Cities, alone or in an integrated way with their neighbours, do not implement a Circular Economy Plan, there is a risk of increasing of waste not recycled, an increase of landfills surface to stock waste (some of it very dangerous for underground water sources pollution) and a negative impact on local Authorities budgets. In times of decreasing resources and growing responsibilities, many cities and regions are understandably sceptical towards what seems to be yet another buzzword.

Environmental Management Performance

Thematic	Weaknesses	Threats
Air and Noise quality	Most of the pollution affecting air comes from energy use and production, burning fuels release harmful gases and chemicals into the air.	Lack of consciousness on control and monitoring, together with the absence of measures to mitigate it, there is a risk for

	With the development of industry and the increase of energy production and consumption, air quality has deteriorated considerably. The considerable increase in road traffic **and maritime transport** has also led to an increase in air pollution which can lead to serious health problems. Noise It is a product of transport and industrial activity on land, in the air, on waterways, and on oceans. It is a pervasive pollutant that directly affects the health and well-being of exposed humans and wildlife. It is estimated that 125 million people are affected by noise levels from road traffic greater than 55 decibels (dB) .	public health and therefore for families and public budgets.
Climate adaptation	Not everywhere there is a real awareness of risk, with planned mitigating Measures and organisation	Not implementing mitigating plans there is a considerable risk for human, economic activities losses, along with jobs impacted.
Social inclusion	Social exclusion - EU 27 population at risk of poverty rate is 16,8% (more than 75 million people) with a small diference between sexes (but 27% are children) and has been growing since 2010. This rate varies from Country to Country. This situation related to 2018 (last info from Eurostat) will be much worst necessarily after COVID 19 socio economic impact.	If no Plans and implementing Measures exist to fight social exclusion, there is a risk of its increase in the next years, with all the consequences for thoses populations and a real threat for social cohesion (violence, insecurity, etc) in particular in major cities.
Governance for sustainable urban development and Participation	In Europe, cities don't have the same level of power to take strategic actions, depending on Regions and State, implying much more bureaucratic transactions. Primarily based on municipalities, urban institutions are yet politically fragmented and their administrations still work in siloes. As a result, setting up an urban data platform previously needs to streamline organisation or engage stronger cooperation. It also needs a large deployment of digital infrastructure that could be problematic in smaller cities. The citizens' participation must be fair and it is a difficult task (civic lottery).	At all levels, political leadership is crucial to reach the objectives. There is a risk that SDGs finally lead to a rough statistical calculation by the state to publish its voluntary national review (VNR), and without implying a governance change. As regards urban data platforms, the market is still weak and needs to be oriented towards open-source solutions, supporting interoperability. Decision-making should not only be based on big data algorithms but also true citizens' engagement and at the suitable territorial scale.

4.2. Recommendations for the future of EU Urban Policy

In this chapter we focus on 4 main groups of recommendations:

A. How future EU Urban Policy should look like
B. Recommendations for each one of the urban policy thematic
C. Financing
D. governance

A. How future EU Urban Policy should look like

With the adoption of the 2030 Agenda, a clear judgment was expressed on *unsustainability* of the current development model, not only on the environmental level, but also on the economic and social level. An integrated vision has emerged - without distinction between "developed" and "developing" countries.

Environmental sustainability must be understood as a transversal reference framework of the cohesion policy not only as an important element for safeguarding the natural resources and ensure a development process which is compatible with the challenges of Change Climatic, but also as a real driving force of the regional growth. The new cohesion policy, in accordance with each regional planning process, will have to mark a "green deal", an agreement/pact that the Regions not only signs with Europe but also with its local authorities and with the regional productive systems in order to redefine the economy and boost the development.

On the environmental side, there are three main directions which should drive the interventions: (i) further incentives for forms of energy production from renewable sources; (ii) the commitment to transition from a development model based on linear economy to a circular model in which the reduction of waste materials is associated with reductions in gas emissions greenhouse; (iii) attention to sustainable mobility in particular in major urban centers, given the growing mobility for work and study.
On the social side, the greatest need is to intervene on the growing inequalities (i) through a more widespread participation in the production process, in particular of youth and women; (ii) through interventions on the weakest subjects, also due to them their location in more disadvantaged urban and territorial areas.
On the economic side, the commitment on the innovation remains a decisive strategic axis which has to be achieved through the participation of the companies together with an action aimed at strengthening and modernizing the knowledge infrastructure of the cities and regions and the quality of work.
on the market side: to introduce incentives for the citizens (consumers) in order to buy products which, comply with a sustainable production process.

Therefore, on the basis of these directions, future EU Urban Policy should:

- Implement the new Leipzig Charter decided end 2020.
- Reinforce all Cities Competences and Finnancing to tacle existent and future predicable citizen' needs like those cameo ut with the Covid sanitary crisis.
- Create legal conditions to promote Functional Urban Areas in particular related to small cities of 20,000 inhabitants or less but that cover the needs of a wider area of population to assure a correct development of the rural-urban network. Creating the conditions to a better and efficient resolution of Cities common problems by managing public services in a cooperative manner and therefore reducing operational costs for the involved communities.
- Pay a particular attention to Cities' Governance and encourage citizens' participation in public decision making process, in particular at local level.

B. Recommendations per urban policy thematic

Along with the overall recommendations set up in point A, the future EU Urban Policy should in concrete promote the following thematic ideas to ensure better results for citizens' quality of life and sustainable development of the urban and rural areas.

Urban Resources efficiency

In the last decades EU focused more on environmental legislation. As a result, air, water and soil pollution has significantly been reduced. Legislation at EU level has been modernized and the use of many toxic or hazardous substances is now forbidden or restricted, therefore EU citizens enjoy

some of the best water quality in the world and over 18% of EU's territory has been designated as protected areas for nature

Sustainable land use and urban renewal

If Europeans want to have in future enough land for living, working, mobility and recreation in Cities and, at the same time, have a balance between urban space and agricultural / forestal needs, they have to make a choice by reducing urban sprawl.

As the new Leipzig Charter's D.1.1 Chapter, on Active and strategic land policy and land use planning, states:

Space is limited in many cities, which often leads to conflicting interests. Local authorities need to apply sustainable, transparent and equitable land use planning and land policies, including local authority land ownership and control. In order to ensure resilient and long-term development, local authorities need to take into account strategic and future developments and risks. Key elements to achieve this are:

— Polycentric settlement structures with appropriate compactness and density in urban and rural areas with optimal connections within cities to minimise distances between housing, work, leisure, education, local shops and services. This should minimise traffic and mobility needs within and between cities, combatting urban sprawl and reducing traffic areas;
— Fostering the cooperation beyond administrative and national borders and coordination of spatial planning in functional urban areas, taking into account urban-rural linkages, in order to prevent as well as contain urban sprawl;
— Reducing land take, prioritising the renewal and complex regeneration of urban areas, including brownfield redevelopment, to limit soil sealing;
— Land use should balance urban density by favouring green and blue infrastructure, to increase urban biodiversity and enable climate-neutral, resilient and environmentally sound urban development as well as improved air quality;
— Design and management of safe and accessible public spaces providing healthy living environments for all citizens;
— Sufficient areas for adequate, safe, well designed and affordable housing to ensure vibrant and socially mixed neighbourhoods, avoiding speculative land policy;
— Mixed-use urban spaces to promote new forms of production and economic activity in a green, creative, service-based economy.

Therefore, is recommended that:

1. ***New urban policy should encourage and support financially the reduction of urban sprawl; This reduction should be made through urban or Integrated larges urban areas including the rural surroundings (in a functional urban area concept) for re-use, re-build, revitalization of spaces to bring new functions. Actions should be taken to support 'Brownfield regeneration', 'Social Housing '(and increasing housing density for instance), 'Urban renewal / Urban regeneration / Urban revitalization' concepts,*** **increasing the quantity of public space and improving its quality*****, preservation and development of the built and other cultural heritage, etc***

Water – water harvesting, urban flood management, storm water management

Europe is largely considered as having adequate water resources, but water scarcity and drought is an increasingly frequent and widespread phenomenon in the EU.

EU Member States are obliged to carry out a preliminary assessment of flood risk to identify areas of potential flood risk, to establish and publish flood hazard and risk maps and to develop and implement Flood Risk Management Plans to reduce flood risk. Cities try to respond to changing climatic conditions and try to introduce new approaches to water management. In the past, the city water management focused on providing drinking water, the reduction of flood risk and solving water pollution. The main identified risks associated with the climate change are also extreme rainfall, floods in the city, insufficient soaking of rainwater, drought and insufficient amount of water.

2. ***Therefore, all Cities and Groups of Cities should be encouraged to have long term Strategies and Action Plans to implement measures to: Assure water supply in future; Reduce flood risk and underground water pollution.***

Waste and Circular Economy

Promote the transition to a circular economy" through interventions of promoting the use of recycled materials as raw materials, as well as support of small and medium-sized enterprises in the implementation of good practices in the field of circular economy. It will be given attention also to the realization of interventions necessary to reduce the production of processing waste in various sectors of production;

Member states will set up, by 1 January 2025, separate collections of textiles and hazardous waste from households. In addition, they will ensure that by 31 December 2023, bio-waste is either collected separately or recycled at source (e. g. home composting). This is in addition to the separate collection which already exists for paper and cardboard, glass, metals and plastic. With specific targets by 2030.

The legislation contains a landfill reduction target, and sets minimum requirements for all extended producer responsibility schemes. Producers of products covered by these schemes must take responsibility for the management of the waste stage of their products, and will be required to contribute financially. Mandatory extended producer responsibility schemes for all packaging have also been introduced. Member states shall endeavour to ensure that as of 2030, all waste suitable for recycling or other recovery, in particular in municipal waste, shall not be accepted in a landfill.

The waste package will lead to more recycling of waste and so contribute to the creation of a circular economy. It will encourage the use of recyclable packaging and reusable packaging and will improve the way waste is managed.

In this context, there are several options to be considered to reach the goals:

- Cascade national recycling targets down to the municipal level with responsibility for waste collection systems, and ensure that there are consequences for municipalities that fail to meet targets.

- Introduce measures (incl. taxes) to phase out landfilling and other forms of residual waste treatment (e.g. Mechanical Biological Treatment, and incineration) to provide economic incentives to support the waste hierarchy.

- Develop guidance with local and regional authorities for municipalities in the form of a minimum service standard for separate collection. Organise technical support and capacity-building programmes for municipalities at national level.

- Introduce mandatory requirements to sort bio-waste, and ensure that planned or existing treatment infrastructure matches the collection systems.

- Encourage co-operation between municipalities on infrastructure planning and/or service procurement to ensure scale efficiency and that the financial burden is shared.

- Improve Extended Producer Responsibility (EPR) schemes, at least in line with the general minimum requirements set out in the revised Waste Framework Directive

- Introduce measures to encourage households to sort waste, including higher collection frequency for separated streams as compared with that for mixed waste.

- Improve monitoring and reporting, including by ensuring that data is captured at municipal level.

- Use EU funds more effectively to develop waste infrastructure by ensuring that cofinancing supports prevention, re-use and recycling performance.

Local and regional authorities have an important role in launching and accelerating the transition to a circular economy, whether by leading by example, setting clear framework conditions or directly supporting local and regional stakeholders.

Starting point: analysing the local and regional context: factors such as industrial profile of a region (for example, service and resource-intensive sectors), accessibility (for instance, implementing more resource-efficient transport systems, district heating systems or a sharing economy could be a greater challenge for less accessible) play an important role.

Using smart public procurement: using green public procurement criteria and mechanisms such as pre-commercial procurement

Supporting local and regional stakeholders: Local and regional authorities can offer support to relevant stakeholders by providing targeted funding, access to knowledge and information, as well as networking opportunities

Setting clear framework conditions: Cities and regions should integrate their commitment to a circular economy into relevant strategic documents, setting out local priorities, planned measures and forms of support available. This sends a clear signal to local and regional stakeholders, enabling them to plan their activities in the long term. The documents can include EU regional operational programmes, long-term development plans, environmental strategies, as well as other thematic or sectoral strategies (e.g., waste management or industrial development plans).

Therefore, is strongly recommended:

3. All Cities and groups of Cities should implement: by 2035, 65% increase the reuse and recycling of municipal waste; by 2030 all waste suitable for

recycling or other recovery, in particular in municipal waste, shall not be accepted in a landfill; by 2030 a Circular Economy Plan as suggested by the CEAP - Circular Economy Package which establishes a concrete and ambitious programme of action, covering entire materials cycles, from production and consumption to waste management and the market for secondary raw materials; The EU Directives to meet the target of increase the reuse and recycling of municipal waste up to 65% by 2035, and the specific recycling targets for packaging by 2030:a) All packaging 70%;b)Plastic 55%; c) Wood 30%; d) Ferrous metals 80%; e) Aluminium 60%; e) Glass 75% and f) Paper and cardboard 85%.

Energy Transition

Despite efficiency gains, energy consumption is expected to continue growing at the rate of 0.7% per capita per year.

Over the past ten years, municipalities have emerged as significant players in global energy markets, they are even increasing their own staff capacity and resources to address climate change and lead new energy programmes while exerting leadership in programmes and policies to decarbonise energy products and use.

Is visible in the case of renewable energy which in the final energy consumption has been growing continuously. The trend is very promising, however, to maintain it, a lot needs to be done.

4. ***Cities and Groups of Cities should reinforce their energy efficiency measures, integrate as much as possible renewables. Developing notably intelligent systems, networks and energy storage systems at the level local "through interventions to support the promotion of energy integration technologies from renewable sources;***

Sustainable Urban Mobility

Nowadays, urban transport relies on the use of conventionally fuelled passenger cars, mainly oil based energy consumption (98%). This kind of transport represents a significant part of total energy consumption (33%). Moreover, urban transport represents 40% of CO2 emissions within the transport sector, a sector weighing 20% of total carbon emissions, a large contribution to climate change.

Half of total urban trips (less than 5 km) are made with a private car, causing high level of congestion and costing 202 billion euros per year. Urban accidents represent more than 10 000 casualties per year. Lastly, private cars are not used 96% of time although one third of urban infrastructure is dedicated to them, implying less public place for other modes.

Despite constant strategic policies, action plans and large funding, the European Court of Auditors claims that the EU-supported projects have not yet helped make mobility in urban areas more sustainable. Regarding urban transport, the projected passengers target is not often reached and

traffic congestion has not yet significantly reduced, impacting negatively people health and climate change.

SUMPs – Sustainable Urban Mobility Plans have helped to improve the quality of life in European cities, particularly in the city-centres. Nevertheless, they are still areas for improvement.

A transition towards sustainability relies on structural policies at the functional urban scale. As a subsidiarity application, SUMP should be the core of the European framework strategy. Member-States (or other legislative authorities) must make them lawfully compulsory along with dedicated national or regional funds, and definitively a prerequisite for cities to request EU-funds. Instead of centralised states, regions or other appropriate administrative areas (like Metropolitan areas, Agglomerations, Inter-Municipal Federations or other Functional Urban Areas) could become a more operational intermediate institution to promote, support and follow up SUMP implementation, sharing best practices in a similar geographic background, particularly in a polycentric territory of small and medium-sized cities.

Whilst cars reliance remains the main issue, efforts have firstly been deployed to improve the offer of adequate and performing public transport or launch innovative solutions. However, it is necessary to devise a comprehensive and integrated urban mobility strategy. First of all, SUMPs must be in line with urban planning as well as dedicated energy, environmental or climate change plans. In addition, they must protect vulnerable users, particularly when active modes are promoted. Parking management should also be optimised to reduce traffic congestion due to parking search.

Access regulations for vehicles, such as low emission zones, must be more largely deployed to avoid bringing private cars in downtown areas, by deploying park and ride facilities at the entrance to cities.

With fewer cars, it would be possible to rearrange public space and better support an integrated multimodal urban mobility approach, not only for passengers but also logistics. Therefore, ITS solutions could offer digital tools to enable mobility integration.

Shared mobility must be used at both ends of a journey chain with first and last mile solutions, using bicycles, ebikes or appropriate ultra-compact electric city vehicles[iv], physically located at main mobility stations. It appears that mobility authorities must engage collaborations with private operators so as to integrate shared mobility in the whole multimodal system, particularly by deploying new performing transport services in underserved areas, through appropriate business models. Sharing mobility could be considered as an alternative mode only if the vehicles are used on priority lanes. In conclusion, sharing public space is an important structural condition in order to compete with private cars.

Encouraging modal shift requires engaging large investments in light rail urban transport systems (tramway or tram-train) so as to connect the main city with its peri-urban areas. This approach refers to urban planning in the perimeter of functional urban areas, bringing potentially a new balance of activities with economic relocations.

In Europe, a lot of studies, demonstrator projects and best practices sharing have already been financially supported and well spread out. A new phase should come up by engaging structural policies supported by public-private partnerships – multimodality and electrification – to accomplish a true transition towards sustainable urban mobility

Therefore, is recommended:

5. ***Promote sustainable intermodal urban mobility" through interventions aimed at improving the sustainable urban mobility actions such as the acquisition of rolling stock materials with lower environmental impact, the significant enhancement of the cycle network and cycle / pedestrian in the urban area, the implementation of integrated actions aimed at better usability when switching from one mode to a low emissions mode (e.g. interchange points, exchanger car parks, parking places) bicycle parking, etc.) or collective (with particular reference to adductions a bus stations, railway stations, tramway stops etc.) and the development of infomobility and intelligent transport solutions for a better use of services and services infrastructure by citizenship.***

Environmental management Performance

Air and Noise Quality

Air and Noise pollution are phenomena of modern times and increase of urban population, transportation and industry development are often pointed out as main sources. The consequences for the public health and citizens 'quality of life imposes action to be taken. Therefore, is recommended:

6. ***Air pollution Cities and groups of Cities should implement the European Commission Clean Air Policy Package, including a Clean Air Programme for Europe setting objectives for 2020 and 2030, adopted in 2013; and follow the guidance provided in the Communication "A Europe that protects: Clean air for all', adopted in 2018.***
7. ***Noise Pollution Cities and groups of Cities should implement Environmental Noise Directive 2002/49/EC.***

Climate Adaptation

Climate adaptation is one of the actual themes being tackled at all levels of administration. Adaptation to climate change, adaptation to ongoing current and expected impacts is essential for sustainable development of cities. As mentioned in the new Leipzig Charter, "Predictive and preventive policies, plans and projects should include diverse scenarios to anticipate environmental and climatic challenges and economic risks as well as social transformation and health concerns".

8. ***Promote adaptation to climate change, risk prevention and resilience to disasters through prevention interventions (interventions and actions of regulation and government of the territory aimed at mitigating risks such***

as hydraulic hazard for the environment, cultural heritage, the social system and economic activities)

Social Inclusion

Having in mind:

- The EU pillars of Social rights (equal opportunities and access to labour market, fair working conditions, and social protection and inclusion)

- EU urban areas concentrate around 80% of the EU population, and as a consequence the most important share of poverty

- Social exclusion - EU 27 population at risk of poverty rate is 16,8% (more than 75 million people and 27% are children) and has been growing since 2010. This rate varies from Country to Country. This situation related to 2018 (last info from Eurostat) will be much worst necessarily after COVID 19 socio economic impact

- Cities are in the frontline to resolve the social exclusion problems which basically concerns: famillies with very low revenues, housing conditions (in particular for the homeless), health and education conditions, and migrants and refugees situation.

- That Without eliminating social exclusion there is no Social Cohesion, one of the EU integration objectives.

- Atlantic Cities' San Sebastian Charter (2008), in which Mayors from Atlantic Cities commit to "Promote equality and social inclusion of European citizenship based on active leaderships of its citizens, as well as shared sovereignties between different citizens, sharing rights and responsibilities."

It is therefore, recommended:

9. ***Cities and groups of Cities should be strongly advised, encouraged and supported to prepare and Implement Social Inclusion Action Plans for their territories. These Action Plans shall notably include financing of measures to create local economy Jobs, to provide social housing (in particular for the homeless, and education (in particular for the children that represents 27% of the population at risk of poverty), where the pandemic impact was the strongest (the poor, unemployed, less skilled workers, less educated, elderly population) in a coordinated way with the national authorities, as well as to foster the inclusion of migrants.***

Cities should also promote social inclusion by the means of citizen participation in local decision process.

Green Growth and Eco-innovation

Trees and plants increase their ability to absorption of pollutants, the more they are closer to the source of pollution. That is why it is important to plan actions not only of reforestation but also

interventions in the urban contexts, considering that cities produce about 70% of the total pollution. Plants in the city are therefore no longer intended only as aesthetic and beautifying elements, but as real means of protecting the quality of the air and consequently our health.

Moreover, a "blue" dimension should be taken into account, next to the green. As Atlantic Cities' Final Declaration (November 2020) recalls: "water is a paramount element of urban development and circular economy. Also, because river, coastal and port cities undergo particularly complex situations due to climate change.". Blue growth is a reality for cities mentioned above, as marine renewables, for example, are drivers for eco-innovation and the economy.

The idea of maritime character as a strength of territories is also pointed out in the conclusions of the Conference of Mayors for the post COVID19 era, organized in September 2020 by Eixo Atlántico gathering almost 38 mayors and Presidents of County Councils of Galicia and North of Portugal, together with high qualified experts in many key domains

10. ***Strengthen biodiversity, green and blue infrastructure in the urban environment and reduce pollution through interventions aimed at creating green infrastructures in the urban area, in order to safeguard and protect natural resources, address the negative effects of climate change, reducing the consumption of soil and settlement dispersion.***

C. Financing

An important theme, in continuity with the current programming period, is that of integrated territorial development. Indeed, the higher concentration of resources should be promoting the sustainable urban development based on integrated, local and/or territorial strategies. At the same time, integrations between funds can be strengthened, first with the ESF + for interventions in support of education and training as well as with the EAFRD to support the development of territorial strategies especially in the suburban areas.

Cities are in the front line to resolve citizen's increasing needs (80% of the EU Population), responsibility increased by the socioeconomic impact of the sanitary crisis of COVID 19 in areas like the increased poverty and social exclusion.

They will be in front line of the response to the social crisis of the increasing social exclusion as a consequence of unemployment increase and reduction of household's income. They will be in front line as well not only to help unemployed people with basic revenues, but as well to help people back to work on stimulating new economic activities and investing in socio economic infrastructure to attract them.

It is necessary to closely understand issues that needs to be solved on local level and when larger scale is appropriate, so in which cases the involvement of several municipalities should be organized. That is also unclear how to finance these actions for functional areas: benefiting some parts of areas directly, some parts of areas less and some without direct benefit. States and municipalities often do not have sufficient knowledge and skills to assess which cases, when and how to plan investments together with neighbouring municipalities, co-financed from region, state and/or EU.

There is also one idea for implementation of urban policies that public-private partnership could be included as a criterion for funding in cases when higher effectiveness and wider involvement of civil society is crucial.

Recently EU Institutions agreed to increase SUD allocation to at least 8% for the 2021-27 programming period, which are good news but not enough having in mind the huge amount of investments needed.

Therefore, is strongly recommended:

11. To increase National and EU financial support to Cities: a) support should be increased to Cities, and their networks. In particular to smaller cities, which can be considered as leaders of FUA – Functional Urban Areas and involve smaller cities around them in a polycentric system. b) The new EU instruments that will be approved by the EU Council and Parliament concerning the Recovery package of public money (MFF- Multiannual Financial Framework and Next Generation EU) should be an occasion to boost Cities and Municipalities financial support in particular through ITI – Integrated Territorial Investments. Therefore, the allocation of EU structural Funds should be increased in the Operational programs to at least 10%, in current prices using the facility of the actual allocation that is of at least (8%).

D. governance

Governance for Sustainable Urban Development and Participation

Mandated by the United Nations, UN-Habitat programme promotes socially and environmentally sustainable towns, cities and communities. In Europe, the forthcoming "2030 Territorial Agenda: a future for all places" should be the appropriate policy framework to contribute to the 2030 Agenda for sustainable development.

The 2030 Agenda is a real opportunity to incite cities' administrations to work beyond silos and engage collaboration with nearby municipalities so as to deliver holistic policies at the appropriate functional urban area. In this effort, new European tools and shared knowledge could help cities tackle integration and policy coherence, and thus establish new efficient governance. Accordingly, urban authorities could set up an urban data platform, which should play a key role in monitoring policies through a range of SDGs based indicators. To this regard, create stakeholders' groups is revealing crucial.

The concept of Smart City has become much more multidimensional and scalable, depending on which technologies to use, data to cope, domains to apply and integration level to reach. The deployment of connected devices – sensors, smartphones or connected vehicles – is a prerequisite to collect and exchange data. Smart cities envisage data as a resource to monitor the urban life, optimise public policies or create new services for society. Let's note that digitalisation should not be seen as an end in itself but as a mean to foster inclusiveness, empowerment and also

environmental sustainability. In Europe, 240 cities with populations over 100 000 have made some progress towards becoming smart cities[73]. In Nordic countries, all of them are smart cities. Most cities over 100,000 people in Italy, Austria and the Netherlands are smart cities, as well as half of British, Spanish and French cities. In contrast, Germany and Poland are behind, while the eastern EU Member States have the lowest number of smart cities.

At international level, dialogue is engaged through multi-level governance. The Covenant of Mayors for Climate and Energy is a bottom-up, multi-level governance model that brings together local governments, regions, Member States but also non-governmental organisations, such as WWF. The Urban agenda for the EU has also launched a range of partnerships to deal with thematic urban issues. Each Partnership is made up of Urban Authorities (cities), the European Commission, EU organisations (European Investment Bank, European Economic and Social Committee, Committee of Regions), Member States, Partner States, experts, umbrella organisations (e.g. EUROCITIES, Council of European Municipalities and Regions), knowledge organisations (e.g. URBACT, ESPON and INTERREG EUROPE) and other stakeholders (NGOs, business, etc.).

Representative democracy is being questioned and traditional representation mechanisms are no more sufficient to ensure a proper democratic participation. Regarding deliberative process, intermediate bodies – industry, labour, professional associations, non-governmental organisations … – are progressively involved at different scales.

In the last two decades, innovative solutions deepening citizen participation or empowerment have spread in Europe. Participatory budgeting, in which community members directly decide how to spend part of a public budget, has since largely spread in European cities. The largest metropolises – Paris, Madrid, Lisbon or Milan – have implemented it as well as around 3,000 smaller cities (e.g. Rennes, Brest or Viana do Castelo), involving millions of European citizens. In the last decade, this effort was fostered by the use of digital platforms along with new methodologies.

In addition, the civil society must be engaged, not only intermediate bodies but also and more directly, the citizens. Applying a bottom-up approach, civictechs could support participatory processes. However, in-person events are still necessary to build trust between representative and the population. Thanks to volunteers or civic lottery, citizens' councils or large-scale mini-public debates, aiming to co-create a common collective vision, might draw the future of urban democracy.

Therefore, is strongly recommended that:

12. Cities and groups of Cities should in future reinforce Governance by development concepts such as Smart Cities and governance participation involving the civil society in the decision making process.

[73] https://euagenda.eu/publications/how-many-smart-cities-are-there-in-europe

Governance and Functional Urban Areas (FUA's)

An important concept to take into account in future city governance is the FUA – Functional Urban Area.

In Europe, the urban fabric is polycentric. At the national level, polycentric regions are, in reality, organized around FUA's, large, medium or small, as shown by different national experiences. This type of organization must be strengthened in the future since they are proved to be real.

The European program ESPON Study concluded:

- ✓ The most important quality of the FUA concept is its ability to extend beyond administrative boundaries. As a result, the needs for economic activity and service production can be mapped more efficiently. This leads to more consistent strategic planning and vision. Many European countries have inserted some statistical levels between the municipal and regional levels, shaping current urban areas and inter-municipal cooperation. European countries have identified FUAs in various ways such as functional urban regions, districts, commuting areas, local labour market areas, daily urban systems, displacement zones and sub regional units, as well as others.

- ✓ The functional urban area (FUA) consists of the Urban Area / central municipality plus the adjacent areas of commuting (peripheral municipalities). Switching data at NUTS 5 level is a prerequisite for defining these FUAs, but switching data (according to Data Navigator) is available for this territorial level only for Austria, Belgium, Denmark, Finland, France, Germany, Luxembourg, Norway and Sweden. FUA has a definition of national counterparty (often referred to as functional urban region, commute area, commuter catchment area, commuting area, or the like) in 18 countries (Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary (regional work centers), Italy, Norway, Luxembourg, the Netherlands, Sweden, Switzerland, the Slovak Republic, Slovenia and the United Kingdom). Due to lack of data, European program ESPON uses the national definitions of FUA, or the closest available counterparts. ***FUAs with a population of 20,000 are considered urban, and even the smallest FUAs are considered if they have a functional role within the national urban system.***

- ✓ FUAs are the basic components of the polycentric region. Polycentric regions are established by two or more FUAs that reinforce each other. At two levels, we are dealing with urban polycentric regions, the (sub) national level (national polycentric regions) and the transnational level (cross border polycentric regions).

- ✓ Even if in practice it is only statistically evident for large and medium-sized FUAs, can be applied to 20,000 and more FUA inhabitants, or even less than 20,000 inhabitants, under certain circumstances.

Currently are eligible for ERDF: the great European FUAs and the FUAs of cities with 50,000 or more inhabitants. Why only these ones? Once smaller cities have the same problems, even in a different scale, and have smaller resources. For this reason, these smaller FUA's, of 20.000 or more inhabitants should be more supported. Europe is a polycentric urban territory, with different levels of polycentrism. Basically, the urban territory is organized like the following scheme:

- Metropolitan Areas or Metrópolis, that constitute FUAs naturally
- Cities with 50.000 or more inhabitants, which constitutes, or can be FUAs, within a Region
- And in fine, the smaller Cities between 10-20.000 inhabitants, which are centers of attraction for 2 or more smaller urban centers.

In the absence of detailed and comparable statistics at European level on cities, it is reasonable to provide for a set of eligibility criteria for the constitution of FUAs, using the Eurostat criterion described above as a basis, and adding other easily identifiable criteria and consequently, make smaller urban centres also eligible for national and European funds on a FUAs basis. Therefore, it is highly recommended:

13. A - to include in the future, for the purpose of organizing urban planning and management in national polycentric regions, the FUA with about 20,000 or more inhabitants (central and peripheral municipalities integrated in an area of influence of the main city of the central municipality). These FUAs should therefore be able to access European funds for European urban policy in the form of ITI's.

13. B – Eligibility criteria for national and ERDF funding 2021-27(notably it is). The FUA leader municipality:

- must have at least around 10.000 inhabitant[74], and in total the FUA territory must have at least 20.000 inhabitants.
- FUA leader city must elaborate a document describing its attractivity in relation to the surrounding urban and rural centers (ex. % of non-resident population working on the municipality, capacity to attract new economic activities, characteristics of the services provided to non-residents). Territorial continuity should not be compulsory, as orography of some territories makes this condition sometimes impossible, even if the territory effectively is functioning as a FUA.
- must present a formal agreement with the other urban and rural centers involved including a strategy of integrated urban development for the FUA area, accepted by all partners.

Urban Policy Necessary Instruments

In order to improve the relevance, efficiency and effectiveness of the policy making and implementation process regarding functional urban areas and other functional regions, it is essential to have data, indicators and analysis tools that can help to better understand the drivers for growth and inclusive social development in functional areas. Analyses tools on European scale should help to build an evolving urban agenda, diversified actions for concrete functional areas of Europe, so also there is a significant need for development of funding model for actions addressed to these diverse territorial functional areas.

[74] https://www.palgrave.com/gp/book/9783319674094

STATISTICS

Without appropriate statistics is not possible to design a realistic evolving EU Urban Policy.

Findings

- there is no clear and consensual definition of Urban area in EU and elsewhere
- there is no clear Statistical definition of Cities, in particular concerning those below 50.000 inhabitants
- there is no EU available statistics at the level of Cities (Eurostat). The only few statistics existent are at Municipal level (administrative boundary) which is commonly accepted that do not represent the urban evolution reality.
- there is no clear overall picture, at EU level, on what is really the investment of EU funding in Cities for the period 2014-20, since the information is dispersed through National, Regional and Local strategies (ITI, CCLD, etc), community initiatives (Innovative Urban Actions, Urbact, Interreg programmes, Life, etc), and specific ESF programmes concerning Youth populations (Youth Initiative) and Social Inclusion.
- The EU Statistical classification (NUTS 2021) only comprises 3 levels (104 NUTS I, 281 NUTS II e 1348 NUTS III). Why not create a level NUTS IV to understand the urban – rural reality?

Therefore***, is highly recommended to improve EU and national statistics' production*** in the following sense:

14. Recommendations on Statistics production:

Urban evolution has generated a transformation in the scale that has led to different figures (counties, urban agglomerations…). Nevertheless, there is not accurate nor uniform information about this administrative level to be used as input to design the Urban Policy. In this sense, it seems advisable to reflect about the adequacy of create a new level NUTS IV, especially to have appropriate statistics for the Urban Policy.

In close collaboration with national statistics institutions, and using notably the periodic and specific census, Eurostat should provide accurate statistics in an annual basis, or at least every 2 years.

The information other than Population and area (sq. km) should contains at least data on: a) Urban Space occupied (housing, industry, services, green Space, transportation); b) Housing (private, social); c) Families 'average income (to detect clusters of poverty)

The information should be provided in a breakdown by: a) Metropolitan Areas and Big Cities Functional Urban Areas; b) Big Cities (100,000 inhabitants or more); c) Medium Cities (between 50 000 and 100 000 inhabitants); d) Small cities (less than 50, 000 inhabitants); e) Small cities Functional Urban Areas (commuting area around a city of around 20,000 inhabitants, as proposed by ESPON)

This information could be provided using in a systematic way the criterion Eurostat stablished already, and based on the 'Urban Grid – with a density of more than 1, 500 inhabitants per sq.

ITI INSTRUMENT

Findings

- ITI is being used in the current 2014-20 EU programming period with success. ITI is a valuable tool to devolve decision-making to specific local areas. Within this framework, local authorities should, at the very least, be more closely involved in project selection.
- Urban ITI should not be privileged and take priority over other types of ITI at EU and national level: ITIs is a tool for all local area types. As authorised by the Regulation, some ITIs will be applied beyound areas strictly defined as urban, but will also help the development of an integrated approach in functional areas and neighbourhoods, at regional or at local level. It is already used in some Cross Border areas.
- ITI is a new instrument and it is particularly important that Technical Assistance be available to fully support the ITI's activities, in particular those related to properly accounting the spend across the separate ESI funding sources.
- It is not compulsory for an ITI to cover the whole territory of an administrative level. An ITI can be implemented at any (sub national) level, for which an integrated territorial development strategy has been set up. It may cover a region, a functional area, an urban or a rural Municipality, a neighbourhood or any other sub national territory.

We took note, according to the EC Guidelines for 2014-20:

1. That urban authorities or any other authorities responsible for sustainable urban development in functional areas apply participatory approach during different stages of programming their development. Relevant stakeholders should be firstly identified, then involved in programming, monitoring and evaluation. Participation is a key factor of creating sustainable growth.

2. That European Commission together with national, regional and local authorities co-operate with urban and other authorities and institutions involved in functional urban areas in programming relevant financial perspectives. Communication, dissemination of information, adequate timing of different programming stages will translate into better projects, better EU funds spending and meeting sustainable development objectives in a short-term and long-term perspective.

Having in mind all these findings and the fact Member states had different approaches during the programming period 2014-20, ***is strongly recommended***:

15. That European Commission recommends ITI's should be used in the next EU 2021-27 programming period as a main instrument for SUD. And that ITI's should be encouraged not only for urban areas, but as well for Functional Urban Areas. In this case ITI's should be encouraged as well for Cross Border Functional Urban Areas.

5. BIBLIOGRAPHY AND REFERENCES

1.INTRODUCTION

Methodological manual on territorial typologies 2018 edition, Eurostat:

https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-GQ-18-008

HANDBOOK OF SUSTAINABLE URBAN DEVELOPMENT STRATEGIES, Joint Research Centre of EU Commission,

https://urban.jrc.ec.europa.eu/documents/handbook-of-sustainable-urban-development-strategies.pdf

The State of European Cities 2016 Cities leading the way to a better future, EU Commission and UN Habitat, https://ec.europa.eu/regional_policy/sources/policy/themes/citiesreport/state_eu_cities2016_en.pdf

CITIES IN EUROPE THE NEW OECD-EC DEFINITION Lewis Dijkstra and Hugo Poelman: https://ec.europa.eu/regional_policy/sources/docgener/focus/2012_01_city.pdf

Futurium platform - https://ec.europa.eu/futurium/en/urban-agenda

ESI FUNDS OPEN DATA - https://cohesiondata.ec.europa.eu/themes

Assessment Study of the Urban Agenda for the European Union (UAEU):

https://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/assess_uaeu_en.pdf

COMMISSION STAFF WORKING DOCUMENT RESULTS OF THE PUBLIC CONSULTATION ON THE KEY FEATURES OF AN EU URBAN AGENDA, 2015:

https://ec.europa.eu/regional_policy/sources/consultation/urb_agenda/pdf/swd_2015.pdf

The State of European Cities 2016: https://ec.europa.eu/regional_policy/sources/policy/themes/citiesreport/state_eu_cities2016_highres_en.pdf

JRC European Territorial Trends – Facts and Prospects for Cities and Regions Ed. 2017: https://publications.jrc.ec.europa.eu/repository/bitstream/JRC107391/jrc107391_ett-2017_v11_online.pdf

OECD: https://www.oecd.org/coronavirus/policy-responses/cities-policy-responses-fd1053ff/

The New Leipzig Charter: https://www.bmi.bund.de/SharedDocs/downloads/EN/themen/building-housing/city-housing/new-leipzig-charta.html

2.1.1 Sustainable land use and urban renewal

https://ec.europa.eu/futurium/en/system/files/ged/op_20171228_with_attachments_0.pdf
https://ec.europa.eu/futurium/en/system/files/ged/leaflet_sulnbs_en.pdf
https://ec.europa.eu/futurium/en/system/files/ged/sul-nbs_finalactionplan_2018.pdf

2.1.2 Water

Water Framework Directive (WFD)
Environmental Quality Standards Directive, Groundwater Directive, Floods Directive.
Communication „Addressing the challenge of water scarcity and droughts "from the European Commission adopted in 2007.
https://ec.europa.eu/environment/water/index_en.htm
Adaptation Strategy of the City of Pilsen
The EU Strategy on adaptation to climate change
Strategický plán města Plzně – Strategic plan of the City of Pilsen
European level report: Evaluation of the contribution of Operational Programmes to the implementation of EU water policy.

2.1.3 Waste

https://ec.europa.eu/environment/waste/index.htm
Directive on waste - Directive 2008/98/EC in 1998
Directive on the landfill of waste - Council Directive 1999/31/EC of 26 April 1999
Directive on ELV/Batteries/WEEE - DIRECTIVE 2006/66/EC of 6 September 2006
Directive on packaging waste - DIRECTIVE 94/62/EC of 20 December 1994

2.1.4 Urban Renewal / Urban Regeneration

Europe 2020 strategy : The flagship initiatives are: Innovation Union, Youth on the Move, A Digital Agenda for Europe, Resource Efficient Europe, An Industrial Policy for the Globalisation Era, An Agenda for New Skills and Jobs, European Platform against Poverty.

2.1.5 Energy Transition

The EU Declaration of Toledo
The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015
European Green Deal which was presented on 11 December 2019 by the President of the European Commission
The Great population debate, Richard Webb, New Scientist, 14 November 2020
Énergies renouvelables dans l'UE : de la perception à la réalité, Samuel Furfari et Ernest Mund

2.1.6 Sustainable Urban Mobility

"Thematic Strategy on the Urban Environment" (2006), a Green Paper "Towards a new culture for urban mobility" (2007)
Amsterdam Pact, the Partnership on Urban Mobility (PUM) settled in 2017
UITP (2011)
https://ec.europa.eu/transport/sites/transport/files/studies/internalisation-handbook-isbn-978-92-79-96917-1.pdf
Eurostat (2017)
European Environment agency (2019)
https://ec.europa.eu/commission/presscorner/api/files/document/print/en/memo_19_1990/MEMO_19_1990_EN.pdf
https://www.eca.europa.eu/Lists/News/NEWS2003_03/INSR_Sustainable_Urban_Mobility_EN.pdf
https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf
https://www.eltis.org/sites/default/files/sump-guidelines-2019_mediumres.pdf
https://sumpsup.eu/fileadmin/user_upload/Tools_and_Resources/Reports/SUMPs_Up_D5.1_SUMP_in_Member_States_report_28022018_final_doc_with_annexes.pdf
https://www.sciencedirect.com/science/article/pii/S0301479718311733
https://urbanaccessregulations.eu
https://ec.europa.eu/transport/sites/transport/files/uvar_final_report_august_28.pdf
https://park4sump.eu/sites/default/files/202002/Parking%20and%20Sustainable%20Urban%20Mob%20Planning%20PRINT.pdf
https://www.eltis.org/sites/default/files/urban_road_safety_and_active_travel_in_sumps.pd_.pdf
https://share-north.eu
https://www.cerre.eu/sites/cerre/files/cerre_sharedmobility_maas_report_2019.pdf
https://www.mdpi.com/2413-8851/3/2/61/pdf
https://www.eltis.org/sites/default/files/sustainable_urban_logistics_planning.pdf
https://whimapp.com
https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5bd7b354f&appId=PPGMS
https://www.smarter-together.eu/about/objectives (Smarter Together, H2020)
https://www.accuracy.com/perspectives/electric-bus-fleets-europe-three-turbulent-effects-will-dominate-rapid-electrification-public-transport
https://media.groupe-psa.com/en/free2move-adds-citro%C3%ABn-ami-%E2%80%93-100-%C3%ABlectric-its-carsharing-service-paris
https://ec.europa.eu/futurium/en/system/files/ged/2018-11-14_pum_final_action_plan.pdf
https://ec.europa.eu/futurium/en/urban-mobility (position papers)

2.2.1 Air and Noise Quality

https://ec.europa.eu/environment/air/index_en.htm
https://ec.europa.eu/environment/legal/law/5/e_learning/module_1_5.htm
European Commission Communication "A Europe that protects: Clean air for all', 2018
Annual environmental Report, ESPO, 2019
Impact of maritime transport emissions on coastal air quality in Europe, in Atmospheric Environment, June 2014
Environmental Noise Directive 2002/49/EC

2.2.3 Social Inclusion

https://ec.europa.eu/commission/priorities/deeper-and-fairer-economic-and-monetary-union/european -pillar-social-rights_en
COMMISSION STAFF WORKING DOCUMENT. Synthesis of the findings of the evaluations of European Structural and Investment Funds Programmes (2019)
https://ec.europa.eu/futurium/en/urban-agenda 4
http://ec.europa.eu/regional_policy/sources/policy/themes/urban-development/agenda/pact-of-amster dam.pdf
https://ec.europa.eu/futurium/en/system/files/ged/action_plan_urban_poverty.pdf
https://ec.europa.eu/futurium/en/system/files/ged/action_plan_inclusion_of_migrants_and_refugees.p
https://ec.europa.eu/futurium/en/system/files/ged/ap20final20draft_jobs_and_skills_26oct2018.pdf
https://ec.europa.eu/futurium/en/system/files/ged/final_action_plan_euua_housing_partnership_dece mber_2018_1.pdf
http://www.urbact.eu/
https://ec.europa.eu/regional_policy/en/policy/themes/urban-development/network/
https://ec.europa.eu/regional_policy/en/policy/cooperation/international/urban/

2.2.4 Governance for Sustainable Urban Development and Participation

https://www.un.org/sustainabledevelopment/development-agenda/
https://www.un.org/sustainabledevelopment/cities/
https://www.oecd.org/cfe/territorial-approach-sdgs.htm
https://www.territorialagenda.eu/renewal.html
https://www.territorialagenda.eu/renewal-reader/UN-SDG.html
https://unstats.un.org/sdgs/indicators/indicators-list/
https://urban.jrc.ec.europa.eu/#/en/sdgs
https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/european-handbook-sdg-voluntary-local-reviews
https://journals.sagepub.com/doi/10.1177/1550147719853984
https://ec.europa.eu/digital-single-market/en/european-legislation-reuse-public-sector-information
https://euagenda.eu/publications/how-many-smart-cities-are-there-in-europe
https://eu-smartcities.eu/sites/eu-smartcities.eu/files/2019-01/Connected%20Smart%20Cities%2017-1-2019%20-%20M%20van%20Oosterhout%20%28draft%29%20final.pdf
https://www.rsm.nl/fileadmin/Images_NEW/ECFEB/pdf/Connected_Smart_Cities_17-1-2019_-_M_van_Oosterhout_final.pdf
https://eu-smartcities.eu/sites/eu-smartcities.eu/files/2020-01/2019%20Study%20on%20Urban%20Data%20Platforms%20-%20key%20findings%20%2828-1-2020%29%20.pdf
https://oascities.org/
https://www.living-in.eu/
https://www.weforum.org/press/2019/10/unprecedented-global-alliance-for-smart-city-technology-launched-to-counter-growing-tensions/

https://www.globalcovenantofmayors.org/
https://ec.europa.eu/futurium/en/node/1819
https://urbact.eu/urbact-local-groups
https://webgate.ec.europa.eu/fpfis/cms/farnet2/about/at-a-glance/farnet_en
https://ec.europa.eu/digital-single-market/en/news/ministerial-declaration-egovernment-tallinn-declaration
https://ec.europa.eu/futurium/en/digital-transition/digital-transition-action-plan
https://www.eu-startups.com/2019/05/govtech-10-european-startups-that-are-making-governments-more-efficient-and-democratic/
https://en.wikipedia.org/wiki/Grenelle_Environnement
https://fr.wikipedia.org/wiki/Assises_de_l%27%C3%A9conomie_de_la_mer
https://www.vie-publique.fr/fiches/19629-le-conseil-economique-social-et-environnemental-regional-ceser
http://www.conseil-developpement-brest.fr/actualites/179-assises2019.html
https://www.lakestar.com/news/2019/social-networks-for-neighbours
https://www.esteval.fr/article.21937.75-pourcents-des-utilisateurs-de-reseaux-sociaux-heureux-dans-leur-quartier
https://www.oecd.org/gov/innovative-citizen-participation.htm
e-governance
https://urbact.eu/sites/default/files/media/20200520_card4all_masterclass_it_integration.pdf

2.3.1 Green Growth and Eco-innovation

https://ec.europa.eu/environment/green-growth/eco-innovation/index_en.htm

Frantzeskaki N, Kabisch N: Designing a knowledge co-production operating space for urban environmental governance lessons from Rotterdam, Netherlands and Berlin, Germany. Environmental Science & Policy 2016.

EC (European Commission): Towards an EU Research and Innovation policy agenda for nature-based solutions and Re-Naturing Cities. Edited by. Brussels: DG Research and innovation; 2015:73.

Mark Huberty, Huan Gao, and Juliana Mandell with John Zysman. SHAPING THE GREEN GROWTH ECONOMY: A review of the public debate and the prospects for green growth, 2011

Yangang Xing, Phil Jones and Iain Donnison, Characterisation of Nature-Based Solutions for the Built Environment, 2017

EC (European Commission), Internet source : https://ec.europa.eu

Organisation for Economic Co-operation and Development, Internet source: http://www.oecd.org/

Connecting Nature Project, European Commission's Horizon 2020 Innovation Action Programme, https://connectingnature.eu/

Renature Project

2.4 Circular Economy

EU Circular Economy Action Plan

Waste Framework Directive 2008/98/EC

3. Role and Support of EU Programs

https://ec.europa.eu/info/eu-regional-and-urban-development/topics/cities-and-urban-development_en
Strategic report 2019 on the implementation of the European Structural and Investment Funds [Brussels, 17.12.2019 COM (2019) 627 final].
https://ec.europa.eu/futurium/en/urban-agenda
https://www.uia-initiative.eu/en
https://ec.europa.eu/knowledge4policy/territorial/topic/urban_en
Commission proposal 2021-27: https://eur-lex.europa.eu/resource.html?uri=cellar:c2bc7dbd-4fc3-11e8-be1d-01aa75ed71a1.0015.02/DOC_1&format=PDF
Next Generation EU - https://ec.europa.eu/info/sites/info/files/communication-europe-moment-repair-prepare-next-generation.pdf

ITI – Integrated Territorial Instrument

CEMR Overview October 2015 - The implementation of the Integrated Territorial Investments (ITIs) by Member States
https://epthinktank.eu/2015/02/11/partnership-agreements-within-cohesion-policy-2014-2020/
https://urban.jrc.ec.europa.eu/documents/handbook-of-sustainable-urban-development-strategies.pdf

6. ANNEXES

6.1. Urban Concepts and EURE Partners Urban Spectrum

6.2. Art 7 of ERDF Regulation

6.3. EU Urban-Rural Demography

6.4. Investments needs in EU to deliver the green transition and digital transformation

6.1. Urban Concepts and EURE Partners Urban Spectrum

UN's definition of urban areas and cities

Urban agglomeration	'The built-up or densely populated area containing the city proper, suburbs and the continuously settled commuter areas. It may be smaller or larger than a metropolitan area; it may also comprise the city proper and its suburban fringe or thickly settled adjoining territory'.
Metropolitan area	'The set of formal local government areas that normally comprise the UA as a whole and its primary commuter areas'.
City proper	The single political jurisdiction that contains the historical city centre'.
Cities	**Metacities** - More than 20 million inhabitants **Megacities** - 10 million and more inhabitants **Intermediate cities** - 1–5 million inhabitants **Small cities** - Less than 500 000 inhabitants

Source : United Nations—habitat.1

Europe Urban Classification[75]

The current definition of "city", developed in 2011 by the European Commission and OECD and applicable to EU and OECD countries, is based on population size and density. The Eurostat[76] classification is as follows:

Urban grid	with a density of more than 1 500 inhabitants per sq.
Urban centre	The contiguous high-density cells clustered with a minimum population of 50 000 inhabitants. A cluster of non-diagonal contiguous grid cells having a population density of at least 1 500 inhabitants per km² and collectively at least 50 000 inhabitants.
City	Are densely populated areas — where at least 50 % of the population lives in one or more urban centres. A city is a local administrative unit (LAU) where the majority of the population lives in an urban centre of at least 50 000 inhabitants. For instance the city of Milano has 1 346 000 inhabitants.
Commuting zone	A commuting zone can be identified based on commuting patterns using the following steps: - If 15 % of employed persons living in one city work in another city, these cities are treated as a single city. - All municipalities with at least 15 % of their employed residents working in a city are identified; this means that these cities will have a single shared commuting zone. To identify which municipalities should be included, the commuting to both cities will be added together. - Municipalities surrounded by a single functional area are included and non-contiguous municipalities are dropped.
FUA – Functional Urban Areas	Functional Urban Areas are defined as a city and its commuting zone. In cases where cities are connected by commuting, the functional urban area may consist of multiple cities and their single commuting zone (if at least 15 % of employed persons living in one city work in another city, these cities are treated as a single destination for the commuting analysis). There are a few cases where cities do not have a commuting zone: for these, the city is equal to the functional urban area. For example the functional urban area of Milano has 5 111 000 inhabitants.
Greater city	The urban centre stretches far beyond its boundaries. This is a fairly common approach and several greater cities have already existed: Greater Manchester, Greater Nottingham etc. This level was created for some capitals and several other large cities. Based on the new clusters from the 2011 population grid, several new Greater cities were defined - for example, Madrid, Valencia, Sevilla, Elda, Granada, Puerto de la Cruz, Santa Cruz de Tenerife, Pamplona/Iruña and Igualada in Spain. In some cases, the greater city contains a single city. Athens is a clear example of such an approach. In most cases, the Greater city equals the combination of two or more cities. The Greater city of Porto, for example, is made up of five cities (Porto, Vila Nova de Gaia, Gondomar, Valongo and Matosinhos). In a few

[75] https://ec.europa.eu/knowledge4policy/territorial/topic/urban_en

[76] Methodological manual on city statistics 2017 edition, https://ec.europa.eu/eurostat/documents/3859598/8012444/KS-GQ-17-006-EN-N.pdf/a3f1004f-cfae-4cc4-87da 81d588d67ae2

	cases, the greater city includes several cities and other communes, as for example in Rotterdam, Helsinki, Milan and Naples.
Urban-rural typology	Groups of 1 km² population grid cells are plotted in relation to their neighbouring cells to identify: • rural grid cells: all grid cells outside of urban clusters/ centres, in other words, those cells with a population density that is (usually) less than 300 inhabitants per km² and/or fewer than 5 000 inhabitants; • urban clusters (moderate-density clusters): a cluster of contiguous grid cells with a population density of at least 300 inhabitants per km² and a minimum population of at least 5 000 inhabitants.

EURE Partners' Urban Spectrum

Partners Territory	Cities More than 50.000			Cities 20 - 50.000			Small Cities Less than 20.000			TOTAL	
	Nbr	Name	Inhab.	Nbr	Name	Inhab.	Nbr	Name	Inhab.	Nbr	Inhab.
EIXO ATLANTICO	20	Vigo Coruna Vila Nova Gaia Porto Braga Matosinhos Guimarães Sta Maria da Feira Maia Vila Nova Famalicão Barcelos Ourense Sant.Compostela Valongo Lugo Viana do Castelo Pontevedra Ferrol Povoa do Varzim Vila Real	295.364 245.711 302.295 237.591 181.919 174 382 152.792 138 525 137 727 131 738 116 531 105.233 94.260 96 570 98.276 84.636 83.029 66.065 65.452 52.000	5	Vila García Bragança Riveira Mirandela Lalín	 37.456 33.586 26.886 21.808 20.218	291[77] 46[78]	(Galicia) North PT		376	6.271.314[79]
ASEV				1	Empoli	48.795	4	Vinci C. Guidi Montelupo Capr. Limite	14.608 10.931 14.301 7.829	5	96.464[80]
ALBA IULIA	1	Alba Iulia	74.283							1	74.283
LUBELSKIE	4	Lublin Aglom.[81] Biala Podlaska Chelm Zamosc	378.994 57.352 62.670 63.813	5	Bilgoraj Krasnik Lubartow Lukow Pulawy	26.391 34.539 21.995 30.025 47.774	38			47	983.840

[77] 200 (less than 5.000 inh.); 59 (between 5-10.000 inh.); 32 (between 10-20.000 inh.)
[78] 5 (less than 5.000 inh.); 24 (between 5-10.000 inh.); 17 (between 10-20.000 inh.)
[79] Total Pop = 6.271.314; +50.000 inh (1.910.803); 20-50.000 (433.283); less than 20.000 (3.927.228 = 63% pop.)
[80] For the OP Tuscany 2014-20 the FUA Empoli was accounting for 105.000 inhabitants.
[81] Including Swidnik (39.312 inh)

PILSEN	1	Pilsen Met. Area	308.707							1	308.707
NICOSIA	1	Nicosia	341.700							1	341.700
ATLANTIC CITIES[82] **(BRETAGNE)**	5	Rennes Brest Quimper Lorient Vannes *Rennes Métropole* *Brest Met. Area*	216.815 140.064 62.985 57.149 53.352 *456.784* *209.722*	4	Saint-Malo Saint-Brieuc Lanester Fougères	46.097 44.372 22.728 20.418	28	Lannion Concarneau Bruz Vitré Ploemeur Cesson-Sévigné Lamballe-Armor Landerneau Hennebont Pontivy Morlaix Guipavas Dinan Plérin Douarnenez Auray Plougastel-Daoulas Saint-Jacques-de-la-Lande Plouzané Quimperlé Pacé Betton Saint-Avé Guidel Ploufragan Le Relecq-Kerhuon Chantepie Dinard	19.880 19.050 18.266 18.037 17.853 17.526 16.578 15.781 15.678 14.606 14.559 14.482 14.166 14.062 13.902 13.627 13.337 13.087 12.822 12.057 11.739 11.735 11.642 11.550 11.546 11.462 10.435 10.027	37[83]	1.063.472
RIGA	3	Riga Met. Area Riga City Jurmala (coast) Jurmala (Surr)	1.100.000 693.046 57.503 60.798	6	Salaspils Ogre Kekava Olaine Marupe Tukums	24.004 35.305 25.240 20.614 23.349 29.943	3	Sigulda Adazi Stopini	19.037 12.171 12.161	12	1.070.000
TOTAL	**35**		**6.205.908**[84]	**21**		**641.543**	**410**			**466**	**10.209.780**

[82] BRETAGNE (INSEE, 01/01/2017)
[83] Municipalities above 10.000 inhabitants.
[84] Concerning Atlantic Cities include Brest and Rennes metropolitan áreas population; concerning Riga include Riga Metropolitan área (1,1 Million) instead of Riga city.

6.2. ART 7 of ERDF Regulation

CHAPTER II Specific provisions on the treatment of particular territorial features
Article 7 Sustainable urban development
1.The ERDF shall support, within operational programmes, sustainable urban development through strategies that set out integrated actions to tackle the economic, environmental, climate, demographic and social challenges affecting urban areas, while taking into account the need to promote urbanrural linkages.

2. Sustainable urban development shall be undertaken through Integrated territorial investment as referred to in Article 36 of Regulation (EU) No 1303/2013, or through a specific operational programme, or through a specific priority axis in accordance with point (c) of the first subparagraph of Article 96(1) of Regulation (EU) No 1303 /2013.

3. (…)

4. At least 5 % of the ERDF resources allocated at national level under the Investment for growth and jobs goal shall be allocated to integrated actions for sustainable urban development where cities, sub-regional or local bodies responsible for implementing sustainable urban strategies ("urban authorities") shall be responsible for tasks relating, at least, to the selection of operations in accordance with Article 123(6) of Regulation (EU) No 1303/2013, or, where appropriate, in accordance with Article 123(7) of that Regulation. The indicative amount to be dedicated for the purposes of paragraph 2 of this Article shall be set out in the operational programme or programmes concerned.

6.3. EU URBAN – RURAL DEMOGRAPHY

Urban Europe — statistics on cities, towns and suburbs
Executive summary

Figure 4: Distribution of population, by degree of urbanisation, 2014
(% of total population)

	Cities	Towns and suburbs	Rural areas
EU-28	41.6	31.0	27.5
Malta	89.5	10.3	0.2
United Kingdom	57.2	29.2	13.6
Netherlands	45.1	40.2	14.7
Italy	43.4	41.1	15.5
Belgium	28.8	53.2	18.0
Germany	35.4	41.4	23.2
Spain	51.1	22.5	26.5
Portugal	44.4	28.4	27.1
Cyprus	51.2	20.9	27.9
Sweden	35.1	36.4	28.5
Finland	34.2	35.7	30.1
Bulgaria	39.5	26.4	34.2
France	45.2	19.8	35.0
Ireland	39.7	24.3	36.0
Czech Republic	31.5	31.2	37.3
Greece	38.0	23.9	38.1
Hungary	29.7	30.3	40.0
Austria	29.8	29.4	40.7
Estonia	43.1	15.7	41.2
Slovakia	23.6	35.1	41.3
Poland	33.2	24.5	42.3
Romania	33.5	24.0	42.6
Slovenia	18.8	36.4	44.8
Denmark	34.2	20.6	45.2
Lithuania	42.8	10.5	46.7
Latvia	43.4	9.7	46.9
Croatia	24.7	28.4	46.9
Luxembourg	14.5	36.6	48.9
FYR of Macedonia (1)	56.6	43.4	0.0
Iceland	64.7	20.5	14.9
Switzerland (2)	27.3	48.1	24.5
Norway	39.1	33.0	27.9
Serbia (2)	36.1	27.7	36.2

(1) 2011. Rural areas: low reliability.
(2) 2013.
Source: Eurostat (online data code: ilc_lvho01)

Eurostat Regional Yearbook 2019
Chapter 13 — Focus on cities

Figure 1: The 20 largest functional urban areas of the E

(million inhabitants)

	City	Commuting zone
Paris (FR)	9.8	12.8
London (UK)	8.8	12.1
Madrid (ES)	4.9	6.6
Berlin (DE)	3.6	5.1
Milano (IT)	4.1	5.1
	12.8	12.8
Ruhrgebiet (DE) (1)	0.6	5.1
Barcelona (ES)	3.6	4.9
Roma (IT)	2.9	4.4
Napoli (IT)	3.1	3.4
Greater Manchester (UK)	2.8	3.3
	12.8	12.8
Hamburg (DE)	1.8	3.2
(UK)	2.5	3.0
Lisboa (PT)	1.8	2.8
Budapest (HU)	1.8	2.9
München (DE)	1.5	2.8
	12.8	12.8
Stuttgart (DE)	0.6	2.7
Frankfurt am Main (DE)	0.7	2.6
Bruxelles / Brussel (BE)	1.2	2.6
Leeds (UK)	0.8	2.6
Amsterdam (NL)	0.8	2.5
	12.8	12.8

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Figure 3: People at risk of poverty or social exclusion, 2017

(% share of total population, by degree of urbanisation)

	Cities	Towns and suburbs	Rural areas
EU-28 (1)	22.6	21.0	23.9
Greece	32.7	33.3	38.9
Italy	30.4	27.6	28.7
Belgium	30.1	15.2	20.9
Bulgaria	29.8	38.0	51.9
Austria	26.3	16.4	13.0
United Kingdom	24.6	19.0	16.1
Spain	24.2	26.9	31.1
Portugal	23.2	19.7	27.5
Denmark	23.0	15.7	13.1
Ireland	22.5	24.0	22.0
Latvia	22.5	30.7	33.7
Germany	22.3	17.2	16.8
Cyprus	21.5	28.8	29.5
Estonia	20.7	22.2	26.9
Lithuania	19.9	28.0	37.2
Netherlands	19.8	13.4	13.0
Romania	19.6	30.5	48.5
Hungary	19.3	26.2	31.0
Malta (2)	19.2	20.7	
France	18.5	20.2	13.9
Luxembourg	18.3	26.3	18.6
Croatia	18.0	25.3	33.1
Slovenia	17.9	15.8	17.7
Sweden	17.5	15.7	20.6
Finland	16.3	15.0	15.6
Poland	14.6	18.2	24.2
Czechia	12.5	12.7	11.6
Slovakia	11.2	17.0	18.3
Switzerland (3)	21.4	16.2	17.1
Norway	19.4	14.2	14.1
Iceland (3)	11.7	14.3	11.3
North Macedonia	41.1	40.3	44.1
Serbia	30.4	34.4	43.9

Note: ranked on cities.
(1) Rural areas: estimate.
(2) Rural areas: low reliability
(3) 2016.
Source: Eurostat (online data codes: ilc_peps13 and ilc_peps01)

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Figure 7: Unemployment rate, 2017

(%, unemployed people aged 15-74 years as a share of the total labour force aged 15-74

	Cities	towns and suburbs	Rural areas
EU-28	8.3	7.5	6.6
Greece	23.0	22.7	18.0
Spain	16.6	18.0	17.7
Italy	11.9	10.9	10.5
Belgium	11.7	5.4	4.9
France	10.3	10.3	7.7
Portugal	10.3	8.4	7.3
Cyprus	9.9	12.7	12.1
Austria	9.3	4.9	2.9
Finland	9.3	8.9	7.4
Croatia	9.1	11.3	13.0
Latvia	8.5	6.9	10.2
Slovenia	7.8	6.8	5.9
Sweden	7.6	6.4	6.0
Ireland	6.8	7.5	6.3
Denmark	6.6	5.8	4.8
Slovakia	6.0	7.2	10.0
Estonia	5.6	6.4	5.5
Luxembourg	5.5	6.3	4.9
Netherlands	5.5	4.1	3.8
Germany	4.9	3.4	2.7
United Kingdom	4.9	3.6	3.2
Lithuania	4.4	7.0	10.9
Malta (1)	4.4	3.8	
Bulgaria	4.2	6.1	10.2
Poland	4.2	5.2	5.3
Romania	3.6	5.9	5.4
Hungary	3.4	4.1	5.0
Czechia	2.8	3.0	2.9
Switzerland	6.0	4.7	3.4
Norway	4.7	4.5	3.5
Iceland	2.9	3.0	1.8
:	:	:	
Serbia	15.1	14.8	11.5

Note: ranked on cities.
(1) Rural areas: low reliability
Source: Eurostat (online data code: lfst_r_urgau)

6.4. Investments needs in EU to deliver the green transition and digital transformation

Sectoral breakdown of green transformation investment gaps *(EUR bn, per year)*				
Sectors		**Climate mitigation and energy 2030 targets**	**Wider environmental objectives, beyond climate**	**Total green transformation**
Renewable energy	Power grids	10	-	10
	Power plants	20	-	20
	Total Renewable Energy	30	-	30
Construction	Residential energy efficiency	115	-	115
	Business energy efficiency	70	-	70
	Total Construction	185	-	185
Industrial/other energy efficiency	Industrial energy efficiency, new efficient boilers	5	-	5
Transport	Vehicles, rolling stock, vessels and airplanes	20	-	20
	Infrastructure - Core TEN-T network	30	-	30
	Infrastructure - Other interurban infrastructures	35	-	35
	Infrastructure - Urban transport	35	-	35
	Total Transport	120	-	120
Environmental protection	Protection of ambient air and climate	-	40	40
	Wastewater management	-	15	15
	Waste management	-	10	10
	Protection of soil, ground-/surface water	-	1	1
	Noise and vibration abatement	-	1	1
	Biodiversity landscapes / Agri-food	-	4	4
	Protection against radiation	-	5	5
	Environmental R&D	-	2	2
	Total Environmental protection	-	77	77
Resource management (excluding energy)	Management of waters	-	20	20
	Management of forest resources	-	2	2
	Management of wild flora and fauna	-	1	1
	Management of materials and efficiencies	-	10	10
	Resource management R&D	-	5	5
	Total Resource management (excl. energy)	-	38	38
Circular economy (beyond needs already included)	Additional potential (based on EMF papers) in 3 sectors (food, mobility and built environment), informal expert view	-	15	15
		340	**130**	**470**

Source: Commission services; Estimate for additional investments needs in the power, construction, industrial and transport (vehicles and rolling stock, excluding infrastructure) sector based on EUCO32-32.5 scenario, https://ec.europa.eu/energy/en/data-analysis/energy-modelling/euco-scenarios. Estimates of additional investment per year over the period 2021-2030 are relative to 2016 Reference, estimates per sector rounded to the nearest € 5 bn. Estimates not yet updated to include raising the ambition of GHG emission reductions to 50-55%. Climate change adaptation is not yet assessed and incorporated in climate figures. The European Green Deal initiatives, being rolled out currently, are only partly addressed yet. Environmental figures do not comprehensively cover marine issues. For the water domain, the Water Framework Directive and the Floods Directive still to be added to the assessment, as well as the most recent OECD-ENV water study results (not fully captured yet).