



## DELIVERABLE D2.1

# COLLOQUIUM ON THE ROLE OF EDUCATIONAL SPACES IN URBAN BIODIVERSITY

COOLSCHOOLS: Realizing potentials of nature-based climate shelters in school environments for urban transformation

**July 2023**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101003758

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Authors: Céline Clauzel, Nathalie Blanc, Sarah Bortolamiol

## SUMMARY

From June 7 to 9, 2023, WP2 organized a symposium on the role of biodiversity in schoolyard greening initiatives. 10 international speakers presented their work and thoughts on the subject. The symposium was attended by some sixty people from all over Europe, and sometimes beyond (Kenya, Brazil, etc.). A report was produced and distributed to the various networks of Coolschools project partners. It constitutes the deliverable 2.1.



# FROM GREENING SCHOOLYARDS TO URBAN BIODIVERSITY: THEORIES AND CASE STUDIES

## COOLSCHOOLS EUROPEAN PROJECT CONFERENCE

7,8 and 9th of June 2023, Paris  
Académie du climat

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The CNRS (UMR LADYSS, LIED), Université Paris Cité and the City of Paris are involved in the European research project CoolSchools (2022-2025) on green schoolyards. Based on schoolyard transformation pilot projects in Barcelona, Brussels, Paris and Rotterdam, the project seeks to assess how schoolyard greening practices can lead to socio-ecological transformations in favor of urban sustainability, climate resilience, social justice and quality education. The symposium brings together various French and foreign speakers to discuss more specifically the place of biodiversity in schoolyards' transformations.

### Wednesday 7th June (afternoon)

**2:00 - 5:00 pm - CoolSchools consortium meeting (project members only, not public)**

### Thursday 8th June (morning)

**9:00 am - Welcomings and coffee**

**9:30 - 11:00 am - Urban biodiversity issues in Paris**

- Philippe Jacob (Direction des Espaces Verts et de l'Environnement, Ville de Paris) - Ecological politics of the city of Paris
- Nathalie Machon (Muséum national d'Histoire naturelle) - Biodiversity and vegetation in cities
- Céline Clauzel and Tanguy Louis-Lucas (Université Paris Cité, CNRS) - From greening schoolyard to urban biodiversity

**11:15 - 12:45 am - Feedbacks on greening experiences in Europe**

- Fabiola Frattini (University of Rome) - Feedbacks on greening experiences in Rome
- Mary Jackson (Learning through Landscapes) - Experiences of greening in England
- Sigrun Lobst (Springzaad Foundation) - Feedbacks on greening experiences in Germany and the Netherlands

**12:45 - 2:00 pm - Lunch (at the participant's expense)**

### Thursday 8th June (afternoon)

**2:00 - 2:30 pm - OASIS project of the city of Paris**

- Raphaëlle Thiollier (Direction des Affaires Scolaires, City of Paris) - Political strategies around the OASIS schoolyards

**2:30 - 4:45 pm - Visit of two OASIS schoolyards in Paris**

**7:00 pm - Gala dinner on quais de la Seine (at the participant's expense)**

### Friday 9th June (morning)

**9:00 am - Welcomings and coffee**

**9:30 - 11:00 am - Policies in favor of biodiversity and greening in the city**

- Nathalie Blanc and Sarah Bortolamiol (CNRS) - Governance modes and biodiversity production
- Charlotte Halpern (SciencesPo) - Urban ecology policy in Europe
- Anne Theuri (National Environmental Management Authority of Kenya, VISIOCONFERENCE) - Schoolyard greening program in Kenya

**11:15 am - 12:45 pm - Forum of experiences: exhibition**

**12:45 pm - Conclusion**

### Practical information

#### Place

Académie du Climat  
2 place Baudoyer  
75004 Paris

#### Contacts

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**Free and mandatory registration before May 15th**  
**[click here](#)**

**[Link to european project, click here](#)**

#### Partners



**THURSDAY, JUNE 8, 2023**

## PHILIPPE JACOB

DIRECTION DES ESPACES VERTS ET  
DE L'ENVIRONNEMENT,  
VILLE DE PARIS



## Ecological politics of the city of Paris

The Paris Biodiversity Plan (2018) takes stock of the city's biodiversity and suggests ways of enhancing it, despite the human density that characterizes the capital and the pressure exerted by users on green spaces.

With a rich "green heritage" consisting of two woods (Boulogne, Vincennes), parks, gardens, squares, tree plantings, green roofs, the banks of the Seine and former railroad lines converted into urban promenades, the City of Paris is home to a diverse range of wildlife that cohabits with city dwellers.

To preserve and enhance this heritage, the City of Paris "fully involves residents in environmental issues" by making shared gardening spaces available (at the foot of trees, in shared gardens, etc.), as well as collaborative monitoring of flora and fauna species with the support of participatory science practices.

***"Biodiversity must be a global issue that determines all the others"***

Adopted in 2018, the Paris Biodiversity Plan aims to preserve biodiversity and mobilize levers to restore it when it is degraded. The plan consists of:

- Reclaiming green spaces by greening streets and neighborhoods;
- The development of better ecological management for all, in particular by promoting and respecting the natural cycle of species;
- Involving everyone, notably with the creation to date of 150 collective gardens in the city.





## NATHALIE MACHON

MUSÉUM NATIONAL D'HISTOIRE  
NATURELLE (MNHN)

## Biodiversity and vegetation in cities

Ile-de-France is a region rich in biodiversity, which nevertheless diminishes as you move closer to urban centers.

5 major factors influence urban biodiversity:

- Regional plant and animal species (in the Paris region, 1,620 plant species, 60 mammal species, 230 bird species and 18,000 insect species have been recorded);
- Abiotic and biotic factors (microclimate, pollution, wind, etc.) that influence the presence of species in cities;
- The availability and diversity of habitats for species;
- The presence of corridors connecting habitats;
- Management methods (zero-phyto, diversified, etc.), prevention campaigns and regulations.

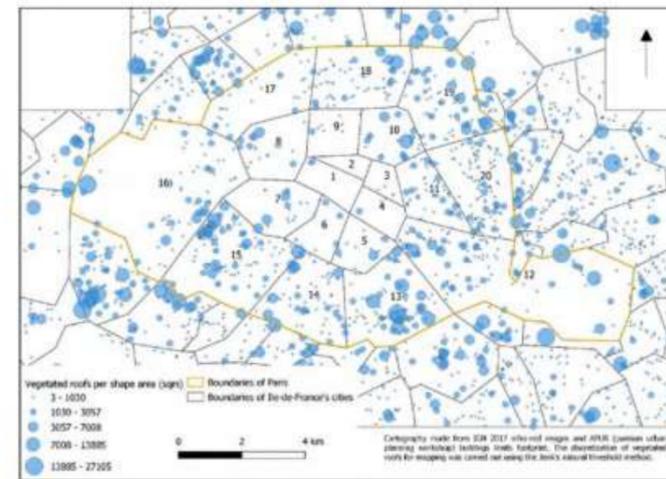


## Why green building roofs?

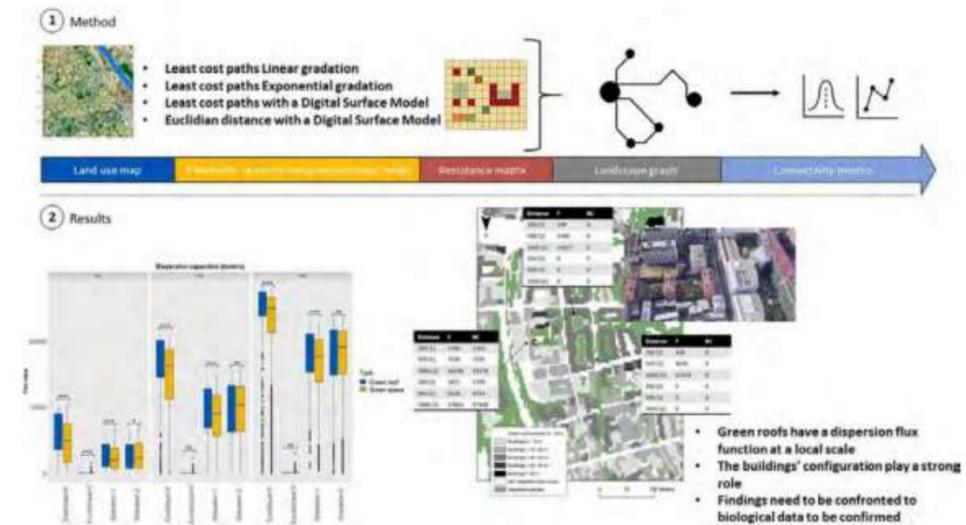
- It's an action that enables the development of habitats for species;
- These roofs contribute to the proper functioning of the ecosystem by encouraging interaction between species and developing more spaces for connectivity;
- They contribute to the development of well-being in urban areas and have an aesthetic value.



Which roof should be greened in Paris ?



- (1) to compare the potential green roofs' role to connectivity in relation to other urban green spaces,
- (2) to specify the green roofs contribution's type,
- (3) to explore the influence of building height
- (4) to assess the impact on connectivity of simulated greening new roofs.



At a large scale (metropole scale), green roofs can slightly improve the global connectivity through connections rather than addition of habitat areas

At a local scale, green roofs would have a dispersion flux function



**CÉLINE CLAUZEL ET  
TANGUY LOUIS-LUCAS**

UNIVERSITÉ PARIS CITÉ, CNRS

## Contribution of schoolyards to ecological connectivity in dense urban environments

The creation of micro-habitats and ecological corridors in cities facilitates the establishment and movement of various species in dense urban environments. This raises two questions:

- Do school grounds contribute to urban biodiversity as habitats and/or corridors?
- Is this contribution of the same order as that of urban green spaces?

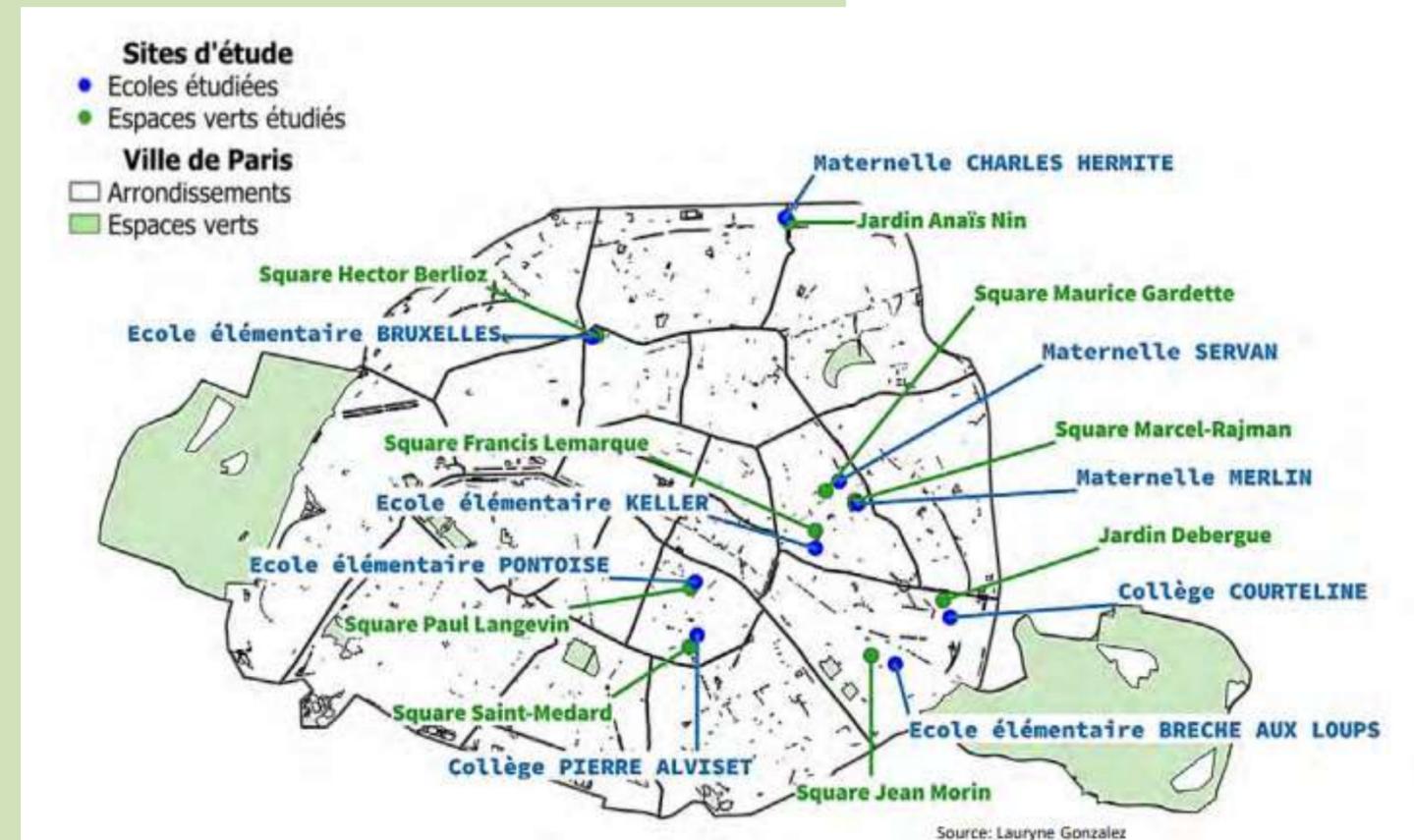
The results show that the school grounds with the most vegetated surface area are located in the north-east of Paris, in arrondissements that are less dense and more recent than the historic center. Despite their low vegetated surface area (linked to the size of the courtyards), schools in central Paris nevertheless contribute to functional connectivity, at slightly lower levels than green spaces. Their vegetation can therefore help to strengthen connectivity by creating secondary habitats that reinforce the connections between green spaces.



**Arthropod inventories were carried out in 9 schools and 9 green spaces in 2022.  
The results show :**

- Wide variations between schools in terms of order diversity and abundance;
- The presence and diversity of arthropods is sometimes greater in the school than in the nearest green space;
- Diversity increases when the surface area of vegetation is large;
- Connectivity seems to have no influence on arthropod diversity.

These provisional results need to be consolidated by further inventories.



***"The amount of vegetation seems to be a key factor in urban biodiversity"***

**FABIOLA FRATTINI**  
UNIVERSITÉ SAPIENZA ROME



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## Feedbacks on greening experiences in Roma

Fabiola Frattini presents her experience in implementing an urban micro-forest in the San Lorenzo district of Rome. Around 230 plant species have been planted in a 120 m<sup>2</sup> area in the Parco dei Caduti (War Memorial Park). The project is based on Japanese scientist Akira Miyawaki's reforestation method, which aims to create so-called native forests in small spaces.

In the face of the current environmental crisis, the creation of urban forests contributes to nature-based solutions for mitigating the impact of global warming in urban areas. It also integrates regulating ecosystem services and socio-cultural services.

***"Planting trees is not enough for a microforest  
to spread socially"***

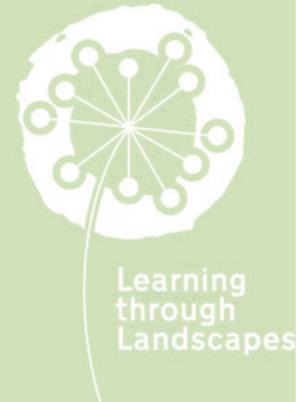


The creation of this urban micro-forest has benefited from significant participation from the local school community. Schools in the San Lorenzo district have developed open-air courses on themes such as the plant world, pollution and heat islands. By learning through experimentation and observation, the aim is to give pupils a sense of responsibility in the scientific process and strengthen their links with nature. In this way, the micro-forest is a tool for encouraging pro-environmental behavior among pupils, improving the quality of the local environment and the well-being of citizens. The San Lorenzo eco-pedagogical micro-forest was recognized for its practices by the Italian Alliance for Sustainable Development (ASviS) in 2022.



**MARY JACKSON**

LEARNING THROUGH  
LANDSCAPES



## Experiences of greening in England

Schoolyards can become playful learning environments. They provide opportunities for children to socialize, be active and interact with nature. The *Learning through Landscapes* association was set up with the aim of maximizing the benefits of outdoor play and learning for all pupils. Several projects have been carried out in the UK, aimed at reconnecting children with the living world around them and enriching their knowledge of biodiversity.



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## Some Learning Through Landscapes projects

The *Polli:Nation* project develops support within schools to encourage the presence of pollinators in the classroom. This initiative has helped boost teachers' confidence in teaching outdoors, and has inspired children who have dropped out of school to take up the profession. Pupils also come away with a greater respect for the little creatures.

The *Natural Nations* and *National Education Nature Park* projects are based on the same principle: identify the biodiversity present and raise awareness among pupils of their ability to change their environment.

*My School, My planet* gets pupils working on the themes of climate change, biodiversity and soil. Finally, the *Climate Ready School Grounds* project (Scotland) works to guide the design of school grounds to meet sustainable development objectives.

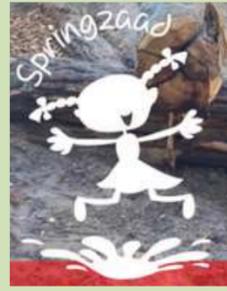
"I didn't know there was, like, different pollinators. I didn't know that butterflies and moths and flies were pollinators."

year 6 pupil (about 11 years old)



"Bees used to be one of my worst fears, now they are one of my favourite things"

year 8 pupil (about 13 years old)



**SIGRUN LOBST**

SPRINGZAAD FOUNDATION



## Feedbacks on greening experiences in Germany and the Netherlands

As representative of the Dutch network Stichting Springzaad, Sigrun Lobst presents an overview of schoolyard greening experiments in the Netherlands and Germany. She looks at the elements that make up the very essence of a nature-based schoolyard: playful landscapes rich in nature, containing multi-purpose open spaces with no pre-established purpose ("Loose parts"), as well as "magical" places that enhance the everyday play space.

It's important for children to be able to play outdoors and move around freely, playing in an adventurous way so as to have a rich experience of urban nature. The use of topography and different types of vegetation must be designed for the act of play, not as decorative elements.

It's important to go beyond design for vegetated school grounds. In fact, using only eco-responsible materials does not necessarily encourage the emergence of new avenues of exploration for children. A natural playground is one that makes full use of the site's potential.

***"The ideal schoolyard is a playful laboratory, a rich living space/biotope, constantly evolving...  
Just like its users! "***

« *Participation in co-creation is essential for green schoolyards* »

The model we have developed involves students in all stages of the project, from consultation to co-construction, as part of a true co-design process. Students are thus better able to take ownership of the space when they participate in all stages of transformation.

It's important to look at these projects from a long-term perspective, as evolution can be slow, and changes are often accompanied by adaptations as they happen.

To motivate schools to join this type of project, it's important to show examples of schools at an advanced stage to convince future users of the potential of their own courtyard.



**RAPHAËLLE THIOLLIER**

DIRECTION DES AFFAIRES  
SCOLAIRES



## Political strategies around the OASIS schoolyards

The OASIS project is in line with the objectives of the Paris Resilience Strategy (2017). It was co-financed as part of the 2019-2021 "Innovative Urban Action" project (FEDER), which focused on 10 Parisian schoolyards.

The project aims to increase and promote:

- well-being at school;
- more nature for all ;
- greater citizen involvement;
- cooler, climate-friendly school grounds.

The greening of Parisian schoolyards aims to create more diverse spaces for children, put nature at the heart of educational projects, improve rainwater management and develop new play activities.

## Evolution and new objectives of the OASIS program

Several challenges for new generations of courses are given:

- A more participatory co-design phase with school members, students and parents;
- The development of "new pedagogical and professional practices" for all, such as "outdoor classes".
- Increased connection with nature
- Greater maintenance of courses for greater sustainability
- Weekend opening to a wider public.

In this way, school grounds are transformed into islands of coolness, capable of refreshing users during periods of heatwave; they also contribute to extending the possibility of access to green spaces for relaxation.



# Visit to two OASIS school playgrounds in Paris

In addition to their different locations in the Paris region, the two OASIS schools we visited had different implementation dates. As a result, participants were able to observe two "generations" of planted schoolyards.

The first visit was to the Neuve Saint-Pierre elementary school in the 4th arrondissement. Its courtyard was landscaped by the municipality in 2019. During the visit, an exchange took place with a school organizer, to whom participants were able to ask questions about pedagogical practices, soil permeability and the adaptation process of the school as a whole.



The second visit was to the Maryse Hilsz elementary school in the 20th arrondissement. Its OASIS courtyard was created in 2020.

Raphaëlle Thiollier presented the project, then visitors took time to freely observe the space and stroll near the small stream that separates the kindergarten courtyard from the elementary, and the play and shade areas.



**For more information:** <https://www.paris.fr/pages/les-cours-oasis-7389>  
<https://www.uia-initiative.eu/en/uia-cities/paris-call3>

(c) OASIS

**FRIDAY, JUNE 9, 2023**



**NATHALIE BLANC  
SARAH BORTOLAMIOL**

CNRS LADYSS



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## Governance modes and biodiversity production

Because of their number and distribution within the urban fabric, schoolyards represent an opportunity for action in terms of adaptation to climate change and the connectivity of living organisms. In this sense, these spaces need to become functional ecosystems.

For a long time, urban greening projects were conceived with the sole aim of cooling the environment, without taking biodiversity into account.

Yet it is within this biodiversity that we can find a solution to climate change.

The COOLSCHOOLS project aims to create local communities committed to transforming schoolyards into "oases".

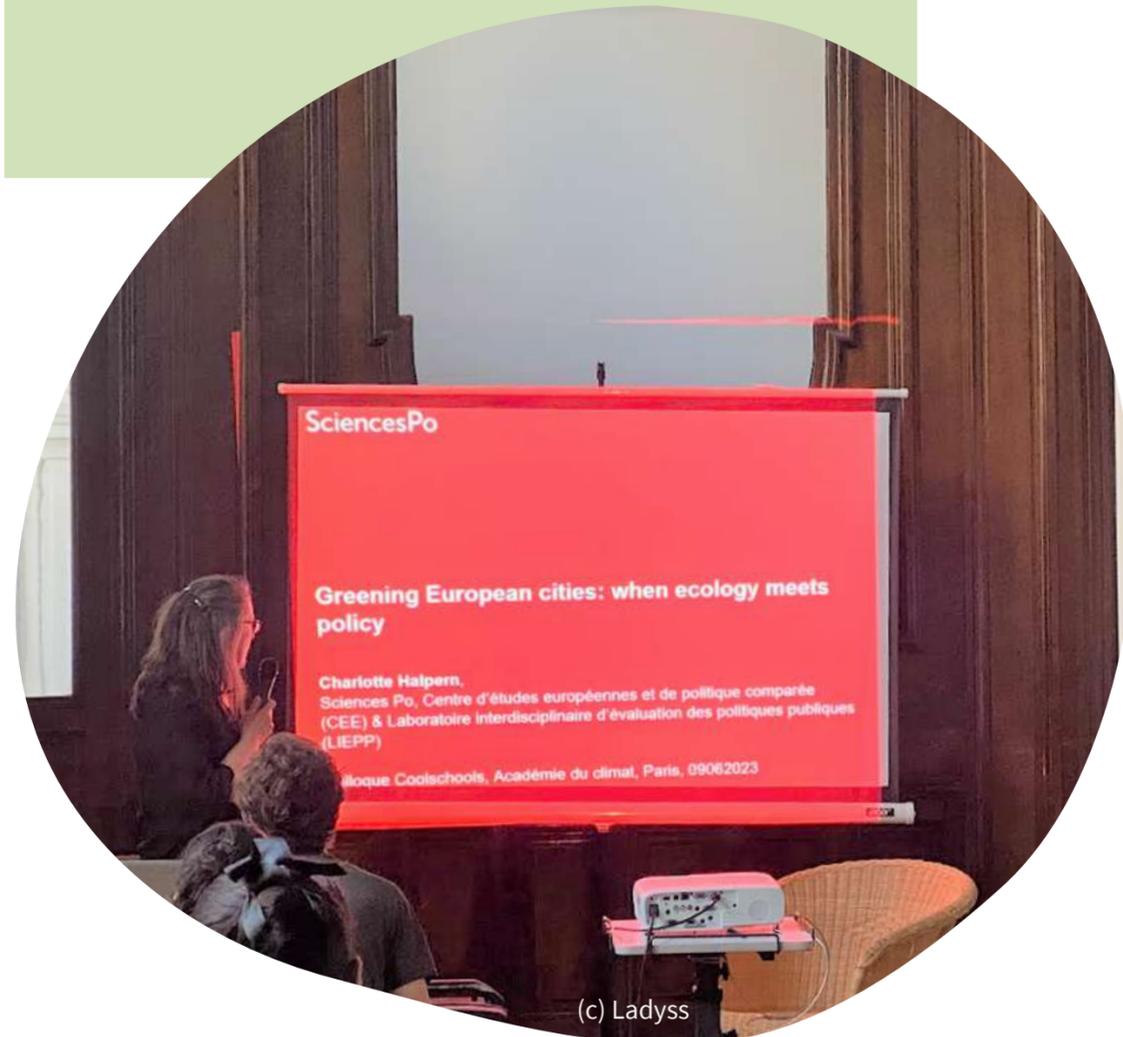
## The COOLSCHOOLS project in Paris

Governance practices have an impact on biodiversity. The latter seems to depend on the involvement of school staff in the long-term enhancement of living things. The presence of animals in courtyards enriches children's recreational activities.

The management of these areas encourages the involvement of the surrounding communities. In this way, the school can help to weave resilience strategies into the fabric of each neighborhood. An integrated approach to vegetation would encourage the presence of a diverse range of flora and fauna, and thus help to strengthen the links between different forms of life.



**CHARLOTTE HALPERN**  
SCIENCES PO



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## Urban ecology policy in Europe

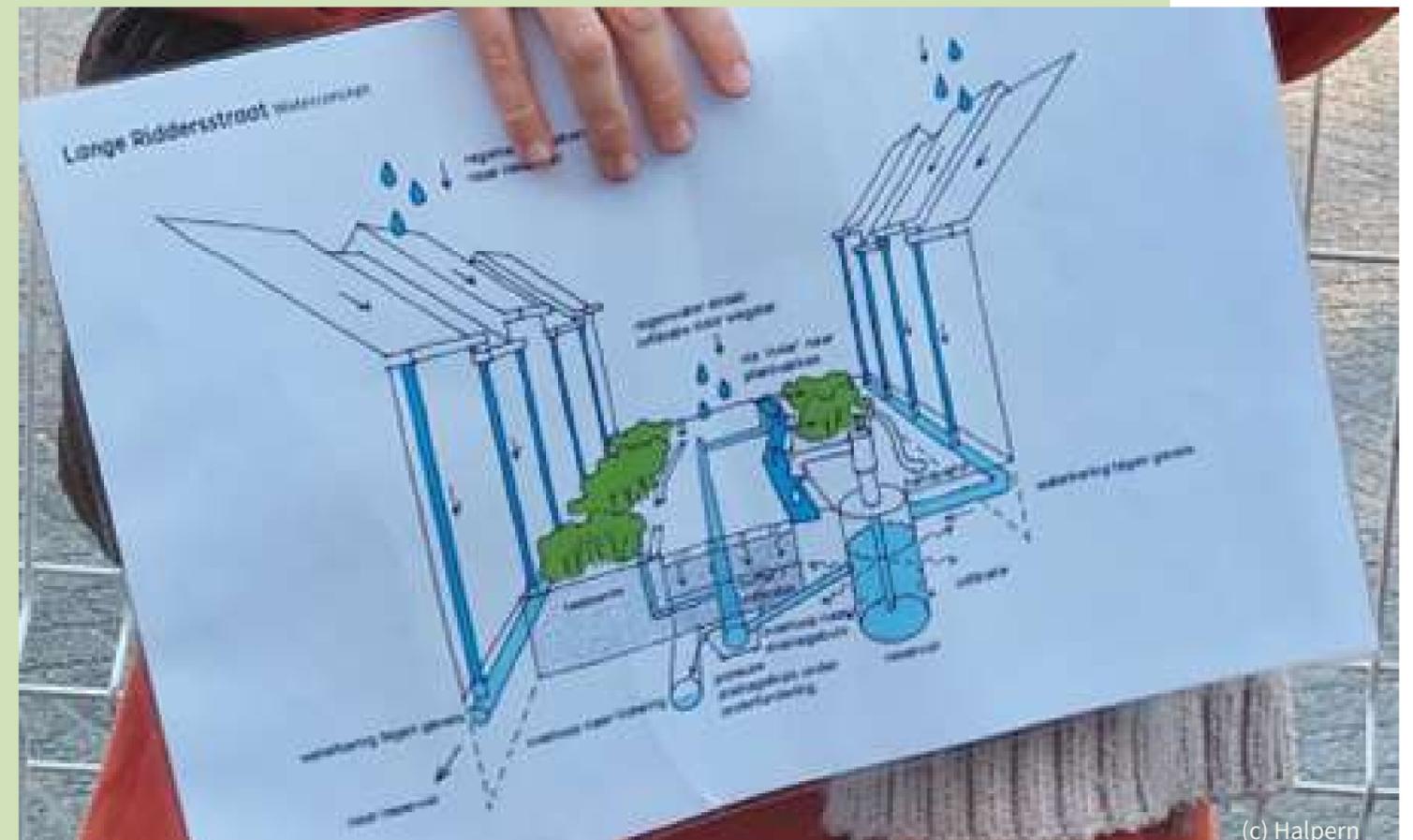
The growing concentration of people in cities is generating greenhouse gas emissions that are harmful to the environment and human health. Green interventions (i.e. nature-based infrastructures) can provide a solution to these problems.

However, these initiatives are often carried out on a small scale: for climate adaptation, it is necessary to increase their scope and speed up their implementation. Urban policies could be a driving force behind this change.

## Transforming small-scale initiatives

Cities are made up of local communities that need to be addressed: greening the city must be a collective and political action. This means reorganizing the governance of these spaces. Many of Europe's cities are still at the experimental stage.

However, green interventions should not be a collection of local experiences, but a large-scale network: they must extend to the whole city. Small initiatives are a first step towards change, but they are not enough. We need to see how the city is connected, and think about its evolution with a long-term perspective.





**ANNE THEURI**

NATIONAL ENVIRONMENTAL  
MANAGEMENT AUTHORITY OF  
KENYA

## Schoolyard greening program in Kenya

The effects of climate change are clearly visible in Kenya. A school greening program has therefore been initiated to engage children and their communities in actions to protect the environment. Its main objectives are to create climate shelters in and around schools, while promoting responsible behavior, which will then be disseminated to local communities through children.

The aim is also to increase the country's forest cover and raise awareness of biodiversity conservation measures.



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## Kenya's schoolyard greening program

This project has encouraged new conservation initiatives in the participating schools. The major challenges are increasing food security and fencing schools to protect their vegetation from animals. In addition, improving people's knowledge of tree development and access to water are both necessary for the survival of vegetation. Water harvesting and seedling care by schools and communities must be optimized to increase vegetation survival rates.

Obstacles to the success of the program are mainly the unfavorable local climate, destruction by animals and the lack of local involvement in seedling care.



## Forum of Experience : exhibition

The seminar ended with an exhibition of posters produced by the various participants in the COOLSCHOOLS project as well as by external participants. This moment of exchange and discussion gave everyone an opportunity to talk in greater depth with the speakers about the topics covered during the seminar.

Experiences from Barcelona, Belgrade, Bruxelles, Germany, Kenya, Paris, Rotterdam, Strasbourg, England were presented.





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## Acknowledgements

Many thanks to all our partners in the COOLSCHOOLS project. Thanks to all the participants, some of whom came from far and wide, for bringing this symposium to life. Thank you to the City of Paris. Thank you to the Académie du climat for hosting the event. Thanks also to the Oasis Neuve Saint Pierre and Maryse Hilsz schools for opening their doors for a visit.

## Acknowledgements

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The illustrations in this document are taken from the presentations made by each of the speakers and the Coolschools team.



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