

A wide-angle aerial photograph of Earth from space, showing the curvature of the planet, a thin layer of white clouds, and a clear blue sky. The image is used as a background for the title text.

# Around the World in 80 Case Studies

# 1<sup>st</sup> Stop: Paris

# Bienvenue a Paris!

Those of you who know us will know that UKGBC is an industry-led network with a mission to radically improve the sustainability of the built environment.

We represent the voice of the industry's current and future leaders who are striving for transformational change.

We inspire, challenge and empower our members, helping them to identify and adopt the most sustainable, viable solutions.

We also engage our members in advocating a progressive message to government, informing and influencing policy.

Our membership has gone from strength to strength in the last year - covid highlighting both the need and possibility for rapid change. Covering the whole value chain we now have well over 500 members and continue to welcome new members each month. Importantly our focus has shifted from explaining *why* we need to act on sustainability to *how*. This decade needs to be a decade of delivery if we are to keep within the 1.5 degrees recommended by the IPCC. It will take all of us, in all our varied roles as members of businesses, government leaders and as citizens.

And this series of case studies forms a key part of that move to how - exploring how others have achieved results in different parts of the world, that we can all learn from.

So welcome everyone to the first in our 'Around the World in 80 Case Studies' series. Inspired by the adventures of Phileas Fogg in French novelist Jules Verne's novel, published in 1872, we are embarking on our own adventure around the world.

Since 1872 when Phileas Fogg set off, CO2 have risen from 288ppm to today's 418ppm - which sets the context for our modern circumnavigation.

Nearly 150 years on from Fogg's original journey, ours is a architectural, virtual and covid-safe adventure, that will explore some of the buildings and places responding to the challenges of global warming in the year leading up to what we hope will be another landmark COP Summit in Glasgow in November.

And like all good journey's, ours begins in Paris. Not only is Paris famously the City of Light, it is now also famous for being home of "The Paris Agreement" a huge step forward in international negotiations on action on climate change and an international consensus to limit warming for the benefit of all.

# Bienvenue a Paris!

## Setting the Scene...

In 2015 the Conference of Parties (or COP) of the 1992 United Nations Framework Convention on Climate Change met in Paris. In the 20 years since the first meeting in Bonn in 1995 slow progress had been made in agreeing targets that made any significant inroads into ever-increasing global emissions.

In Paris however, a landmark agreement was reached to intensify and accelerate actions and investments towards a low-carbon future. According to the [UNFCCC website](#) "The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius."

The Paris agreement has a 5-year review clause for countries to ratchet up their commitments – which is what makes the delayed COP26 in Glasgow all the more significant. The Sustainable Development Goals ([SDGs](#)) that now guide many government and business strategies were also agreed at COP21 in Paris.

Since Paris gave it's name to the agreement a variety of other initiatives have been taking place within both Paris and France, keeping the spotlight on them as a leader in the campaign to keep warming to well below 2degrees above pre-industrial levels.

At national level a number of new laws have come into force and are emerging including:

- 2018 [Elan Law](#) – facilitating new housing development and social equity
- 2020 [Circular Economy Law](#)
- 2021 [Climate Resilience Law](#)
- 2022 New regulations for new buildings – to both improve energy consumption and to assess whole life carbon

But the [news](#) has not all been good. In February of 2021 the French Government was found guilty for "failing to address the climate crisis and not keeping its promises to tackle greenhouse gas emissions." In what is being hailed as a landmark ruling it is hoped by plaintiffs that action on climate change will be accelerated.

So while pressure will remain on the government to meet the commitments it has made under the Paris agreement and elsewhere, HQE-GBC and others will continue to push for progress and change in the built environment sector. Moves towards integrating renewable energy, low embodied energy within new developments, and circular economy principles are supported by initiatives by HQE-GBC such as the [INIES database](#), and [product disclosure statements](#).

And at the city level the continued presence of Mayor [Anne Hidalgo](#), first elected in 2014 with her policies driving down car use, improving air quality, walkability, cycling and greening continues to change the face of the city and push forwards low-carbon initiatives.

As a member of the [C40 Cities](#) initiative which is a collective of 97 cities globally – representing 25% of world GDP - Paris and it's Mayor have committed to delivering on the most ambitious goals of the Paris Agreement at a local level. You can find out more about this initiative [here](#).

### Key stats:

Population	2.27 million
City area	105km <sup>2</sup>
Rainfall	700mm/year
Average temp	13.6 C
GDP	US\$171bn

# Our local hosts

Our guides for the first three steps of our tour of Paris are:



## Estelle Reveillard

CEO  
HQE-GBC

Estelle Reveillard, CEO of Alliance HQE-GBC. Her professional experience is based on networking with professional organisations; especially those taking part in building decarbonisation, sustainable cities and territories. At a European level, she works with building materials networks present in Brussels, particularly on the topic of carbon.



## Jean-Eric Fournier

Director Sustainable Development  
COVIVIO

Jean-Eric Fournier, Sustainable Development Director at COVIVIO, a Real Estate company developing, managing and investing 26bn portfolio of assets across Europe. SO POP and Jean Goujon are part of an expanding green portfolio, projects aiming to be an inspiring new landmarks in Paris's journey towards becoming a truly sustainable city, with an emphasis on social inclusion, employee wellbeing and circular economy



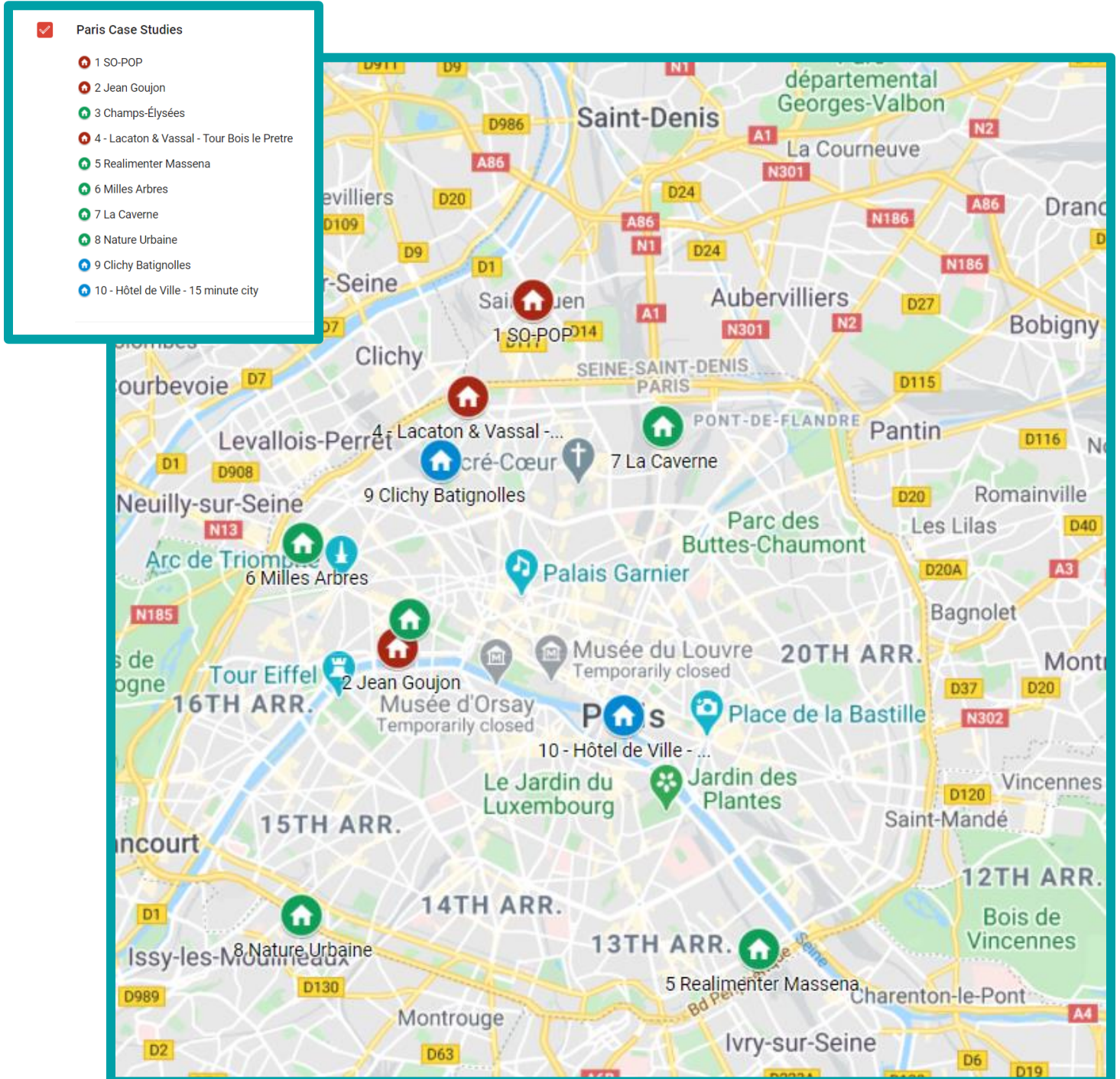
## Philippe Chiambaretta

Architect & Founder  
PCA-Stream

Phillipe Chiambaretta is an Architect and Founder of PCA-Stream Architects Paris. Parisians have fallen out of love with this grand avenue, and Philippe and his team have been exploring whether it can be brought back to life as a balanced urban ecology and delivered by 2030 – a metaphor for our industry's progress towards a sustainable planet in the same crucial timeframe.

# Map

You can view an interactive google map of our destinations by following [this link](#).



# 1

# SO POP, Saint Ouen, Paris

## COVIVIO

### Key facts



32,462m<sup>2</sup>



Under construction, complete 2021



Office, Retail, Residential



Climate Change - Resource Use -  
Health & Wellbeing - Socio-  
Economic Impact



### Project overview

Opting for demolition instead of refurbishment, the SO-POP project aims to produce a high-performance building which will last. The demolition process itself followed the Cycle Up procedure, aiming to reduce emissions and waste during the carbon intensive process of demolition. During the construction phase various procedures were undertaken to minimise waste and emissions as well. This included the inclusion of recycled aggregate concrete, which ended up being 10% of the total volume of the structure. The false floor from the neighbouring building was cleaned and reused, adding up to about 3000 sqm floor. And finally, recycled paint was used which had a low VOC (volatile organic compounds) content to reduce chemical pollutants. All materials used in the construction were listed in the material passport of the building.

The SO-POP building places emphasis on producing green and healthy living spaces by providing almost 4,000 m<sup>2</sup> of gardens, terraces and rooftops, designed to encourage positive interaction between people. Natural lighting and opening onto the gardens producing an open and pleasant working space.

### Notable achievements



- ✓ 10% total volume of structure recycled content
- ✓ 4,000 m<sup>2</sup> gardens and terraces

### Further resources



- [SO POP](#) Project webpage
- [COVIVIO](#) webpage

# 2

# Jean Goujon, 8<sup>th</sup> Arr. Paris

## COVIVIO

### Key facts



8,455m<sup>2</sup> - 9,165m<sup>2</sup>



Under construction, complete 2022



Office Refurbishment, Retail



Climate Change - Resource Use - Nature & Biodiversity



### Project overview

Taking an innovative life cycle assessment approach to the refurbishment of the 1930's Jean Goujon building is producing a project that will achieve high environmental standard in various fields. The refurbishment approach means building intervention is kept to a minimum, circumventing the polluting process that comes with demolition and reconstruction. Low numbers of car parking spots means that users will arrive by low carbon emitting transport, key for a successful life cycle assessment.

Reductions in emissions related to heating and lighting have been achieved by using sage glass glazing in the roof. This glass adapts its light and heat transmission (and tint) to the level of sunlight and the building's ambient temperature, while maintaining a view to the outdoors. This significantly reduces the amount of energy consumed for air conditioning, heating, and lighting.

Responding to the need for greenery in the urban space, the courtyard and terrace will be made accessible to the public. On the rooftop there will be cafeteria, serviced in part by a greenhouse located on the roof of the building. Also the roof will be accompanied by an open green space, maximising the space by providing room for nature to return to the city landscape.

### Notable achievements



- ✓ HEQ certification level Excellent
- ✓ BREEAM Certification level Excellent
- ✓ OsmoZ label
- ✓ Biodiversity label
- ✓ R2S (Ready to Services) label

### Further resources



- [COVIVIO](#) webpage

# 3

# The Greening of the Champs Elysee

Philippe Chiambaretta, PCA-Stream

## Key facts



15ha, 2.5km



Design, complete 2030



Social Infrastructure



Nature & Biodiversity - Climate Change - Health & Wellbeing - Socio-Economic Impact - Resource Use



## Project overview

The Champ-Elysée's has always been a symbol of Paris and France in general. Recently the street has seen non-stop protest by the Gilets Jaunes, pollution, storefronts dominated by luxury brands and touristic overcrowding.

The greening of the Champs Elysée's tries to tackle all these issues at once. The street will be reduced from 6 lane road, to a single two-lane, two-way road. Installing low-noise road surfacing and adding underground car parks will reduce the noise pollution, while thousands of various new plants will reduce the air pollution. In the newfound spaces creating by pedestrianisation, the plazas are making space for Kiosks and Cafes. In time, the luxury storefronts are replaced by more relevant business for an area dominated not by tourists looking to spend their money, but a more diversely populated place which houses those looking to enjoy the space.

The core philosophical concept behind the project is called urban metabolism. This concept aims to metaphorical framework to study the interactions of natural and human systems in specific regions. This concept is explored in detail on page 14 of [this](#) PDF document.

## Further resources

- On [PCA-Stream](#) webpage
- Exhibition [document](#)





# The Tourist's View

We have chosen a number of case studies in addition to the ones presented by our Guests. These showcase not only Parisian design flair, but also cross a number of themes:

## Greening

When scouring the internet for interesting places to visit, we noticed greenery appearing in buildings both in design and having been delivered. While this has been evident in many designs internationally – a highly visible way for designers and developers to signal the ‘green’ credentials of a building – we were impressed with the range and scale of greening apparent in Paris.



It will be interesting to track how many of them make it from drawing board to delivery, and many will no doubt face the same challenges of maintenance that occur wherever these perfect-on-paper designs actually get implemented but examples from [Patrick Blanc's Musee du Quai Branly](#) iconic green facade to the designs in Realimenter Massena (case study 5) Milles Arbres (case study 6) indicate a new commitment to incorporating nature into building design.

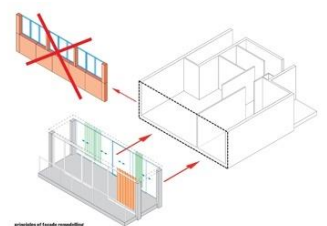
At a larger scale the greening of the Champs Elysee and other [Grand boulevards](#) will provide cooling and level of heat island mitigation, increases in biodiversity, and rain event/flood mitigation.

And in terms of bringing food growing back into the lives of urban dwellers, [Les Parisculteurs](#) initiative forms an umbrella policy for projects like La Caverne (case study 7) and Nature Urbaine (case study 8). It has an objective to plant 100ha of rooftops, walls, basements, and spaces in the ground and more than 50 projects have been realised since an initial study carried out in 2013.



## Refurbishment & reuse

As well as the re-use of existing spaces for new uses in La Caverne (case study 7) and Nature Urbaine (case study 8), the philosophy of reusing is fundamental to the [Lacaton & Vassal](#) architectural philosophy. These architects have been recognised with a prestigious Pritzker Prize Architectural award for their refurbishment of a housing tower building, transforming what was once seen perhaps as the ‘cheaper’ alternative to a premium product. This is demonstrated in case study 4, Grand Parc, Bordeaux.



This philosophy of re-use is also seen in the Jean Goujon building, and the re-use of the heritage station building in Realimenter Massena. The re-use and refurbishment of heritage buildings will be key to delivering on Paris Agreement targets throughout Europe. Consistent delivery standards will hopefully be facilitated by the development of [rating tools](#) like this one from Italy.

And in new developments the incorporation of circular economy thinking aligned with the new legislation in France and more widely in Europe is evidenced in SO POP and examples further afield like Circl Pavilion in Amsterdam.

## A Grand Plan

Linked by [coronapistes](#), green spaces and a [set of policies](#) including the much-copied 15 minute city concept (case study 10), Paris feels like it is leading the way towards not only a more sustainable concept of the city, but one more attractive to residents and visitors. By 2030, perhaps Paris will have become the poster-child for the sustainable future that was laid out in the historic 2015 agreement.



# 4

## Grand Parc, Bordeaux

Lacaton & Vassal, Druot, Hutin Architects

### Key facts



68,000m<sup>2</sup>



Building in use



Residential & social infrastructure



Climate Change - Resource Use -  
Health & Wellbeing - Socio-Economic  
Impact



### Project overview

Non-intervention is a crucial part of the design philosophy Architects Lacaton and Vassal take when they approach a building in its original state. The restorative character of their work thereby greatly reduces the carbon intensive process of construction, resources required as inputs, and reduces the volume of material generated as waste. It is a great example of staying true to the first principle of circular economy, asking "Is it necessary?" This non-interventionist philosophy allowed for the construction to be finished in just 16 days, another method of minimising GHG outputs. Secondly, interventions [included improving insulation](#) and [the winter gardens help to reduce energy consumption](#). Socio-economic impact is addressed since the project has maintained stable rents and residents have not been displaced. This is a common pattern in estate refurbishment, especially in London. RegIn terms of health and wellbeing, these wintergardens have increased the light and liveability of the apartment blocks.

### Notable achievements



- ✓ EUMIS Award, Pritzker Prize 2021 winners
- ✓ Innovative and regenerative philosophy
- ✓ Re-use focused: *Less is more*

### Further resources



- [Lacaton and Vassal](#) webpage
- [The Guardian](#) article on Pritzker Prize
- [Dezeen article](#)

# 5

# Realimenter Massena

DGT Architects, Hertel



## Key facts



450-900m<sup>2</sup>



Design phase



Retail, public & social infrastructure



Climate Change - Resource Use -  
Health & Wellbeing - Nature &  
Biodiversity

## Project overview

This wooden tower of Babylon sits triumphantly just down the street from a concrete apartment block designed by Le Corbusier, the notorious modernist urban planner. The building returns to a material, wood, whose whole life carbon emissions drastically minimise the embodied carbon of the project. It also plans to source its electricity from renewable energy sources, reducing operational energy emissions. Both approaches to lower emissions touch upon the aim to act on climate change through the change in resource use. The building will produce a reduction in air pollution by including plots, plants and vertical gardens for the growing of agricultural produce. The project looks to expand green space in the urban landscape, increasing nature and biodiversity while also contributing positively to the physical and mental health and wellbeing of the urban citizen.

## Notable achievements



- ✓ 750 m<sup>2</sup> of urban agriculture
- ✓ 1150 Kg of edible products per year
- ✓ 68Teg CO<sub>2</sub> stored using wood
- ✓ 238Teg CO<sub>2</sub> reduced compared to a tower with concrete floors and a stapled stone facade
- ✓ 40% saving on drinking water
- ✓ 100% reuse of grey water and rainwater from the site for farms
- ✓ 80% conventional energy consumption offset

## Further resources



- Pictures of the early design process can be found [here](#)



# 6

## Mille Arbres

**OXO Architects, Compagnie de Phalsbourg, Ogic, Franck Boutté Consultants**

### Key facts



13,400m<sup>2</sup>



Design phase (2023 completion)



Office, retail, residential & social infrastructure



Climate Change - Health & Wellbeing  
- Nature & Biodiversity



### Project overview

A key focus of this project is an innovative approach to energy consumption. The inverted pyramid morphology and the patios offer different levels of exposure to the sun and wind while ensuring that each service or use is housed in the most appropriate location. The offices will be behind the inclined facades to ensure they receive less sunlight and consequently require less cooling, and the bus station will be placed in the basement. The co-location of different use types also enables a thermal loop between the hotel, office and housing programs which will allow a 10 to 15% reduction in heating demand. In addition to this design reduction, Mille Arbres is planning to experiment with energy sharing. The use of geothermal energy, photovoltaic panels, and wind turbines plan to cover 80% of the energy needs. The design frees up the ground plane and allows for the creation of two plazas planted with multiple landscapes including the 1000 trees inspiring its name. It will include a park open to the public, and a private park on the roof. These different plazas will bring a diversity of plants and animals, considerably increasing the biodiversity of the site. The interior patios will allow for natural ventilation and offer a haven of calm, away from the noisy streets.

### Notable achievements



- ✓ Geothermal energy, photovoltaic panels, and wind turbines plan to cover 80% of energy needs.
- ✓ A thermal loop between the hotel, office and housing programs will allow a 10 to 15% reduction in heating demand.

### Further resources

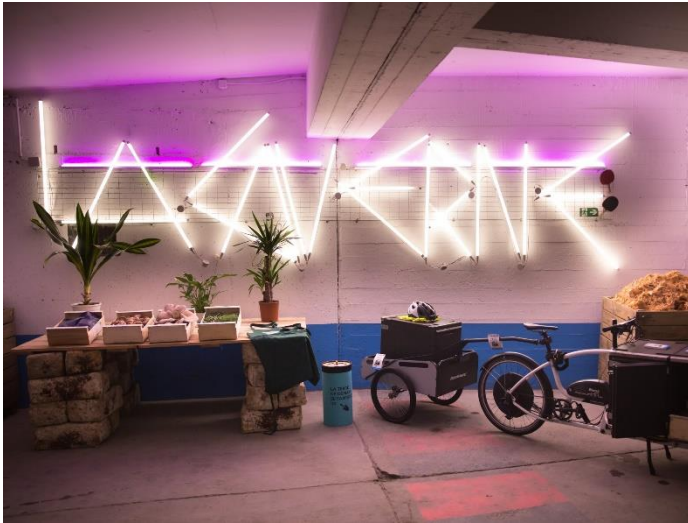


- Pictures of the early design process can be found [here](#)


# 7

## La Caverne


### Cycloponics, Urban Farmers



#### Key facts

 13,400M2

 In use

 Re-use of empty basement carpark

✓ Climate Change - Health & Wellbeing  
- Nature & Biodiversity - Social Value -  
Resource Use

#### Project overview

With the massive downscaling of parking lots in Paris, these spaces are finding new uses through projects such as La Caverne. The dark underground car parks turn out to be the perfect space to grow mushrooms and other plants like chicory, on a large scale. Much like other urban farming projects, this helps to shorten the supply chain of food in the cities. Due to low heating and lighting demand, electricity use and emissions output is low. The food is delivered by bike, all zero carbon. The team of 10 aim to produce 54 tonnes of produce per year. The project also addresses social issues via three channels: it hires locally, it sells its produce to the residents of the social housing complex above them at preferential rates, and it provides educational visits for the curious. Two additional projects exist in Strasbourg and Bordeaux.

#### Notable achievements



- ✓ Innovative approaches regarding the use of derelict space and urban farming

#### Further resources



- Pictures of the project can be found [here](#)



# 8

# Nature Urbaine

## Agripolis, Urban Farmers

### Key facts



45,000m<sup>2</sup>



Construction and in use phase



Social infrastructure and refurbishment



Climate Change - Health & Wellbeing -  
Nature & Biodiversity - Resource Use -  
Socio-economic Impact



### Project overview

The Nature Urbaine Agripolis is Europe's largest urban farm. Placed on the unused rooftop of an old exhibition centre, the urban farm project is a great symbol for how the people in cities are looking to reconnect with their food production. Not only does the project aim to use space efficiently and shorten supply chains, but its presence in the urban landscape also naturally cools the cities climate. In the farm itself there are 66 different species of plants growing, each variety adding to the biodiversity of the urban space. Also noteworthy is the farming method used, a mix of traditional market style gardening and modern aquaponics, using extremely small amounts of water and soil, again reducing the resource and space used by the farm.

### Notable achievements



- ✓ 15,000m<sup>2</sup> of market garden roofing in hydroponics and aeroponics.
- ✓ 135 cultivation squares for hire, with advice from professional gardeners.
- ✓ 1 event greenhouse of 100 m<sup>2</sup> that can be privatized.
- ✓ The production of several hundred kilos of fruit, vegetables and herbs every day, from around twenty different species.
- ✓ Educational tours and workshops open to all, to communicate the pleasure and know-how of taking care of living things in the heart of cities.

### Further resources



- The project website can be found [here](#)



# 9

# Clichy-Batignolles

City of Paris, Métropole Aménagement



## Key facts



409,010m<sup>2</sup>



In use (2020 completion)



Office, retail, residential, social & economic infrastructure, new build



Climate Change - Health & Wellbeing  
- Nature & Biodiversity - Social Value

## Project overview

This project aimed to create a district where tenants would live carbon neutral by default. The insulation and bioclimatic design lower heating needs to 15kWh/sqm/year (equivalent to the German Passivhaus standard for passive houses). 85% of the energy used for heating is sourced through Geothermal energy. The photovoltaic electricity provides 40% of electricity consumption. 6,500sqm of green spaces have been created. There is 26,000sqm of green roofs, 8,000sqm are accessible. It is surrounded by Martin Luther King Park, adding another 10ha of nature space. The park's water and the evapotranspiration of plants works as an urban air conditioner. A biotope basin where rainwater is collected and naturally treated covers 40% of the water demand. Besides the public transport hub serving the new neighbourhood, soft mobility is everywhere and made easy by the park connecting neighbourhoods and new 30kph zones. The vacuum waste collection reduces emissions by eliminating waste collection vehicles and compacting waste before disposal. 20% of the housing complex is rent controlled, and 50% is social housing.

## Notable achievements



- ✓ Stage 4 ÉcoQuartier Passivhaus
- ✓ ERDF "urban innovative actions" Fund
- ✓ Adaptation to climate change & regional development
- ✓ Construction 21 Network, Sustainable City Grand Prize

## Further resources



- Pictures of the project can be found [here](#)



# 10

# The 15-minute City

Mayor Hidalgo

## Key facts



City-wide



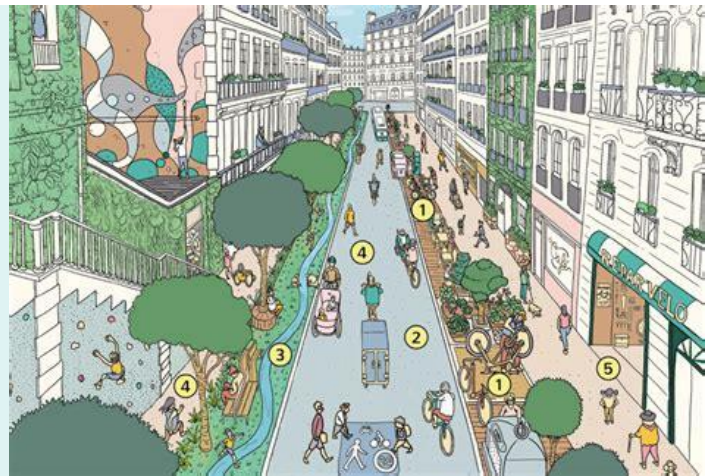
Design phase



Social Infrastructure



Climate Change - Health & Wellbeing  
- Nature & Biodiversity - Social Value



## Project overview

Moreno, the professor who picked up the 15-minute city cause as his oeuvre, says the work of Jane Jacobs figured into his plans. So as cities reel from “post-traumatic urbanism” this initiative provides a way to recover from the onslaughts of such things as property speculation, over-tourism, and now the pandemic, Paris is looking forward to radically changing transport and life in the capital city. The idea is to decentralise by adding more options for walking, cycling and public transit, and focusing on economic development in every corner of the city. Replacing long commutes and car-first transit with bikes and walking would slash vehicle emissions, increase resident health, and free up roads and parking spaces for other uses. Research on U.S. households’ driving habits found that nearly 60% of their one-way trips are less than six miles (9.6km), and 75% of all trips are ten miles or less. The mayor has picked this concept as the central policy framework to improve quality of life and help the city live up to the goals of the Paris Climate Agreement. Some roads have seen triple the number of cyclists. There are 83,500 on-street parking spaces in Paris—Hidalgo plans to remove 60,000 of them by 2024. Under her plans Paris will remove 72% of its on-street car parking spaces. She fast-tracked the transformation of streets into emergency “corona pistes” cycle lanes.

## Notable achievements



- ✓ Innovative approach to urban planning - reducing the need and desire to travel, rather than increasing the capacity of transport infrastructure.

## Further resources



- [What is a 15-minute city?](#)
- [Forbes article](#)



# Around the World in 80 Case Studies

## Future Itinerary

Thanks for joining us in Paris. We hope to see you on future expeditions in this ongoing series.



July:	Central America
October:	China
January:	Middle East

Register using this [link](#).