Accueillir le vivant
L'architecture comme écosystème

Hosting life
Architecture as an ecosystem
B. Le bois de l'école de la Biodiversité

FR
1. Caractérisation générale de la toile
   Hauteur moyenne de la toile : 14 m
   Formation végétale dominante : arbustée
   Surface du bois : 1 599 m²
   Année de conception : 2014
   Épaisseur moyenne du substrat : 100 cm
   Type de toile végétalisée : intense

2. Analyses du substrat
   Substrat à texture limono-argileuse.

3. Eléments-traces métalliques
   Les concentrations en éléments-traces métalliques (en mg/kg) pour cette toile (en argenté) sont toutes en dessous des seuils réglementaires (en vert).

4. Fertilité du substrat
   Le stock de matière organique est très élevé. Il correspond à 3,7% du volume du sol (pour une moyenne du 2,7% dans les sols agricoles). Le rapport C/N (carbone/ammoniac) de cette matière organique est de 9,1. Cette valeur est normale, elle illustre une potentialité bonne décomposition de la matière organique par les organismes du sol.

5. Fonction de retention de l'eau
   Le volume d'eau que peut retenir le substrat dans des conditions idéales, c'est-à-dire probablement sec, en fonction du volume total du substrat est de 55%. Le substrat peut absorber une pluie de 508 mm, ce qui est largement supérieur aux pluies courantes en Île-de-France, et supérieur à une pluie décesanée. Étant donné sa surface et sa profondeur, le substrat peut absorber au total 710 m³ d'eau. Parmi toutes les toitures étudiées, c'est celle qui a la plus grande capacité de stockage.

6. Florai
   Cette toiture est dominée par le liseron (présent dans les dix carrés) et deux poacées : la Féteque rouge et l’herbe vivace. Mêlés à des arbres plantés, la composition observée est plutôt caractéristique d’une friche. Le nombre moyen d’espèces relevées (2017 et 2018) est de treize, ce qui est bien inférieur à la moyenne de dix-huit

B. The School of Biodiversity woodland

EN
1. General specifications of the roof
   Average height of the roof: 14 m
   Dominant plant type: trees
   Woodland surface area: 1,599 m²
   Implementation year: 2014
   Average depth of substratum: 100 cm
   Type: intensive

2. Substrate analyses
   Substrate with silty clay texture.

3. Trace metal elements
   Concentrations for trace metal elements (in mg/kg) for this roof (in silver) are all below regulatory thresholds (in green).

4. Fertility of the substrate
   The stock of organic matter is very high. It corresponds to 3.7% of the volume of soil (compared with a 2.7% average for agricultural soils). The carbon-to-nitrogen ratio for this organic matter is 9.1. This figure is normal — it shows that organisms in the soil are decomposing organic matter as they should.

5. Water retention function
   The volume of water which the substrate can retain in ideal conditions, that is to say from dry, depending on the total volume of the substrate, is 55%. The roof can absorb 508 mm of rain, which is well above usual rainfall in the Île-de-France region, and above the one-in-ten-year rainfall rate. Given its surface area and depth, the roof can absorb 710 m³ of water in total. Out of all the rooftops studied, this is the one with the greatest storage capacity.

6. Flora
   This roof is dominated by bindweed (present in the ten squares) and two grasses: red fescue and perennial ryegrass. Apart from the trees which have been planted, the composition observed is more characteristic of wild lands. The average number of species identified (2017 and 2018) is thirteen, which is well below the average of eighteen observed on all of the roofs involved in the study.
SLA
startingpoint
WE WORK WITH NATURE AND DESIGN
Mental disorder is an increasing future treat, currently affecting 450 million people globally.

Danish scientist has mapped 1 million kids, and concluded that growing up in nature surroundings reduces the risk of mental disorders with 55%.

(WHO and Bioscience Aarhus University, 2019)
REINVENT PARIS
HOW TO SELL THE AREA ABOVE A RINGROAD
(AND CLEAN THE AIR WITH PLANTS)
Concours
Le paysage pont

JACQUES
FERRIER
ARCHITECTURE
ChartierDalix
BEFORE YOU CAN **REINVENT** A CITY
YOU NEED TO KNOW THE **REALITIES**
400,000 PEOPLE DIE YEARLY OF AIR POLLUTION IN EUROPE

(EUROPEAN COURT OF AUDITORS)
HIGHEST POPULATION DENSITY FOR BIG CITIES IN EUROPE

(9.5% PARKS AND GARDENS)

LOWEST GREEN SPACE DENSITY FOR BIG CITIES IN EUROPE

(22,000 INHABITANTS PR. KM2)
CHALLENGES

NOISE
RAIN
WIND
SHADOWS
FRAGMENTATION
BOARDERS
POLLUTION

SOLUTION
PRESENT

PAST

FUTURE: THE GREEN BELT
TERNES
THE MULTILAYERED LANDSCAPE

ENVIRONMENTAL PERFORMANCE

RAINWATER COLLECTION
Roofs catch and store rainwater for further uses.

POLLUTION CATCHER
The green facades catch air-polluting particles, provide shade in hot summer months and act as an acoustic barrier.

WATER FILTERING GARDENS
Bio retention beds filter rainwater and phytoremediates the soil.

AIR CLEANING
The depolluting concrete paving catch air pollutants.

CLEAN WATER STORAGE
Rainwater, cleansed by filtering gardens, is stacked for further irrigation uses.

HIGHWAY DEPOLLUTION
A mushroom cladding covers the underside of the bridge building. The mushrooms feed off car emitted gases.

SOMESY AND AESTHETIC EXPERIENCES

URBAN FARMING
Urban farming creates social interactions and a new learning platform. The roofs produce a variety of raw and delicate fruits, vegetables and teas for a multitude of culinary applications!

PRIVATE RETREATS
The planted facades evolve with the seasons and weather. The leaves filter light and dance with the wind and rain. Each private unit thus has an access to nature, on whichever floor.

REFRESHING PLACES
The mist irrigation provides a fresh urban ambiance. The mist also plays with the natural light, which blurs, in moments, the specific contours of the building.

NEW MEETING PLACES
The stratified landscape is divided in smaller and more comfortable urban spaces, suitable for spontaneous meetings and interactions. The multiple levels creates a diverse and dynamic stage for all.

LEARNING AND SHARING
Water is manifested under all its forms. Bio retention basins, water fountains, water mirrors, and mist irrigation gives a new life to the unused rainwater, undeniably the importance of that element in our lives.

ECOSYSTEMIC INNOVATION
A place suitable for innovation. The project as a laboratory evaluating nature’s impact on humans and cities.
The rainwater is harvested from the buildings and intercepted in rainwater harvesting tanks. The collected water is then conveyed to an underground reservoir, where it is treated and stored for later use. The treated water is then distributed to the various uses on site, including irrigation, industrial processes, and domestic purposes.

The irrigation system is designed to be energy-efficient and to use the collected rainwater. The water is distributed through a network of underground pipes, which are connected to various parts of the site.

The system is also designed to be adaptable to different seasons and climatic conditions. The rainfall data is collected and analyzed to determine the amount of water needed for each season, and the system is adjusted accordingly.

In addition to the harvested rainwater, the system also receives water from the roof gardens. The roof gardens are equipped with drip irrigation systems, which are designed to minimize water loss and to provide the plants with the exact amount of water they need.

The system is also designed to be sustainable and to reduce the impact on the environment. The rainwater harvesting tanks are made from recycled materials, and the system is designed to minimize waste and to maximize efficiency.

Overall, the water harvesting and distribution system is an integral part of the sustainable design of the site. It is designed to be energy-efficient, sustainable, and adaptable to different conditions, making it a valuable asset for the future.
The planned facades can catch up to 40% of NO2 and PM10 in the air. The building geometry creates a "green" effect, enhancing the ratio of surface per air volume, maximizing the air depollution capacity of the green walls.

The mushrooms, used as a shading umbrella, can catch up to 50% of NO2, while reducing the surrounding temperature by 5°C, and the noise by 10dB.

The de-polishing concrete is the principal paving material for the public spaces. This material can clean up to 20% of surrounding NO2. Its light color reflects light and reduces heat island effects.

The majority of the trees are planted on the edges of the site in order to reduce the wind speed, which transports pollutants. The trees also catch 8-12% of NO2 and PM10.

The NO2 and PM10 concentrations reduce by 30% as we get to the second floor. Another important point in favour of the vertical green forest is...
POLLUTED AIR

CLEAN AIR
SEASONALITY STUDY
EXTRACT, RESIDENTIAL FACADES
The Multi-layer City, Reinventing Paris
unused space above train tracks, tube lines and the over ground network in cities

LONDON 280,000 homes of 100 m²
MELBOURNE 80,000 homes of 100 m²
VANCOUVER 50,000 homes of 100 m²

(WSP Out of Thin Air – One Year On report, 2018)