

# 2nd International Conference on Future Challenges in Sustainable Urban Planning & Territorial



UNIVERSIDAD DE MURCIA

## European programmes as a driving force for the transformation of cities. Study on their application in the Region of Murcia (Spain)

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Over the last thirty years, cities have become the main centres of population. Recent research estimates that the concentration of population in cities accounts for 70% of the total European population, reaching 80% in some countries, including Spain. However, this increase in population density has led to associated environmental degradation. The Region of Murcia, in Spain, has special characteristics in terms of climatology and orography that are generating increasingly extreme climates, causing serious deterioration for the territory and for the population. In this Region, therefore, it is vital to adopt actions to mitigate the consequences of climate change in its urban environments. The aim of this paper is to analyse the European and national initiatives on sustainable development of cities that are being carried out in the Region of Murcia, Spain. Throughout this work, a review will be made of the different European programmes that support with funding projects for the transformation and regeneration of these urban environments, mainly considering aspects such as sustainability and adaptation to climate change in order to achieve greater resilience.

### Introduction

Urban sustainability faces various threats that jeopardize the quality of life in urban environments. These threats include rapid population growth, traffic congestion, environmental degradation, resource scarcity, lack of resilient infrastructure, and challenges associated with climate change.

Another important aspect to address is the increase in urban population density. At the beginning of the 20th century, the urban population was only 13% of the world's population, but over the course of this century it has risen to 55% (Dijkstra et al., 2018; Elmqvist et al., 2019). Recent studies indicate that the world's population is expected to be concentrated in urban settings with an estimated 68% by 2050. In the case of Belgium, Denmark, France, Norway and Spain, this percentage increases by 70% to 80%, (Lopez et al., 2019: 11).

Cities with the highest population density contribute the most to environmental degradation. The degradation of areas and neighbourhoods in urban environments led to social and physical segregation which, in the context of Europe, led to the implementation of new neighbourhood and city management policies (Arsenio et al., 2016), and where it was determined that the solution to these poverty-related problems could not be solved locally (Wratten, 1995). This implied the transfer of their resolution to higher levels, national and supranational governments, giving shape to urban issues for the first time (de Gregorio et al., 2021).

For this reason, from the 1990s onwards, the European Commission began the process of searching for solutions that would mitigate the urban degradation that had settled in neighbourhoods and cities, thus enabling social and economic cohesion.

The aim was to develop new policies that were set out in the Green Paper on the Urban Environment (European Commission, 1990), laying the foundations for the legitimisation of public policy proposals for cities.

### Methods

Throughout this work, a review will be made of the different European programmes that support with funding projects for the transformation and regeneration of these urban environments, mainly considering aspects such as sustainability and adaptation to climate change in order to achieve greater resilience.

#### URBACT

URBACT is an EU program facilitating sustainable urban development by fostering knowledge exchange and collaboration among European cities. It aims to address urban challenges, promote innovation, and enhance the effectiveness of local policies through a network of cities sharing experiences and best practices.

#### URBAN AGENDA

The Urban Agenda is a strategic framework aiming to address the challenges and opportunities of sustainable urban development. Its key objectives include promoting sustainable development, improving urban efficiency, enhancing quality of life, fostering social inclusion, encouraging innovation and technology use, building urban resilience, and prioritizing citizen participation. The Urban Agenda emphasizes collaboration between various levels of government, as well as active involvement of the community and private sector.

#### LIFE PROGRAMME

LIFE is an EU funding program that supports projects addressing environmental and climate challenges. It focuses on promoting innovative solutions, conservation of nature and biodiversity, resource efficiency, and climate action. LIFE aims to advance sustainable development practices and contribute to the EU's environmental and climate goals.

#### DUSI Strategies

The DUSI program (Strategies for Sustainable and Integrated Urban Development) is a European Union initiative that funds local projects to promote sustainable and comprehensive urban development. Its aim is to enhance the quality of life in urban areas by implementing strategies addressing various aspects, such as mobility, the environment, and social inclusion.

CITIES	PROJECT
Molina de Segura	Cities4CSPR
Murcia	INTERACTIVE CITIES
Murcia	Innovato-R
Mula	KAIROS
Cartagena	MAPS - Military Assets as Public Spaces
Yecla	Wood Footprint

Urban Agenda				
CITIES (population)				
Grup 2	Grup 3	Grup 5	Grup 6	
5.000 - 20.000	20.000 - 50.000	100.000 - 300.000	> 300.000	
Los Alcázares	Caravaca de la Cruz	Cartagena	Murcia	
Lorquí	Cieza			

CITIES	PROJECT
Las Torres de Cotillas	Estrategia DUSI "Las Torres Conecta"
San Javier	Estrategia DUSI "San Javier Horizonte 2022, una ciudad viva"
Molina de Segura	Estrategia DUSI "Molina 2020 Avanza Contigo"
Cieza	Estrategia DUSI "Cieza 2025 - Ciudad integradora"
La Manga	Estrategia DUSI "La Manga abierta 365"
Águilas	Estrategia DUSI "Águilas SOSTenible"



Specifically, this research will deepen and analyse one of the main European initiatives that pursue climate change adaptation and enable the transformation of sustainable, inclusive and resilient urban environments that promote the prosperity and well-being of all their inhabitants, as well as the mitigation of greenhouse gas emissions for the protection of the environment. This programme has extensive experience with more than 5,600 projects throughout the European Union since 1992. For this last call 2021-2027, the European Commission has increased the programme's budget to 5,400 million euros, including as areas of action: Nature and biodiversity, Circular economy and quality of life, Mitigation and adaptation to climate change and Transition to clean energy.

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### Results

The study will analyse the projects that have been approved for Spain, highlighting their high participation in the three sub-programmes; LIFE Environment, LIFE Nature and LIFE Climate.

The study will analyse the projects that have been approved for Spain, highlighting its high participation in the three sub-programmes; LIFE Environment, LIFE Nature and LIFE Climate, and will look in depth at the LIFE Climate projects (Mitigation and Adaptation to Climate Change) that have been approved and have obtained funding from Spanish public or private institutions.

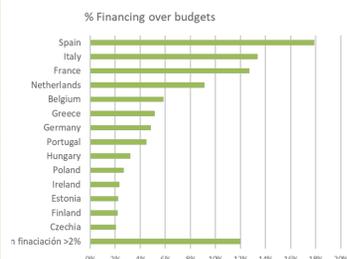
The following graph shows the LIFE projects (2014-2020) that have been implemented, amounting to a total of 6,907 and with funding of 2,565,653,488.33 €.

Countries	Nº Proj	Nº participants	EU Contribution	% Financing over budgets	Countries	Nº Proj	Nº participants	EU Contribution	% Financing over budgets
Bosnia and Herzegovina	1	1	43.780,00 €	0,00%	Estonia	24	96	34.514.477,00 €	1,35%
Nigeria	1	1	44.341,00 €	0,00%	Czechia	44	84	40.709.505,00 €	1,59%
North Macedonia	1	1	63.307,00 €	0,00%	Bulgaria	39	95	43.561.976,88 €	1,70%
Russian Federation	1	2	131.679,00 €	0,01%	Latvia	24	113	49.245.434,00 €	1,92%
Ukraine	3	4	243.595,00 €	0,01%	Slovakia	30	72	49.591.187,00 €	1,93%
Kazakhstan	1	2	328.408,00 €	0,01%	Ireland	23	73	55.577.316,00 €	2,17%
Belarus	1	1	335.639,00 €	0,01%	Austria	39	89	57.752.899,00 €	2,25%
Israel	2	2	348.537,00 €	0,01%	Hungary	38	152	62.857.794,00 €	2,45%
Albania	3	4	363.196,00 €	0,01%	Slovenia	45	155	63.884.945,00 €	2,49%
Tunisia	1	1	402.139,00 €	0,02%	Portugal	93	238	69.108.138,00 €	2,69%
Kenya	1	1	471.481,00 €	0,02%	Denmark	59	318	72.168.272,25 €	2,81%
United States	2	2	536.468,00 €	0,02%	Finland	43	184	73.180.821,85 €	2,85%
Switzerland	4	4	554.207,00 €	0,02%	Sweden	30	193	84.412.341,50 €	3,29%
Türkiye	2	2	626.296,00 €	0,02%	Greece	105	329	94.362.509,00 €	3,68%
Jordan	1	1	762.864,00 €	0,03%	Sweden	49	174	101.240.910,40 €	3,95%
Norway	2	2	1.239.004,00 €	0,05%	Belgium	113	232	118.492.794,00 €	4,62%
Serbia	6	8	1.364.372,00 €	0,05%	Netherlands	100	272	132.201.925,00 €	5,15%
Luxembourg	6	8	4.589.979,00 €	0,18%	United Kingdom	68	148	133.931.770,00 €	5,22%
Malta	12	19	12.865.581,00 €	0,50%	Germany	154	283	179.008.547,00 €	6,98%
Croatia	30	63	15.690.909,00 €	0,61%	France	167	567	224.041.269,00 €	8,73%
Romania	29	50	19.240.371,00 €	0,75%	<b>Spain</b>	<b>361</b>	<b>1.417</b>	<b>354.391.239,45 €</b>	<b>13,81%</b>
Cyprus	26	81	27.016.998,00 €	1,05%	Italy	324	1.312	354.477.407,00 €	13,82%
Lithuania	13	51	29.676.859,00 €	1,16%					

The data published highlights the high participation of Spain and Italy in this LIFE programme; Spain stands out with 1,417 projects, accounting for almost 14% of the funds allocated by the European Union for this LIFE programme.

Focusing the research study on the LIFE CLIMATE sub-programme (2014-2020), there are a total of 551 projects that have received funding from European funds amounting to 529,792,929.58 €.

Spain receives almost 18% of the total funds offered by the EU, leading with 89 projects and with the participation of more than 400 public and private institutions.



Spain, as a Mediterranean territory, is aware of the consequences that climate change is having on both the territory and the population (droughts, floods, desertification, etc.), which has made it a leader in projects that enable better adaptation to the climate.

If we compare all the LIFE programmes that have benefited Spanish public and private institutions, the projects of the LIFE Environment sub-programme stand out. These projects have received more funding and have had a greater number of participants.

This research aims to analyse the contribution that the LIFE Climate sub-programme has made to the transformation of more sustainable urban environments, with special emphasis on adaptation to climate change and the experiences of exchange and collaboration with other institutions in EU member states.

Participant country	Nº Projects	Nº participants	EU Contribution	% Financing over budgets
Spain	361	1417	354.391.239,45 €	
LIFE Environment	193	701	144.287.316,00 €	41%
LIFE Nature	79	314	115.459.856,00 €	33%
LIFE Climate	89	402	94.644.067,45 €	27%

### Conclusions

In conclusion, it can be said that all the sub-programmes have had a high level of participation with an average of around 20 participants per project. It can be concluded that, in Spain as a whole, national, regional and local governmental institutions, universities, research centres and private institutions are aware of the need to implement actions for the environment and climate action in order to transform urban environments and make them more sustainable, with special emphasis on adaptation to climate change. European and national policies that promote measures for the regeneration of urban environments and their transformation have allowed, through various programmes or projects, the change of a multitude of cities.