

Edge of a Third Forest

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Year of commitment : 2020

Address 1 - street : 51 rue de la Commune de Paris 93300 AUBERVILLIERS, France

Diameter : 50



350 000 €

Builder

Mondel TP, Pépinières Chatelain, SOLS-IDF

GENERAL INFORMATION

Lisière d'une Tierce Forêt is an innovative solution against heat waves that combines the *forest ecosystem* and *accessibility* of public space. This **refreshing infrastructure** resembles an urban forest and was developed by a multidisciplinary team of architects, foresters, climatologists and engineers. After 5 years of design, the 1,200 m² prototype was inaugurated in 2020 in Aubervilliers (93) in a home for young workers managed by the Alteralia association.

La Tierce Forêt is positioned at the forefront of **sustainable urban cooling**. The founding principle of infrastructure is the **restoration of the city's water cycle**. The four pillars of consistency of the final design are soil regeneration on site, local rainwater infiltration, carbon storage and increased biodiversity.

The infrastructure has several strengths:

- restoration of the water cycle and biodiversity in cities;
- the resilience and passivity of the cooling ecosystem;
- increased carbon storage through good plant health;
- reduction of runoff for the watershed.

Progress Status

Delivered

Data Reliability

3rd part certified

Funding Type

Public/Private Partnership

Website Enterprise / Infrastructure

<https://www.tierceforet.com>

<https://www.construction21.org/france/articles/h/green-solutions-lisiere-d-une-tierce-foret-un-projet-de-rafraichissement-urbain-visant-a-apaiser-corps-et-esprits.html>

Sustainable Development

Attractiveness :

The Alteralia association, in charge of the residence, sought to replace its car park with a welcoming and sustainable space for users. The long time spent on design has enabled architects and users to **co-construct a solution** tailored to the needs of users and the sustainable city.

Well Being :

This approach has borne fruit. From spring, the infrastructure is used by the Altéralia community, neighbors and birds. Everyone appropriates the furniture and the trees to take advantage of this new, unusual space in the neighborhood.

Especially in times of strong heat, the infrastructure **benefits all living things** by providing a space of comfort. The freshness created by the increased transpiration of the trees facilitates the calming of bodies and spirits. By reducing indoor agitation throughout the summer and reducing thermal shock during heat waves, this former car park becomes **a real asset for the health** of users.

Social Cohesion :

The young workers housed by Alteralia come from different territories. By providing street furniture and freshness within the confines of the residence, the Edge of a Tierce Forêt offers a **welcoming outdoor social space** to share meals and forge links.

Preservation / Environmental Improvement :

Beyond the social benefits for humans, improving biodiversity is one of the four pillars of this solution. Thanks to the multiplication of species and plant layers, new ecological habitats are created for birds and butterflies. Under our feet, the decompaction of the substrates and the porosity of the coating naturally allow the biological revitalization of the soil. Together, **visible and invisible biodiversity** improve over the years.

Resilience :

This resilient infrastructure was developed in anticipation of climate change. Leaning on trees for cooling is effective as long as they are healthy. Thanks to its unique hydraulic design, the Third Forest **effectively reduces the stress of vegetation in the face of droughts**. The construction of a combined device for collecting, storing and redistributing rainwater makes it possible to irrigate as close as possible to the roots. In doing so, the risk of tree mortality decreases and the **resilience of cooling** increases.

Resilience is not just about infrastructure. We must add in-situ infiltration of water from neighboring roofs. Thus our system is not only autonomous, it also contributes to the **resilience of the watershed in the face of climate change**.

Responsible use of resources :

The design of the Third Forest aims to participate in the regeneration of natural resources. On the occasion of the numerous revegetation programs, quality soil is very often imported. To limit the use of this increasingly scarce resource and to reduce carbon emissions linked to transport, our approach is to **restore the soil on site**. Thanks to the natural biological and chemical revitalization processes developed by our scientific partners, our infrastructure is intended to be **sustainable and regenerative**.

Testimony / Feedback

article published on January 22, 2021 by Agence Parisienne du Climat

What do the first scientific results say?

The first results published by the LIED of the University of Paris, and Météo-France demonstrate the effectiveness of the operation on the thermal comfort of users (Parison S. et al, 2020). They relate to the analysis of the measurements carried out in the summer of 2018 (before work) and in the summer of 2019 (after partial work: the installation of the new coating was not completed).

The absence of cars, a clear and permeable coating and of course the presence of a new plant canopy have led to fairly significant impacts on the microclimate of the site.

- *During the days studied, we note a **drop in temperature (UTCI index) of -2.5 °C** on average over 24 hours, **going down to -6 °C around 1 p.m.***
- *The air temperature was also recorded **at the site, down to -1.0 °C** in the late afternoon. The increase in relative humidity remains*

limited, but temporarily exceeds + 2%.

- The observed changes are significant for all parameters for at least 35% of the day. **The study shows that tree shade has a significant impact on lowering UTCI in the morning**, as well as in the early and late afternoon.

The use of measurements from the summer of 2020 and then 2021, once the work is completed, will make it possible to obtain more complete results.

Governance

Fieldwork / Alteralia project leaders

Holder Type : Consortium of companies

Mondel TP, Pépinières Chatelain, SOLS-IDF

Alteralia is an association for social integration through housing created 45 years ago. Historically, its action has focused on the management of the residence for young workers Eugène-Hénaff in Aubervilliers. As part of its mission of general and social interest, Alteralia wished to offer a more pleasant living environment for the young people accommodated in the residence.

Fieldwork is a collective of architects, town planners and engineers who work in the social and solidarity economy, mainly on social and environmental projects. They provide engineering, architectural and urban design services focused on social justice, reducing inequalities and adapting to climate change for all. The team was surrounded by specialists Ekolog / EcoSustain, LIED, IPH-VRD.

Business Model :

Supported by the *Urban Lab* of the city of Paris, the project has brought together many public and private partners. The interest in the process demonstrates its educational potential and its reproducibility. The project was carried out in two stages: a study and evaluation phase with ADEME and the APC, and a works phase with the IDF Region, Seine Normandy Water Agency, the Seine Saint- Denis, the city of Aubervilliers, the RATP Foundation, CAF, Lafarge-Holcim and the SOLS company.

The price per square meter of the development is equivalent to the price of a classic green development in the city, it is around 250 € / m². The infrastructure also has the advantage of low maintenance cost.

The **Third Forest** is a passive ecosystem solution that remains **economically competitive** and **easily reproducible**.

Sustainable Solutions

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Description :

Inspired by the principles of permaculture, La Tierce Forêt responds to cooling objectives by offering **resilient and reproducible system** that exceeds the benefits of a vegetated place.

Our innovation is our **systemic solution** for urban cooling. The association of plants and minerals, the treatment of soil and atmosphere interfaces, the use of old and new technical solutions have made it possible to create a network of positive and resilient interactions that support the city's water cycle. This new kind of ecosystem is **autonomous** and **passive**. It works with sun, water and gravity.

The technical responses of our eco-device are a draining and resistant material for the floor covering, a method of collecting and storing rainwater, a phase shift of plant transpiration for lasting cooling, a permeable concrete which allows restoration. biological and chemical soil.

- Air quality
- Water management
- Soil management
- Climate adaptation



Photo credit

Fieldwork

Contest

Reasons for participating in the competition(s)

Transformation of a former parking lot into an island of freshness and water management.



