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# Urban Solution Directory

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2024

## URBAN SOLUTION DIRECTORY

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<b>PROBLEM OR URBAN CHALLENGE TO WHICH THE PROJECT WAS ADDRESSED</b>	<b>Nº PROYECTOS</b>
Pollution	1
Public spaces and green areas	15
Urban mobility	15
Revitalization of historic areas	4
Others	8

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INNOVATION COMPONENT	Nº PROYECTOS
Big Data	2
Digitalization	8
Certification	2
Cybersecurity	1
Energy efficiency	13
Infrastructures	3
Mobility	15
Industrialized construction	4
Circular economy	12
Building	4
Infrastructures	17
Materials	11
Planning	12
Digital twin-BIM,	1
Management processes	4

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ENTIDADES	Nº PROYECTOS
ADVANCED LEISURE SERVICES	1
ARUP	1
ASOC. IBÉRICA FOTOCATÁLISIS	1
BURGOS & GARRIDO ARQUITECTOS	1
CALCO	1
CHAPMAN TAYLOR	1
CHM	1
EMT	3
GREEN BLUE MANAGEMENT	3
INTEMAC	1
LACROIX	2
LEKU STUDIO SLP	2
LURSTUDIO KOOP	2
METROVACESA	1
NORMO DELIVERY SYSTEMS SL	1
PADECASA	1
PEZ ESTUDIO	1
PORRATLWINARE,SL (SIX 3D)	1
SACYR	3
TECNALIA	1
TYPSA	1
UAX	1
UFV	1

## UAX

- Universidad Alfonso X El Sabio
- Low Emission Zones Observatory
- 2020
- Second Phase Underway
- 200.000 euros
- Toda España
- Urban Mobility
- Digitization, Circular Economy, Energy Efficiency, Infrastructure, Materials, Mobility, Planning

### **Summary (object, description, added value)**

"Since the publication of Law 7/2021 on Climate Change and Energy Transition in May 2021, political and technical leaders of municipalities with more than 50,000 inhabitants and insular territories have clearly understood the obligation to adopt Sustainable Urban Mobility Plans (SUMP) before the beginning of this year. These plans must introduce a series of measures based on the establishment of Low Emission Zones (LEZ) and other complementary actions: facilitating walking and cycling, creating green corridors and areas, improving public transport, promoting electric mobility for people and goods, optimizing goods distribution and commuting, and enhancing air quality around 'sensitive' areas (such as schools and healthcare facilities).

Recognizing the urgent need for these projects, in September 2021, the Polytechnic School of the Alfonso X el Sabio University (UAX) began conducting a series of research projects with our Master's students in Civil Engineering on the technical and economic feasibility of implementing these measures in municipalities across Spain, including the Balearic and Canary Islands. We also proposed improvements to existing LEZs in Madrid and Barcelona, following our #UAXmakers methodology, which focuses on learning through real-world cases with a strong emphasis on innovation and sustainability.

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In the more than 40 populations analyzed, we pre-designed the necessary actions and devices, estimating the corresponding investments for the implementation, operation, and monitoring of an LEZ: signage, access control and parking systems, communication systems, management systems, air quality sensors and meters, mobile app development, communication and marketing actions, monitoring and review, etc.

The main results show that LEZs are feasible in any type of population, as long as the specific characteristics of each urban fabric and mobility development are adequately considered. The total necessary investments depend on the type of population, with costs around 9 million euros in cities as diverse as Toledo or Las Palmas de Gran Canaria, and an average ratio for all of Spain estimated at around 4-6 euros per inhabitant.

These investments, spread over 2 to 4 years, would have a return through regulated parking, parking fees, fines, pay-per-use, mobile apps, etc. If the municipality cannot cover these costs within that timeframe, it is possible, as with other urban services, to resort to public-private partnership systems.

One of the main conclusions is that, at this moment, the city of Madrid is the only one that has already implemented what should be a Sustainable Urban Mobility Plan, with planning and monitoring under the so-called Madrid 360 Strategy.

The project has already received numerous recognitions from external entities. For instance, one of these projects, focused on the city of Toledo, was a finalist in the XIII edition of the TRABIT-UAX Award 2022. Another project, this one on the city of Malaga, was awarded last December at the Sustainable and Accessible Mobility Awards given by the Renault Group Spain Foundation.

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In May 2023, the initiative was awarded in the 3rd Edition of the International Mobility Awards, granted by the Association of Companies for Sustainable Mobility, in the category of Special Research Award.

Furthermore, the first blog post titled "Pending Low Emission Zones" has already been published by the Foundation of Economic Studies, which will be followed by an article with the results of this first phase of the research. This will continue with the study and improvement of LEZs that will be implemented in the coming years.

In September of the same year, the research was awarded in the XVII Edition of the "Muévete Verde" Awards, in the category of Research for Sustainable Mobility, coinciding with the European Mobility Week 2023.

The "Muévete Verde" program, launched by the Madrid City Council and the Municipal Transport Company (EMT) in 2007, aims to identify, recognize, and disseminate the best initiatives in favor of Sustainable Mobility in the city of Madrid. In this edition, in addition to UAX, companies such as SEUR, ALSTOM, and ALSA were also awarded.

This research project continues from October 2023 with the next phase, which will consist precisely in analyzing the monitoring and effectiveness of the measures implemented in cities that have already done so, proposing improvements to emission reduction measures (greenhouse gases, pollutants, and noise) to ensure their effectiveness."

<https://policy.fedea.net/las-zonas-de-bajas-emisiones-pendientes/>

## **ASOC. IBÉRICA FOTOCATÁLISIS**

- Asociación Ibérica de Fotocatálisis
- White Paper on Photocathylisis
- 2014
- 1 year
- 49.000 euros
- Madrid
- Infrastructures , Materials
- Improvement of indoor and outdoor air quality

### **Summary (object, description, added value)**

Guide for the Design and Application of Photocatalytic Nanomaterials to Improve Urban Habitability

<https://www.fotocatalisis.org>

## **CHM**

- CHM OBRAS E INFRAESTRUCTURAS S.A
- Pavement for the reduction of Urben Heat Island effect
- 2017
- 51 months
- 1.359.221 euros
- Murcia
- Public spaces and green areas
- Materials

<https://heatlandlife.eu/>



## CHAMPMAN TAYLOR

- CHAPMAN TAYLOR global architects & masterplanners
- Responsible Urban Design - Jeddah Airport District
- Currently
- 10 years
- No conocido en su totalidad
- Jeddah - Arabia Saudí
- Urban mobility, Public spaces and green areas, Others (specify)
- Industrialized Construction, Building, Energy Efficiency, Infrastructure, Mobility, Planning
- Global urban innovation

<https://www.chapmantaylor.com/projects/airport-city>

## BURGOS & GARRIDO ARQUITECTECTOS

- Burgos & Garrido Arquitectos
- Madrid Río
- 2012
- Six years
- 420.000.000
- Madrid
- Revitalization of historic areas, Public spaces and green areas
- Infrastructure, OTHERS (Specify below)
- Ecological connection, construction, and planting on slab
- 

### **Summary (object, description, added value)**

The Madrid Río project is the most significant work carried out in the city of Madrid in recent decades and, probably, one of the most ambitious public space projects recently built in Europe. In 2003, the Madrid City Council decided to bury the section of the first major ring road of the city that ran along the banks of the Manzanares River for six kilometers. Its construction, 30 years ago, led to the disappearance of the links between the city and its river, leaving it isolated, inaccessible, and invisible.

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The team led by Ginés Garrido and composed of the offices Burgos & Garrido Arquitectos, Porrás La Casta, Rubio & A-Sala, and West 8 won the international competition held in 2005 to carry out the public space project on the surface freed up by the highway burial. The project connects the city of Madrid with the valuable landscapes surrounding it, transforming the Manzanares River into the connecting point between the city and its geography.

Madrid Río covers an area of 150 hectares of green areas and 60 hectares of citizen facilities, including sports facilities, interpretation and artistic creation centers, an urban beach, children's play areas, kiosks, and cafes. With this intervention, the city of Madrid once again belongs to the geography of the river.

The project has consolidated over the past ten years as a key and paradigmatic place in Madrid, introducing a new dimension in the relationship of its inhabitants with public space and outdoor urban activities. Madrid Río has been recognized both inside and outside the country, having received numerous awards. Among them, we highlight the Verónica Rudge Green Prize, awarded in 2016 by Harvard University. The prize is probably the most important awarded worldwide for urban design projects and is given to those that stand out for their design excellence and their ability to transform cities through socially responsible strategies that improve public space and the quality of life of its citizens.

<https://www.archdaily.cl>

## **PORRATLWINARE,SL (SIX 3D)**

- PORRATLWINARE,SL (SIX 3D)
- Six3D
- 2023
- 1 year
- 150.000
- Cuenca
- Digitalization
- Creation of Digital Environment in the City's Tourist Zone

### **Summary (object, description, added value)**

Recreation of several areas of the city to expand the tourist impact in sectors such as gaming

[https://1drv.ms/b/s!Ank\\_InRmF65d2uczIP4Cl\\_t57W6UzA?e=CMCJ79](https://1drv.ms/b/s!Ank_InRmF65d2uczIP4Cl_t57W6UzA?e=CMCJ79)

## **PADCASA**

- Padecasa Obras y Servicios S.A
- Sensasfalt
- 2022
- 1 year
- 480.000 euros
- Ávila y Burgos
- Digitization, Circular Economy, Energy Efficiency, Infrastructure, Machinery, Materials
- Digitalization and sustainability

### **Summary (object, description, added value)**

Development of a digitization and sensorization system in hot asphalt mixture manufacturing plants. Numerous sensors have been installed to obtain detailed information on the manufacturing process, connected to servers and databases to verify compliance and establish a carbon footprint

<https://www.padecasa.com/>

## **INTEMAC**

- INTEMAC
- Scanning and Monitoring of Historic Buildings
- 2022
- 12 months
- 15.000 euros
- Madrid
- Revitalization of historic areas
- Digital Twin-BIM, OTHERS (Specify below)
- 3D Laser and wireless probes

### **Summary (object, description, added value)**

Intemac (Technical Institute of Materials and Construction) of the TYPESA Group conducts pathological studies of structures in historic buildings to make maintenance decisions that prevent structural deterioration and extend their useful life. Intemac has experience in buildings as emblematic as the Palacio de las Comunicaciones, the Bank of Spain, or the Palacio de las Cortes in Madrid.

In the session hall of the Palacio de las Cortes, a monitoring of the vault was carried out to analyze the possible evolution of structural anomalies that had manifested. A 3D Laser scan and monitoring of hygrothermal parameters using wireless probes were conducted to study the effect of humidity and temperature on the vault's movements. The information obtained is loaded into the BIM model for a detailed study of the Hemicycle vault.

With this information, the Board of Congress is able to make maintenance decisions and adopt measures that ensure the building's functionality and safety. Some of the solutions include an appropriate air conditioning system in the room to maintain approximately constant relative humidity levels, as well as avoiding thermal variations between the interior and exterior of the vault.

The work was carried out with the facilities in use and without interfering with the activities of the parliamentarians.

<https://www.espaciobim.com/>

## **CALCO**

- CALCO Territorio y Urbanismo
- Climate Refuge Network of Manacor
- 2023-2024
- 8 months
- 2 M euros
- Mancor, Mallorca
- Public spaces and green areas
- Materials, Planning

### **Summary (object, description, added value)**

The project uses the courtyards of 10 schools to generate a new network of green spaces open to the entire population with bioclimatic functionality. A rigorous measurement of the impact generated at the level of soil permeability, water infiltration, shade gain, reduction in irrigation demand, planting of native species, and increase in biodiversity was carried out. The project strategically contributes to the existing green infrastructure of the city through its connectivity and also relates to the network of facilities, providing spaces for cultural, sports, and recreational activities for different profiles.

<https://calcoestudio.com/>

## **LEKU STUDIO SLP**

- Leku Studio SLP
- 2022
- 1 day
- 10.000 euros
- Barcelona
- Urban mobility, Public spaces and green areas
- Industrialized Construction, Circular Economy, Materials, Mobility, Planning

### **Summary (object, description, added value)**

An innovative, flexible and durable urban element that enables the agile and reversible extension of the sidewalk.

A modular, adaptable and extendable system to transform streets by creating small social plazas in spaces previously occupied by cars. Its structure guarantees easy and quick assembly without the need for civil works or service infrastructure. Flexible Plaza guarantees universal accessibility by creating environmentally comfortable spaces around strategic spaces such as terraces, school facilities, health centres, local shops, etc.

The FLEXIBLE PLAZA model is based on the construction of a series of independent modular elements that guarantee agile and reversible assembly of the platform, as well as its aggregability and the extensible capacity of the system by adding modules in longitudinal and also transversal directions. The platform has been designed with the aim of creating a flexible and versatile system capable of adapting to various arrangements both in alignment in parking lanes and on larger surfaces that allow the colonization of larger spaces such as chamfers or intersections. The elements that make up the family are characterized by the softness of their shapes, with rounded edges and warm textures that seek to offer higher levels of comfort through a human and friendly design.

The design of the elements is carried out under the premise of the economy of materials and their quality and great durability. The sustainability of the system is based on its durability and flexibility through a set of pieces designed with highly resistant, adaptable and modular materials, favoring the reuse and second life of the elements in different contexts, adapting to new conditions and needs of use.

<https://www.archdaily.cl/>

## **TYPSA**

- TYPSA ,TECNICA Y PROYECTOS S.A.
- BE-access: Virtual Reality for Inclusive Mobility Design
- 2021-2023
- 2 years
- 25.000 euros
- Valencia
- Urban Mobility
- Certification, Infrastructure, Mobility
- Inclusive design and user participation

## **Summary (object, description, added value)**

TYPSA actively responds to the need to integrate transport accessibility requirements from the design stage, and to this end has developed an innovation project with inclusive technology that contributes to achieving safe, affordable and accessible mobility for all.

The BE-access tool allows the participation of all parties involved in the evaluation of the design of a station. The proposal consists of facilitating user participation in intermediate design phases, covering any profile of person with or without disabilities, through the testing and evaluation of the virtual reality experience.

BE-access allows an interactive tour of all the spaces of the station and its evaluation, including aspects such as: locating the vertical means of transport with ease, identifying the routes, locating the ticket sales equipment, orienting oneself through a correct signage system, accessing the turnstile line, locating the accessible car areas in Andes, etc. The tool identifies the level of user satisfaction through the immersive experience, in order to facilitate the design decision-making of the infrastructure manager.

Once the station is built and put into service, BE-access can expand its functionality and become a user information tool through the operator's website. On the other hand, it allows the manager to facilitate the accessibility certification of the ARS Foundation, through a technical evaluation process at the design stage.

The development and testing of the application has been carried out at the Amado Granell-Montolivet underground station, of the extension of line 1 of the Valencia Metro, with the collaboration of the Ferrocarrils de la Generalitat Valenciana.

From 223, this tool is used in TYPESA designs that aspire to obtain accessibility certifications from the ARS Foundation.

The BE-access project has been considered a good business practice that contributes to SDGs 1 and 11 by the Global Compact in Spain.

[https://compactlink.pactomundial.org/plataforma-buena-practica?  
bbpp=7453](https://compactlink.pactomundial.org/plataforma-buena-practica?bbpp=7453)



## **LURSTUDIO KOOP**

- LURSTUDIO KOOP. ELK. TXIKIA
- Preliminary Consultation for the Santander General Plan
- 2020
- 6 months
- 60.000 euros
- Santander
- Urban mobility, Revitalization of historic areas, Public spaces and green areas
- Digitization, Mobility, Planning, OTHERS (Specify below)
- Social innovation, citizen participation, governance

## **Summary (object, description, added value)**

### **PURPOSE**

This participation process is proposed prior to the revision of the General Municipal Plan for urban planning of Santander (PGS). It is a public governance process that seeks, in turn, the fulfillment of the Sustainable Development Goals (SDG) and its goals, the Spanish Urban Agenda (AUE) 23.

### **PROJECT DESCRIPTION**

The consultation was open during the months of July, August and September 2022, with various participatory actions that allowed for the collection of numerous contributions that will contribute to the future PGS.

- EXHIBITION AND DISSEMINATION MATERIAL
- ONLINE CONSULTATION
- INFORMATION MEETINGS
- URBAN WALKS
- NEIGHBORHOOD TABLES
- SECTORIAL TABLES
- CHILDREN AND YOUTH TABLES

facilitate the understanding of the key issues for the future PGS, the contents of the prior consultation are organized around twelve themes: Territorial and urban strategy, natural environment and landscape, mobility, public space, housing, economic activity, facilities, heritage, urban regeneration, inclusive perspective, sustainability and climate change and innovation. These twelve themes articulate the contents of the different actions and materials, both informative and participatory.

### **ADDED VALUE PROVIDED**

This division of topics together with the diversity of participatory mechanisms allows the collection and synthesis of contributions that allow a thoughtful, joint and complete vision of what Santander wants to be, with multiple additional contributions that are expected to contribute to the future PGS.

In all, the overall number of participants is 1951 people. Although the consultation collected contributions related to the twelve topics and based on the fact that all are of interest for the future PGS, the topics that generated the greatest interest were mobility and territorial and urban strategy, followed by the natural environment and landscape, housing and public space.

With the results described above, as well as with the more detailed contributions

collected in the annexes to this document, the participatory process aims to have contributed greatly to the drafting of the future PGS with reflections and recommendations, the visibility of those that have greater and lesser

consensus, and through citizen training for informed participation. The final report and annexes contain the most relevant reflections prior to the review of the future PGS, as well as key issues and factors in relation to the participatory process and its contribution to the future PGS.

<https://www.santander.es/ciudad/pgs/consulta-publica-ciudadana/informe-final-consulta-pgs>

## **LURSTUDIO KOOP**

- LURSTUDIO KOOP. ELK. TXIKIA
- Green Parking
- 2023
- 6 months
- 171.585 euros
- Muxika, Bizkaia
- Public spaces and green areas
- Circular Economy, Infrastructure, Materials, Planning

### **Summary (object, description, added value)**

A parking lot is proposed using nature-based solutions

## **PEZ ESTUDIO**

- PEZ ESTUDIO
- Biotic Cities
- 2015-2024
- 6 to 18 months
- Different locations
- Public Spaces and green areas
- Industrialized Construction, Circular Economy, Building, Energy Efficiency, Infrastructure, Materials, Planning, Management Processes
- Citizen participation, Climate Change (adaptation and mitigation)

### **Summary (object, description, added value)**

Biotic Cities is an Urban Regeneration methodology to transform how public space is designed and built in our cities towards more sustainable, fair and inclusive models.

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The project responds to the current situation of polycrisis (climatic, social...), placing living capital at the centre and encouraging public spaces to respond to the needs of the people who use them.

It responds to three objectives: to highlight the needs of citizens as users and co-managers of public space, to test pilot projects of urban transformation that put living capital at the centre, and to create a community of theory and practice through mediation.

The work methodology is based on:

Hybrid knowledge: it combines design, environmental and social knowledge, together with experiential knowledge.

Multidimensional perspective: ecological, feminist, collaborative, open source and experimental.

Creative participatory governance: it understands the participants as creative.

Responsible aesthetics: it pursues a new imaginary for a new culture of creation, ethics and aesthetics.

Part of the experience co-creating public and community ecological infrastructures since 21, and from 215 onwards it transcends the specific interventions of tactical urbanism towards the generation of urban strategies for social and ecological transformation on a larger scale.

Examples of this work approach are Agropiazza Getafe (Madrid) and Agropiazza Kirikiño (Bilbao), Imagina el parque de Torrelavega (Cantabria) or Imagina Cangas (Asturias)

## Impact

Ciudades Bióticas creates knowledge by sharing tools and providing training.

It has been part of the Venice Architecture Biennale 22-221, has been a finalist in Arquia Próxima 216; its works have been awarded in several Architecture competitions and it has carried out training at IED European Institute of Design and Parsons The New School New York. It has involved around 1 organisation, more than 5 people in 2 processes in different locations.

## **NORMO DELIVERY SYSTEMS SL**

- NORMO DELIVERY SYSTEMS S.L
- Fixing Urban Delivery: Europe's First City-Wide, Home by Home Smart Mailbox Deployment for Sustainable Last-Mile Delivery
- 2024
- 12 months
- 1.250.000 euros
- Beasain
- Urban Mobility
- Digitization, Infrastructure, Mobility

### **Summary (object, description, added value)**

Cities are so overflowed by packages that 1 out of 3 are not delivered in the first attempt because nobody is there to pick them up. This inefficiency results in (i) frustrated consumers, (ii) negligible profitability levels for carriers and (iii) a costly carbon footprint for cities - 3% of CO2 emissions is produced by the last-mile. Simply put, buildings are not ready to receive packages autonomously.

We are creating a user-convenient (users are not forced to be at home anymore), carrier-efficient (they deliver on the first attempt) and environmentally friendly (saves .23kg CO2 per package) delivery network. We do so through a universal network of parcel boxes, installed inside residential buildings.

We provide the best experience to receive and return online purchases at home, without changing our shopping behaviour. Meanwhile, any carrier can deliver, for free, without the need for integrations. We envision a future in which every building has its own locker.

The unstoppable rise of e-commerce and the inefficient last-mile infrastructure have unleashed the perfect storm. With a 1/3 of packages not being delivered at the first-attempt, failed deliveries reach a stunning sum of 3M every yearly, only in Spain. And it's getting worse. Unless effective intervention gets place, the World Economic Forum (Future of the Last-Mile Ecosystem report) expects delivery vehicles on the road to increase by 36% between now and 23, putting additional pressure on cities' decarbonization targets due to increased congestion. Similarly, they expect that the average commute time to increase by 21% (purely last-mile delivery induced), equalling an additional 11 min of commute time for each passenger every day.

There is an urgent need for effective interventions to make the last-mile delivery more efficient. The ability to adapt to the new context will determine our success in the future. And Beasain, a young-city in the heart of Gipuzkoa, is no exception.

The project consists of a city-wide last-mile digitalization project through massive deployment of smart mailboxes, at every home. Specifically, it will require the manufacturing, deployment and operation of ~5 smart mailboxes accross 633 residential buildings accross Beasain. Beyond the numbers, the initiative will require an active support by the city-council, the local commerce and carrier companies.

This will result in the biggest and most dense last-mile digitalization project accross Europe. It poses a pivotal upgrade for Beasain, adapting to the digital era, tackling the rise of online commerce and serving as the technological nexus connecting commerce, carriers, and citizens.

The deployment will be followed by an environmental study, conducted by the MIT Media-Lab City-Science Group, and assisted by Mubil, the Basque Country Hub for Innovation on Mobility. We will be acting the heart of the urban sustainability. A universal locker infrastructure, will imply better health and comfort for citizens, resulting in:

- | Reduced CO2 emissions by +5%.
- | Reduced traffic jams.
- | Reduced double parking problems.
- | Reduced fines and fuel costs.
- | Enabled sustainable practices (night or low-traffic delivery hours).

## **GREEN BLUE MANAGEMENT**

- GREEN BLUE MANAGEMENT
- Pilot Project of Two Sustainable Urban Drainage Systems (SUDS) near the Madrid Nuevo Norte Project Area
- 2024
- 3 months
- 58.142 euros
- Madrid
- Public spaces and green areas
- Big Data, Digitization

## **Summary (object, description, added value)**

As part of the scope of the works, Crea MNN has commissioned the successful bidder Green Blue Management to design, build and subsequently monitor two different types of Sustainable Urban Drainage Systems (SUDS) on Agustín de Foxá street, very close to the area of action of Madrid Nuevo Norte.

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The company Green Blue Management, integrated into the TYPESA Group since 2018, has already accumulated more than two decades of experience in the field of sustainable drainage, integrating rainwater management into the urban landscape, being the reference company in this field in Spain.

Sustainable Urban Drainage Systems (SUDS) are solutions with low environmental and economic impact that take advantage of the properties of the soil to collect and retain rainwater where it falls. They contribute to improving the quality of the urban environment while increasing the resilience of conventional infrastructures. This approach to drainage in cities contributes to improving the efficiency of the more traditional systems (large collectors, storm tanks and wastewater treatment plants), with which it is compatible, and which are often found to be insufficient in episodes of heavy rainfall.

The main objective of the project is to monitor the quantity and quality parameters of the runoff filtered by the SUDS during a year, and to make a comparison with an equivalent traditional system, consisting of a conventional drain, which will also be built as part of the works.

In particular, the construction of a floodable parterre, a bioretention area type, and a section of permeable pavement with paving stones permeable by joints is proposed. The water filtered by these two types of SUDS, in addition to that captured by the control drain, will be taken to two control manholes, which include level sensors and an automatic sampler. The data recorded by the sensors will be transmitted to a database for consultation, while samples will be collected after rain events for analysis in the laboratory.

This project, with a marked innovative vocation, seeks to test the effectiveness of these SUDS techniques, so that their replicability in other projects can be made possible both within Madrid and in other cities.

<https://creamadridnuevonorte.com/noticia/agua-drenajes-sostenibles/>



## **GREEN BLUE MANAGEMENT**

- GREEN BLUE MANAGEMENT
- Urbanization Project for Cristóbal de Moura, Provençals, and Fluvià Streets in the Ca l’Alier Area
- 2018-2019
- Barcelona
- Revitalization of historic areas, Public spaces and green areas
- Circular Economy, OTHERS (Specify below)
- Green Infrastructure

### **Summary (object, description, added value)**

The project, promoted by the Institut Municipal d’Urbanisme de l’Ajuntament de Barcelona, has been developed in the Ca l’Alier area, within a consolidated zone of Barcelona, and is part of the strategy to structure the city through green corridors, creating healthy and functional spaces to stimulate neighbourhood activity. It is worth noting that the project as a whole was awarded the Albert Serratosa City and Territory Prize, granted by the Caminos Foundation in its 4th edition.

This newly implemented green infrastructure represents an important space of opportunity for the inclusion of Sustainable Urban Drainage Systems (SUDS), aimed at managing runoff in a sustainable way, reducing the impact of waterproofing the land associated with urbanisation. These systems seek to replicate natural hydrological processes that occur prior to urban development (infiltration, filtration, bioremediation, storage, lamination, evapotranspiration), and include techniques such as permeable pavements, rain gardens, infiltration tanks, etc.

The design of the drainage strategy, as well as its sizing and hydraulic modeling, has been carried out by the company Green Blue Management, integrated into the TYPESA Group since 2018, and which has already accumulated more than two decades of experience in the field of sustainable drainage, integrating rainwater management into the urban landscape, being the reference company in this field in Spain.

The project design was carried out from a double perspective, seeking to manage both the quality and quantity of runoff. To do this, SUDS typologies were selected with an adequate treatment capacity according to land uses, and an attempt was made to promote infiltration into the ground at source, so that only during significant rainfall there is a discharge into the existing unitary network.

The solution includes floodable flowerbeds, a bioretention area type, to treat and infiltrate runoff from sidewalks and roads into the ground; and two large infiltration tanks made of polypropylene reticulated boxes, which will help manage runoff from sidewalks and roofs of adjacent buildings. In total, these solutions are capable of managing a basin of 2.6 hectares.

In short, the proposed drainage strategy is a good example of innovation, and of how green infrastructure can be adapted to fulfill an additional function in stormwater management, contributing to the achievement of the Sustainable Development Goals and to improve stormwater management in the city.

<https://greenbluemanagement.com/ganadores-premio-nacional/>

## **GREEN BLUE MANAGEMENT**

- GREEN BLUE MANAGEMENT
- Project for the Renewal of the Water Supply Network and Pilot Implementation of a Sustainable Urban Drainage System in the Median of the Avda. de las Asociaciones de Vecinos, Northern District (Seville)
- 2019
- Sevilla
- Public spaces and green areas
- Replicability and Public Participation

### **Summary (object, description, added value)**

As part of the works to renew the networks in the area around Avenida de las Asociaciones de Vecinos, the Municipal Water Company of Seville (EMASESA) opted for the implementation of various types of SUDS in the area, including monitoring and follow-up systems.

The design of these types of Sustainable Urban Drainage Systems was awarded to the company Green Blue Management, integrated into the TYPESA Group since 218, and which has accumulated more than two decades of experience in the field of sustainable drainage, integrating rainwater management into the urban landscape, being the reference company in this field in Spain.

Sustainable Urban Drainage Systems (SUDS) are solutions with low environmental and economic impact that take advantage of the properties of the soil to collect and retain rainwater where it falls. They contribute to improving the quality of the urban environment while increasing the resilience of conventional infrastructures. This approach to drainage in cities contributes to improving the efficiency of the more traditional systems (large collectors, storm tanks and wastewater treatment plants), with which it is compatible, and which are often found to be insufficient in episodes of heavy rainfall.

In particular, the construction of a large floodable parterre of 833 m<sup>2</sup>, a bioretention area type, adjacent to the road and with the capacity to manage a basin of 1,679 m<sup>2</sup>, was included. Additionally, two areas with permeable pavements of 392 and 454 m<sup>2</sup> respectively were included, which manage the runoff generated in the adjacent pavements. Both types of SUDS seek the infiltration at source of the runoff received.

These actions included a control, monitoring and data collection system that will allow determining the quality of the water infiltrated into the ground, as well as quantifying the excess runoff that they are unable to manage and, consequently, determining the large amount of runoff that is removed from the collector network, and which therefore reduces the volume of water to be pumped and treated in the treatment plants. This information about the performance of the solutions will allow knowing in detail how the proposed designs behave and evaluating their replicability in other parts of the city.

<https://www.emasesa.com/emasesa-en-coordinacion-con-el-distrito-norte-instala-un-sistema-de-drenaje-urbano-sostenible-suds-en-parterres-de-la-avda-de-las-asociaciones-de-vecinos/>

## LACROIX

- LACROIX
- Public Transport Priority V2X
- 2023
- 3 months
- 250.00 euros
- París, Granada, Marrakech, Agadir, ...
- Urban Mobility
- Cybersecurity, Energy Efficiency, Infrastructure, Mobility,
- V2X Communications

Summary (object, description, added value)

Dynamic transit or safety prioritization at intersections. The first evolutionary, interoperable and cyber-secure traffic light prioritization system

The traffic light priority management solution for public transport priority, PrioV2X, allows the commercial speed and frequency of transport lines to be optimized, while also promoting the expansion of connected mobility.

The passage time for public transport at intersections is reduced and emergency priority vehicles are helped to respond safely and quickly.

The operational management of the C-ITS system is simplified thanks to its interoperability. It is possible to include autonomous shuttles within the prioritization system

<https://www.youtube.com/watch?v=-B-yv5n2zw>

## **ADVANCED LEISURE SERVICES**

- ADVANCED LEISURE SERVICES
- BIOSPHERE Sustainable Destination for the Province of Barcelona
- Since 2022
- Continuo
- 100.00 euros / year
- provincia de Barcelona
- Mobility
- BIOSPHERE Sustainable Destination for the Province of Barcelona

## **Summary (object, description, added value)**

In 2011, the city of Barcelona was certified as a Biosphere destination, and the province of Barcelona in 216. Since then, the Biosphere Sustainable Destination certification and sustainable management system has incorporated more than 1,000 companies and entities committed to the comprehensive sustainable management of destinations and companies based on the 17 SDGs and the 169 goals of the United Nations, from a platform that allows the process of commitment, certification and monitoring of the action plan to be fully systematized online. Currently, there are more than 7 certified destinations and almost 5,000 companies share the Biosphere Sustainable Destination management system.

<https://www.biospheretourism.com> -  
<https://www.biospheresustainable.com>

## EMT

- EMPRESA MUNICIPAL DE TRANSPORTES DE MADRID S.A
- Technological Transformation and Expansion of Bicimad
- 2023-2024
- 24 months
- 50.814.721 euros
- Madrid
- Urban Mobility

### **Summary (object, description, added value)**

The transformation and expansion of bicimad involves two actions: on the one hand, the current fleet and technology of bicimad are replaced with the aim of improving the user experience and promoting an increase in the use of bicycles in the city, making it more attractive. The new fleet includes advances that allow, among other improvements, to avoid vandalism, to have a more manageable, ergonomic and robust bicycle or to have functionalities such as station overflow (ending trips at a full station by placing the bicycle next to it), free-floating circulation (without the need for a station) or making intermediate stops. The new stations also have an innovative design to adapt to different needs (they are modular and can be made smaller or larger) and to face vandalism, corrosion, exposure to the elements and the passage of time. In addition, the service coverage is extended to the entire city of Madrid, reaching the 21 districts that make up the capital. The system has grown to 611 stations and 7.5 bicycles spread across the city.

Currently, there are 7.5 bicycles and 611 stations available.

This project is funded by NextGenerationEU Funds, channelled through the Recovery, Transformation and Resilience Plan

## EMT

- EMPRESA MUNICIPAL DE TRANSPORTES DE MADRID S.A
- Hydrogen Generator
- 2022-2024
- 24 months
- 10.545.968 euros
- Madrid
- Urban Mobility
- Circular Economy, Energy Efficiency, Infrastructure, Mobility

## Summary (object, description, added value)

The specific objective of this project is the design and engineering and subsequent acquisition of components and assembly to build an infrastructure that will allow a refueling service to be offered to both light vehicles (passenger cars, etc.) and heavy vehicles (buses, etc.). The project will thus be aligned with the economic and social progress of the region, consistent with both regional development priorities and the Common Strategic Framework (CSF) 214-22 of the EU.

The hydrogen station will cover the entire hydrogen cycle: production, storage and distribution of “green” hydrogen in a totally innovative comprehensive engineering project co-financed by the European Regional Development Funds (ERDF). Ten buses powered by “green” hydrogen (H<sub>2</sub>), the first in the municipal fleet, will be supplied with this alternative energy.

In order to inject sufficient energy into the hydrogen station, the project includes the installation of a total of 2.78 photovoltaic panels distributed over 3 jetties. The photovoltaic roof will generate a maximum power of 1.6 Mwh, 55 kW for each panel.



The use of hydrogen as a fuel is currently one of the main initiatives being developed by the municipal company. Achieving the milestone of having a 1% sustainable fleet is a crucial aspect within the current Madrid 36 strategy and is one of the axes of the EMT Strategic Plan until 225, setting the course for the future to be a green and decarbonized company with an energy-sustainable model.

[www.emt.com](http://www.emt.com)

## **LACROIX**

- LACROIX
- Dynamic and Intelligent Management of Public Lighting
- 2022
- 4 months
- 800.000
- Wavre
- Urban mobility, Public spaces and green areas
- Energy Efficiency, Mobility
- Public Lighting

## **Summary (object, description, added value)**

Modernizing a neighborhood's street lighting infrastructure with a solution that combines connected management and dynamic lighting. One of the first large-scale deployments of a dynamic street lighting management solution in Europe.

Combination of connected nodes and sensors (infrared and radar) for intelligent and dynamic lighting.

Approximately 6,000 connected light points.

<https://www.youtube.com/watch?v=OUKxVU08QcY>

## **ARUP**

- ARUP
- Buenavista - Business Park for Sustainable Urban Solutions
- 2025 start
- 10 years
- 640 millions euros
- Málaga
- Urban mobility, Public spaces and green areas
- Industrialized Construction, Circular Economy, Building, Energy Efficiency, Infrastructure, Materials, Mobility, Planning

### **Summary (object, description, added value)**

o Objective: Masterplan for the creation of an advanced economic, industrial and business activity park in Malaga, capable of becoming a benchmark for a new model of sustainable urban development and generating a new green economy cluster

o Description: The development of a new business park is proposed for advanced economic activities related to sustainable urban solutions, with a strong focus on technology, sustainability and Smart Cities, in line with the development already achieved by Malaga.

The ambitious vision and positioning of Malaga as an innovation cluster for sustainable urban solutions is part of a favourable global environment. The acceleration of global urbanisation is currently being experienced. The world's real estate stock will double in surface area by 2060, which is equivalent to adding another city like New York every month for 40 years. In parallel, the fight against climate change and its effects is a global priority and the connections between climate change and cities are multiple.

# URBAN SOLUTION DIRECTORY

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On the one hand, cities have been and continue to be a driving force for environmental change, being responsible for 75% of global greenhouse gas emissions, being at the same time one of the main causes and also potential solutions. On the other hand, the environment has a direct impact on cities and their inhabitants.

In addition to this favourable global context, the proposal to develop a business park for sustainable urban solutions in Malaga is based on the strength of two fundamental aspects. On the one hand, the trajectory of urban and economic transformation of the city. Malaga has demonstrated the coherence and strength of its policies and plans, which have allowed an ambitious vision to materialise in a real and radical transformation of the city in the last 20 years. On the other hand, its powerful ecosystem of innovation and existing entrepreneurship. The establishment of Malaga as a technological-digital hub with an international vocation has allowed it to develop a valuable ecosystem for its new stage of transformation towards attracting a Green-Tech economy, with a double component of innovation and sustainability.

The Málaga eSUS business park is conceived as a unique space in which companies, universities, administration and the third sector will promote innovation in fields such as energy, sustainable urban transport, nature-based solutions, the resilience of urban environments or circularity. It will be a unique space for the development of advanced economic activities located within the restored landscape-environment space of the Merino stream.

o Added value: The Málaga Sustainable Urban Solutions Business Park (eSUS) is more than a strategic city project, given that its potential will allow Spain and Andalusia to enter the select group of leading regions in the creation of innovative solutions in the field of the city and its fight against climate change.

## URBAN SOLUTION DIRECTORY

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Institutional, recreational and public activities will be integrated in it and will seek technological applications and advanced industrial solutions for the sustainable city. At the same time, it will be an urban laboratory that will allow research on a 1:1 scale of innovative projects.

On the other hand, the Buenavista Sustainable Urban Solutions Business Park Project (eSUS) has included from its conception the sustainability criteria (social, environmental and economic) that allow it to align itself with local, national and local sustainable development frameworks. From the New Urban Agenda of UN-Habitat and the Urban Agenda of the EU - European Commission to the Spanish Urban Agenda, the Urban Agenda of Andalusia and the Urban Agenda Málaga 2015 itself, as well as with the most relevant urban sustainability plans at a local level, such as Alicia (Climate Plan 2050 for Málaga).

The Buenavista Project represents the opportunity to become a strategic ally to implement these sustainability plans and policies, as a true benchmark for sustainable development and as a business park that reflects the sustainability values of the type of advanced economy that it wishes to attract.

## UFV

- Universidad Francisco de Vitoria
- WW Observatory for Attractive Cities for Talent
- 2023
- Annual
- N/A
- 175 ciudades
- Digitization, Circular Economy, Energy Efficiency, Infrastructure, Mobility, Planning, OTHERS (Specify below)
- Talent

## Summary (object, description, added value)

First Model for City Attractiveness

Open, Comparative, Benchmarkable, Evolutive, Data Based

First Definition for Citizenship Contract

Not another Ranking, but Citizen & City Managers tool

A Change/Improvement Methodology

Capable to Set Radiography (Current Status) then a Plan to Develop, then a Methodology to measure progress/evolution.

Compare & Learn from Others

First to measure Talent Flow (LinkedIN Analysis over 150 m CVs in the 175 studied Cities)

Dynamic but Comprehensive model. 103 Areas -> 500 SubIndicators

<http://attractivecities.com>

## **METROVACESA**

- METROVACESA
- Vinival Patacona
- October 2021
- Estimated duration 6 years
- 145.000 euros until 2024
- Alboraya, Valencia
- Management Processes
- Social dynamization and support. Participatory urbanism

### **Summary (object, description, added value)**

**V**inival Patacona is the process of continuous participation and social revitalization that accompanies the urban regeneration project of the area. A whole display of information resources, activities, workshops and social interaction to bring people closer to the urban development project that reconverts a run-down industrial estate into a residential area with local commerce and facilities, completing the vocation of the La Patacona neighborhood.

The social support implemented around the project is a pioneering initiative in urban planning due to its scope, depth and resources used. In this way, efforts are combined to make our projects more sustainable from an economic, environmental and, especially, social point of view.

Through our own work methodology, we manage to combine experiences and international reference frameworks that are specified in a participatory diagnosis, an action plan with participation and communication actions, and a continuous evaluation and impact process.

This approach has been implemented by the Sustainable Urban Development department of Metrovacesa in seven large projects spread throughout the country. With more than 100 years of history, the real estate developer has the largest portfolio of liquid land in Spain, which allows us to follow the entire value chain from land management, through building and construction, to delivery and sale. This offers us an unbeatable opportunity to add value from sustainability, in its three dimensions (social, environmental and economic) throughout the production process.

In a context where the scarcity of land ready for construction limits the creation of new homes, land management is a key point in the value chain. A management that is conditioned by technical and political factors, but also social ones. Therefore, this innovation allows the project to be improved with the contributions that the residents of the area themselves propose, gradually opening up the project, disseminating information and making it porous to the public. At the same time, this conversation with the social ecosystem allows the projects to be depoliticized, making them more transversal, and providing greater security against political changes that could occur during the long process involved in land management. In this way, projects are strengthened through collaboration and symbiosis with the territories where we carry out our activity.

<https://vinivalpatacona.com>

[https://www.instagram.com/vinival\\_patacona](https://www.instagram.com/vinival_patacona)

<https://metrovacesa.com/sostenibilidad/desarrollo-urbano-sostenible>

## **TECNALIA RESEARCH & INNOVATION**

- TECNALIA RESEARCH & INNOVATION
- FAST is a platform created by Team Ingeniería y Consultoría and Tecnalía aimed at providing a service for the prevention and management of extreme flood events
- 2023
- 12 months
- Varias
- Climate Change\_Floods

### **Summary (object, description, added value)**

To prevent municipalities, infrastructure operators and industries of the risk of flooding in sufficient advance for correct management.

## **SACYR S.A**

- SACYR S.A
- Madrid
- Urban Movility
- Energy Efficiency, Infrastructure, Mobility
- Energy Efficiency, Infrastructure, Mobility

### **Summary (object, description, added value)**

Set of solutions aimed at decarbonisation and the incorporation of renewables (geotechnical and solar energy) in the Moncloa interchange, thanks to the incorporation of two initiatives:

- Development of a new energy technology that supplies the buildings' air conditioning systems, based on the hybridisation of underground thermal energy storage (low enthalpy geothermal energy) with the storage of electrical energy through redox flow batteries, in order to obtain buildings with almost zero energy consumption (details in the news item at the link).
- Incorporation of an innovative photovoltaic solar energy capture system based on light films that can be adhered to the enclosure or the roof, reducing the energy consumption of the infrastructure with a simple installation.



## **TECNALIA RESEARCH & INNOVATION**

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- FAST is a platform created by Team Ingeniería y Consultoría and Tecnalia aimed at providing a service for the prevention and management of extreme flood events
- 2023
- 12 months
- Varias
- Climate Change\_Floods

### **Summary (object, description, added value)**

To prevent municipalities, infrastructure operators and industries of the risk of flooding in sufficient advance for correct management.

## **SACYR S.A**

- SACYR S.A
- AURORA - Immersive Experience at Las Setas de Sevilla
- 2020
- 1 year
- Sevilla
- Revitalization of historic areas, Public spaces and green areas

### **Summary (object, description, added value)**

Immersive experience at Las Setas de Sevilla based on more than 2,500 LED luminaires distributed throughout the building's dome. Visitors are immersed in a changing landscape of light and sound that reinterprets contextual triggers and parametric geometry. The experience takes place every night from sunset, and is changing depending on the weather, space occupancy, developing special patterns for key days of cultural importance, such as the Seville Fair and Holy Week. The visual experience is constantly changing, allowing it to respond automatically and in real time to contextual changes (interaction of people in the exper

ience area, local weather patterns such as temperature, wind, etc.). The experience has been designed with energy efficiency criteria, with efficient luminaires, controlling projection and avoiding glare, and minimizing consumption.

Video of the experience:

<https://youtu.be/rawuwo2QbTO?si=3RxQVrUJMjftmE-S>

## **SACYR S.A**

- SACYR S.A
- Sacyr Prediction Tool - Pavement Behavior Prediction
- 2020
- 4 years
- Madrid (escalable a cualquier infraestructura lineal)
- Urban mobility
- Infrastructure, Materials, Planning

### **Summary (object, description, added value)**

Innovative tool uses machine learning and big data to predict with great precision the long-term deterioration of road pavement.

It has the capacity to run dozens of calculations simultaneously, issuing very precise predictions of the long-term behaviour of the road surfaces and their possible deterioration, based on data on the use of the road itself, its construction, and environmental conditions such as weather or traffic.

This project aims to provide greater safety throughout the entire life cycle of the road. Similarly, the tool aims to ensure that the operations and maintenance carried out have a high level of detail and effectiveness. All of this translates into more efficient, more sustainable and, of course, safer roads, generating value for customers and users in the short and long term.

Video: [https://www.youtube.com/watch?v=iiRyX\\_diwnA](https://www.youtube.com/watch?v=iiRyX_diwnA)

## **CHAPMAN TAYLOR global architects**

- CHAPMAN TAYLOR global architects
- International urban planning - Cities of the future
- In progress, various
- Urban mobility, Public spaces and green areas
- Industrialized construction, Circular economy, Infrastructure, Materials, Mobility

### **Summary (object, description, added value)**

Design, team coordination and execution of mixed-use projects, urban regeneration and planning

<https://www.chapmantaylor.com/projects/sector/masterplanning>

## **ITC-AICE**

- INSTITUTO DE TECNOLOGÍA CERÁMICA - UNIVERSITAT JAUME I
- Life Cersuds
- 2016-2019
- 3 years
- 1.800.000.00
- Benicasin (Castellón)
- Public spaces and green areas
- Circular economy, Infrastructure, Materials

### **Summary (object, description, added value)**

The European LIFE CERSUDS project (Ceramic Sustainable Urban Drainage System) has developed a sustainable urban drainage system (SUDS) that uses high-quality ceramic materials, but of low commercial value as a filtering system for urbanization or paving. Its main objective has been to improve the capacity of cities to adapt to climate change and promote the use of green infrastructures in their urban plans for the rehabilitation of urban areas. To this end, LIFE CERSUDS has developed and implemented a sustainable urban ceramic drainage system, with low environmental impact.

**D**uring its execution, a demonstration project has been developed in the city of Benicàssim (Castellón) in a section of light and pedestrian traffic street in the consolidated urban environment of approximately 3000 m2.

## **ANROTECH**

- ANROTECH
- Constructive solution for Anrotech car parks
- 2012 - present
- S/ project
- Urban mobility
- Industrialized construction, Circular economy, Infrastructure, Mobility
- Sustainable Urban Drainage System (SUDS)

### **Summary (object, description, added value)**

[www.anrotechparking.com](http://www.anrotechparking.com)



ICEX

# Urban Solution Directory

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2024