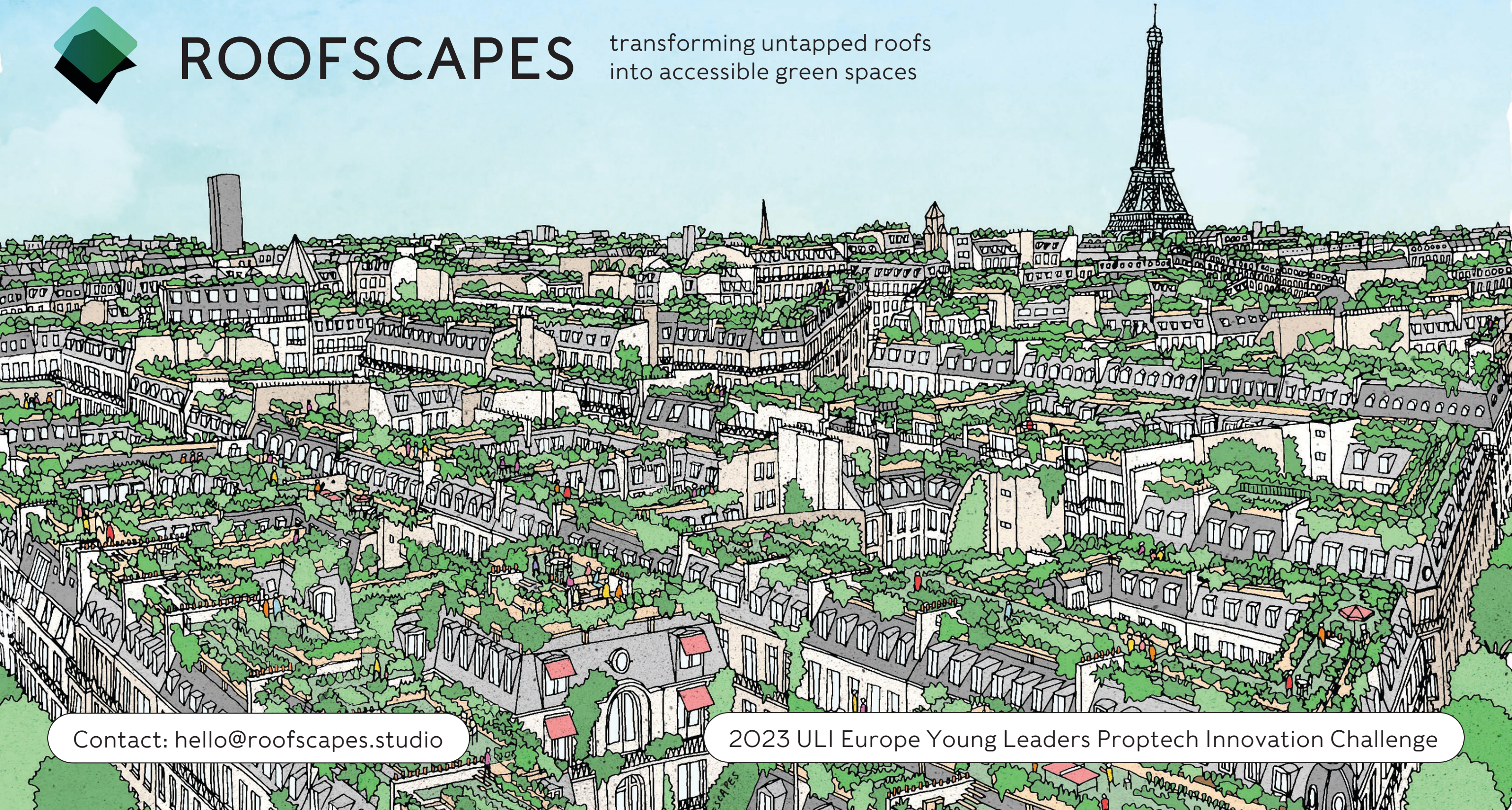




ROOFSCAPES

transforming untapped roofs
into accessible green spaces

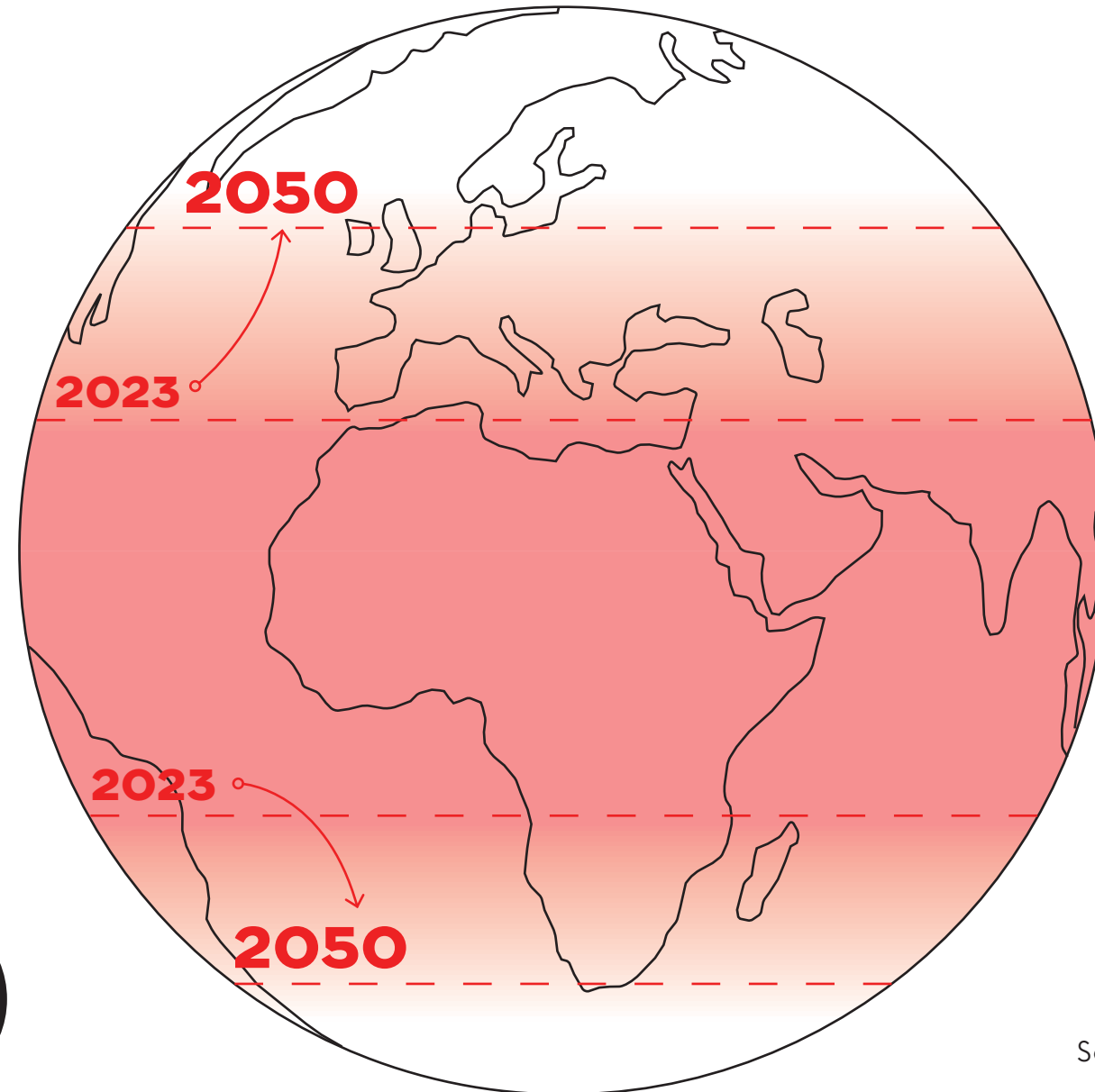


Contact: hello@roofscapes.studio

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CONTEXT

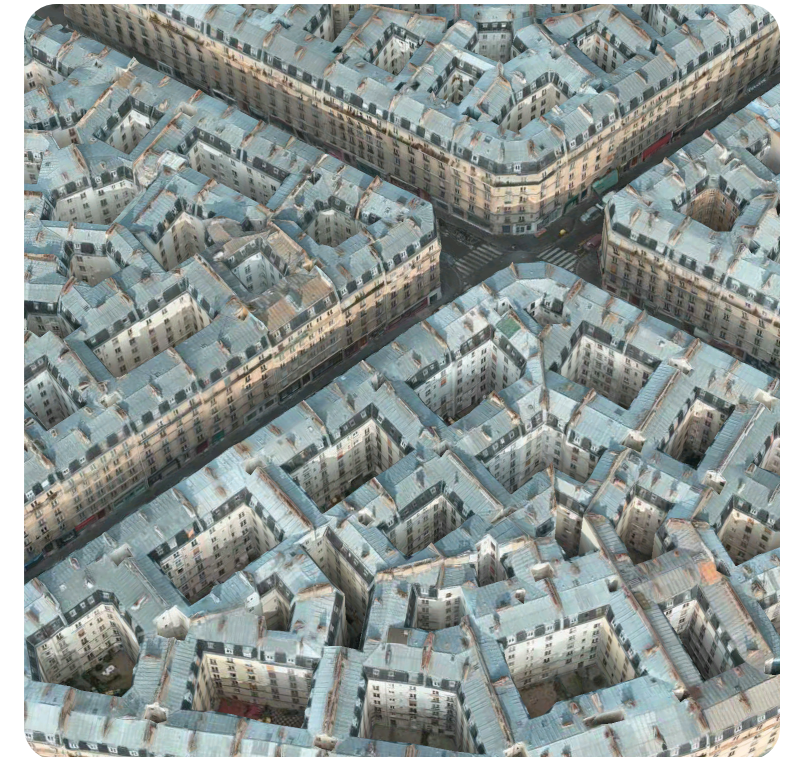
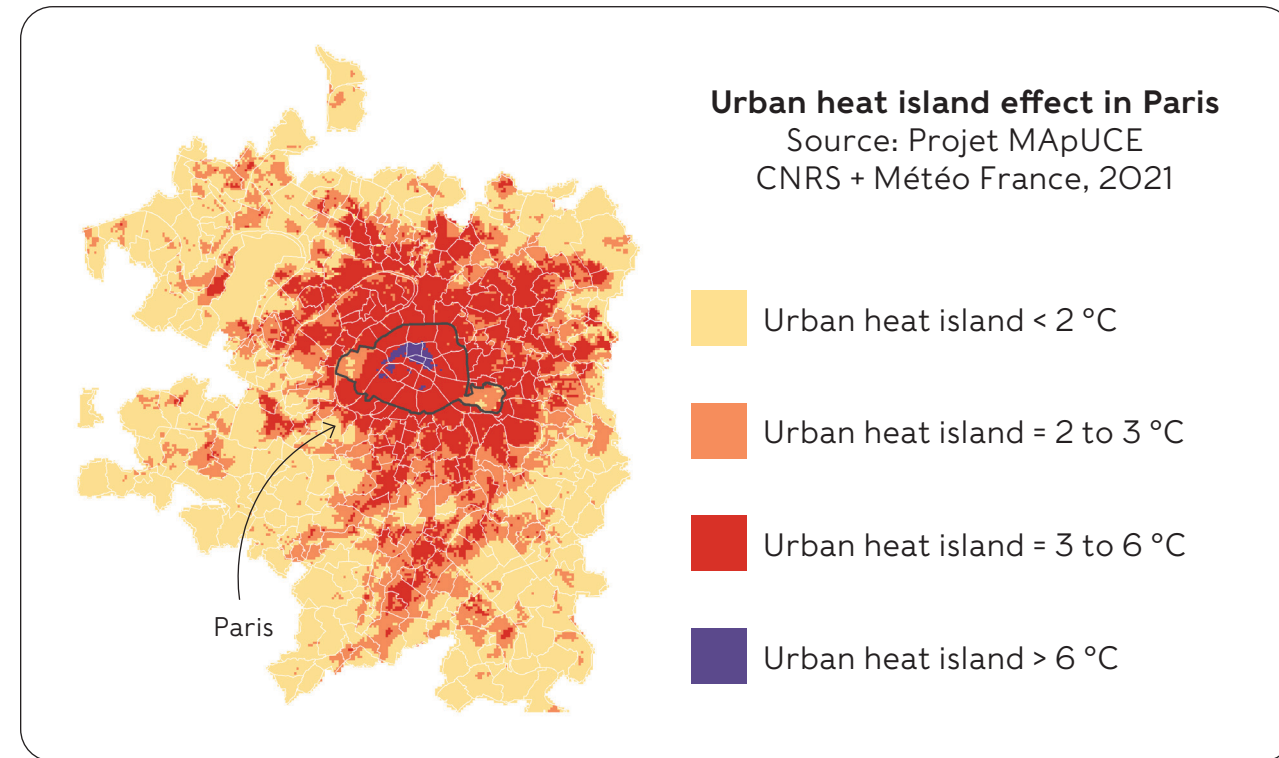
Hot climate is expanding away from the equator



By **2050**, the climate of **Paris** (France) will be the same as the 2023 climate of **Seville** (Spain).

CONTEXT

Ever hotter city centers



Because of the use of artificial materials in roofing and a lack of vegetation, **European city centers are subjected to heat islands where temperatures can be up to 8°C** greater than their rural surroundings. This trend has further accelerated with global warming, as in the example of Paris:

Historic heat wave of 1973: **35.5°C** Heat wave of 2019: **42.6°C**

The situation is particularly **inhospitable** for those living and working under zinc, slate, and tile **roofs**, whose temperatures can reach above **80°C in summer**.

CONTEXT

Greening roofs to reduce the urban heat island effect and improve access to green spaces

NEW CONSTRUCTIONS



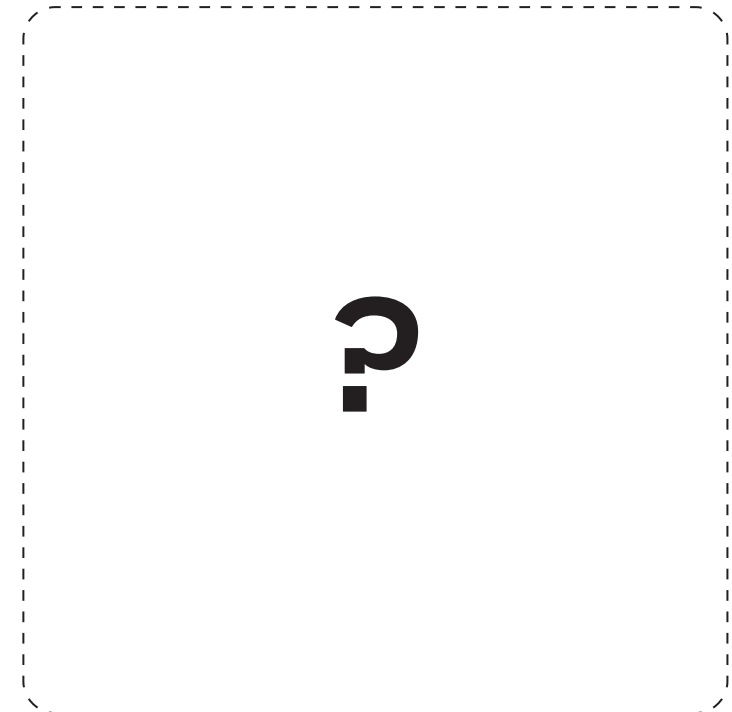
School in Boulogne-Billancourt
Chartier Dalix, 2014

RENOVATION OF FLAT ROOFS



Opéra Bastille rooftop in Paris
Topager, 2017

ADAPTATION FOR PITCHED ROOFS

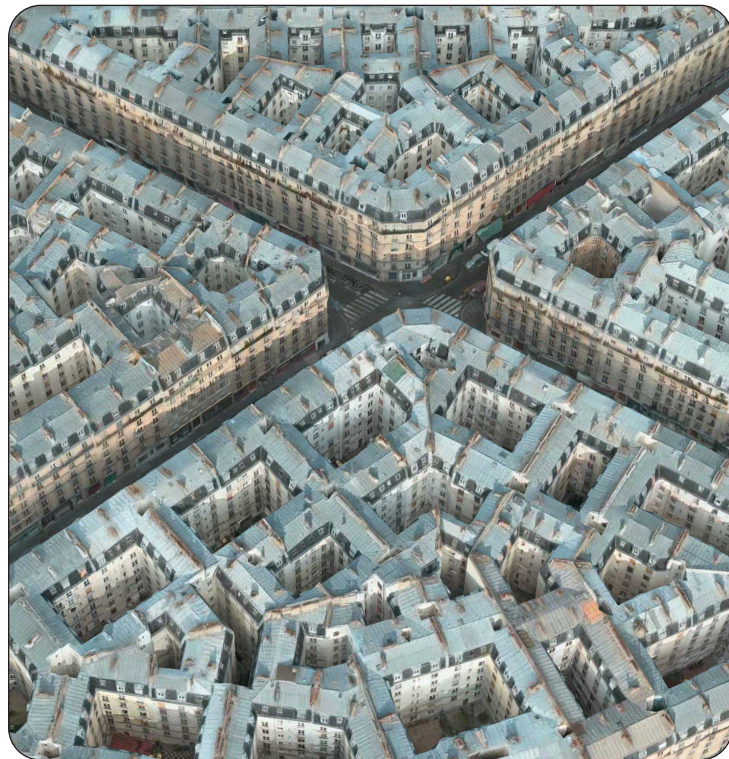


Green roofs cool buildings, reinforce **urban biodiversity**, capture **stormwater**, **absorb** pollution, and offer high quality **exterior spaces** at the domestic scale. For these reasons, their installation is encouraged by urban resilience policies. However, their adoption is currently restricted to **flat roofs**.

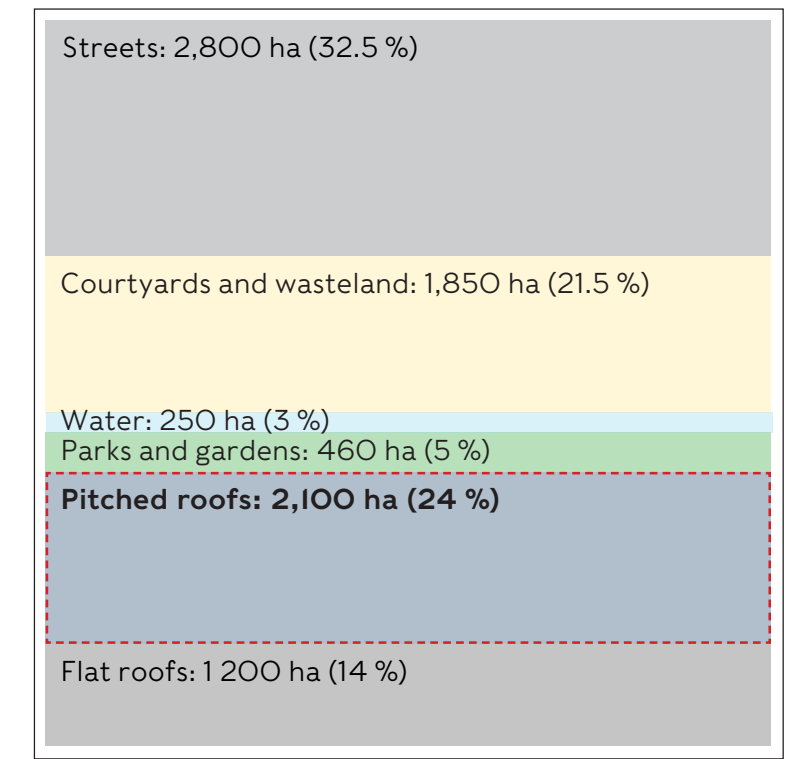
92% of French people believe there is **not enough nature in cities**

PROBLEM

Unlocking the enormous potential of pitched roofs



Overall Paris Footprint: 8,660 hectares



Sources: APUR, Le Monde, Parisinfo

Roofs represent **1/3 of available horizontal space** in a city like Paris - a considerable opportunity for urban ecological transition. However, in French cities, **the majority of these roofs are pitched** and as such excluded from urban resiliency projects and the benefits of the ecosystemic services provided by green roofs.

In a city like Paris, **4 out of 5** buildings are covered by a pitched roof, making the installation of a traditional green roof impossible.

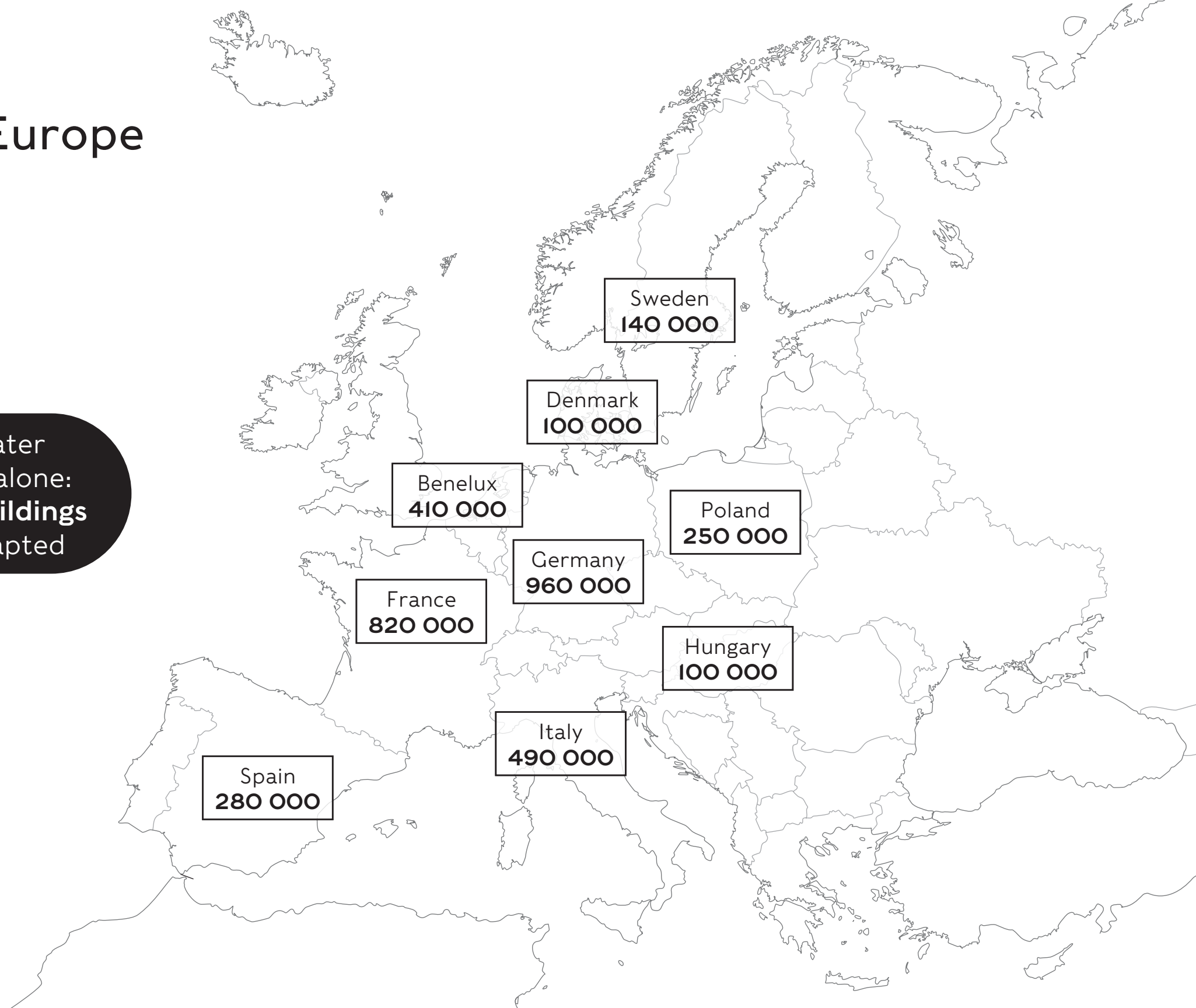
MARKET

Urban pitched roofs in Europe

In the Greater Paris region alone:
200 000 buildings
could be adapted

European cities contain more than **4 million buildings** with pitched roofs which can support the structural loads required for installing accessible green roof platforms.

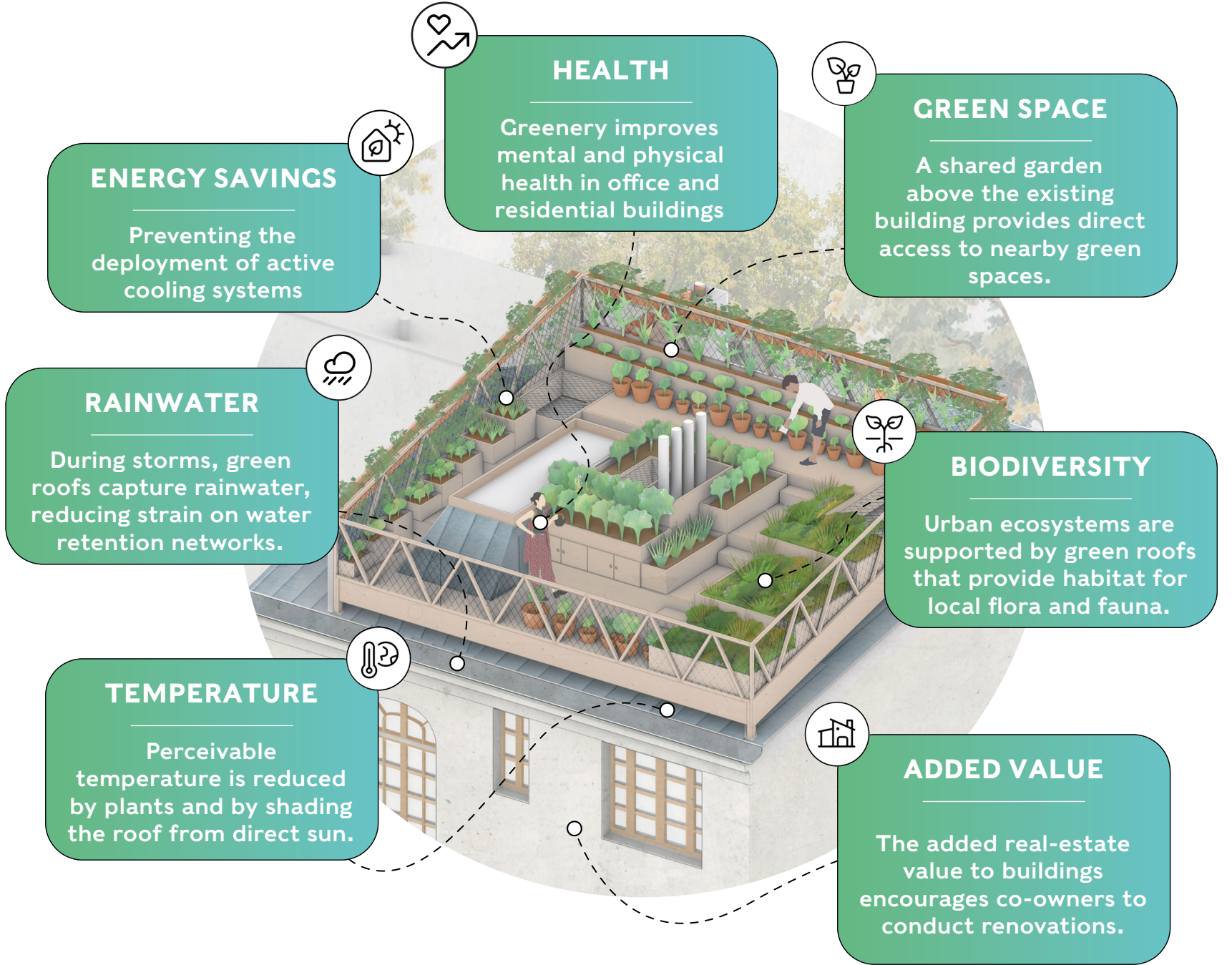
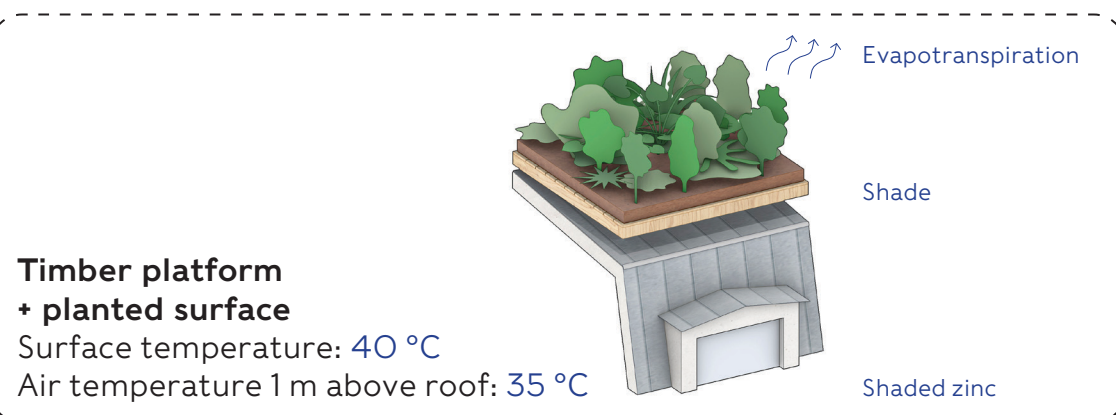
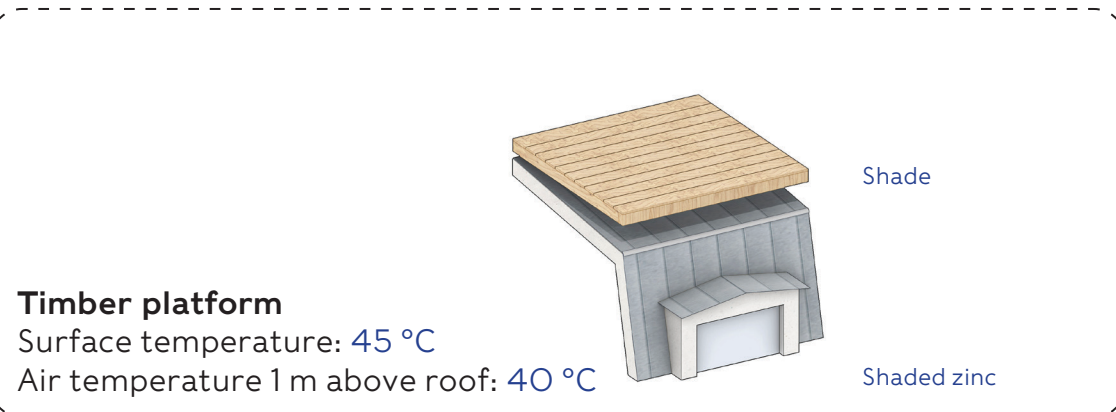
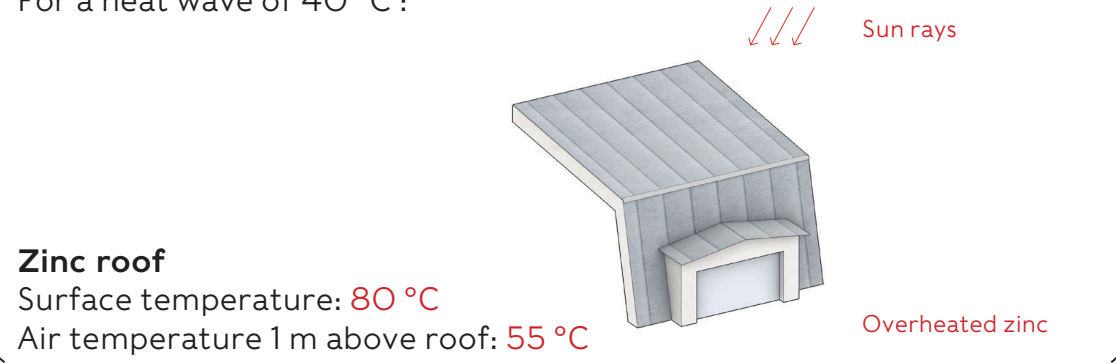
Source : Commission européenne + Worldometer, 2020



SOLUTION

Modular timber platforms - green and accessible

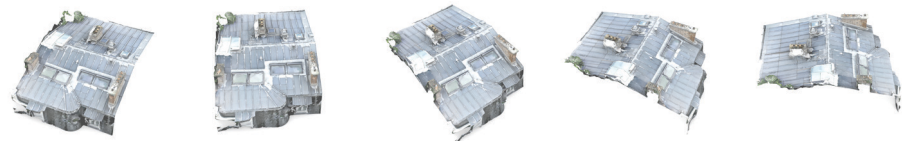
For a heat wave of 40 °C :



INNOVATIVE ASPECTS 1/2

A flexible model

In order to fit any roof, Roofscapes' system is designed to **adapt to the unique features** of each roof. The platforms are built around the existing fittings of the roof, such as skylights or chimneys, thus **maximizing available green space** for users.



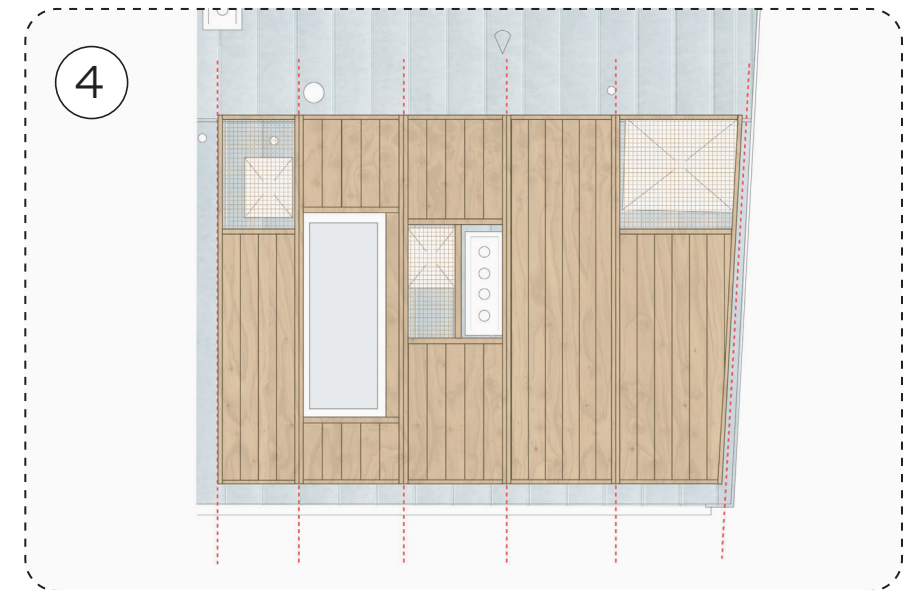
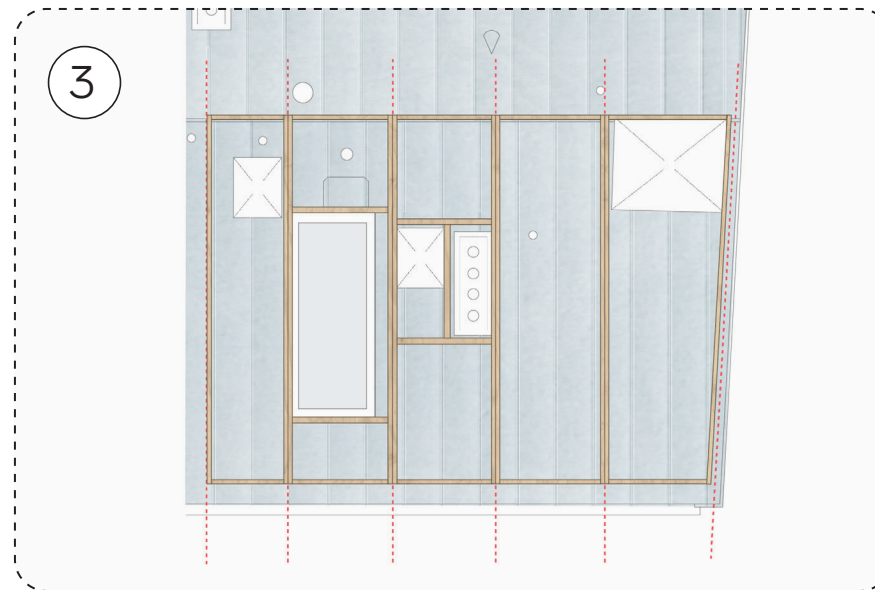
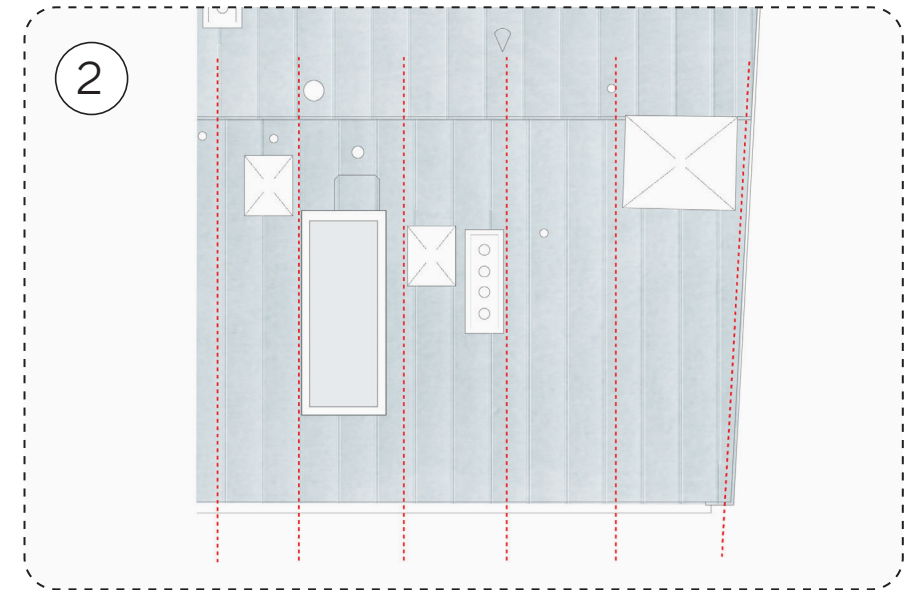
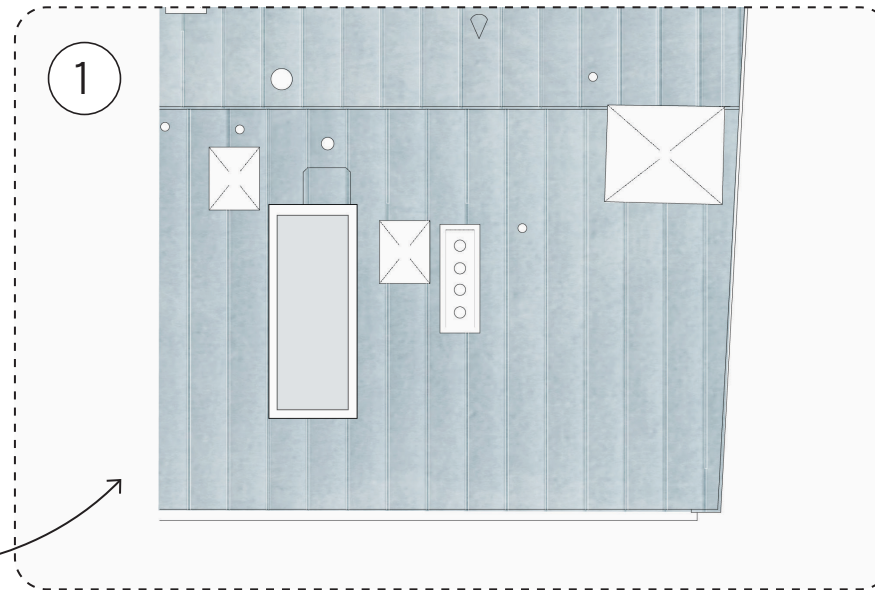
Step 1 - Site study by drone (photogrammetry)

Step 2 - Overlay of modular grid

Step 3 - Adaptation to obstacles

Step 4 - Platform design

Series of aerial views showing conceptual system for adaptation to roof features >



INNOVATIVE ASPECTS 2/2

A replicable construction strategy

Adapting cities to climate change requires a **systemic approach**. Hence, Roofscapes platforms are based on **load-bearing walls** (whose structural capacities are reliable on any building) rather than on timber frames (whose condition varies from one building to another). This structural strategy means that Roofscapes' approach can be **replicated** across the entire building stock of historic city centers.

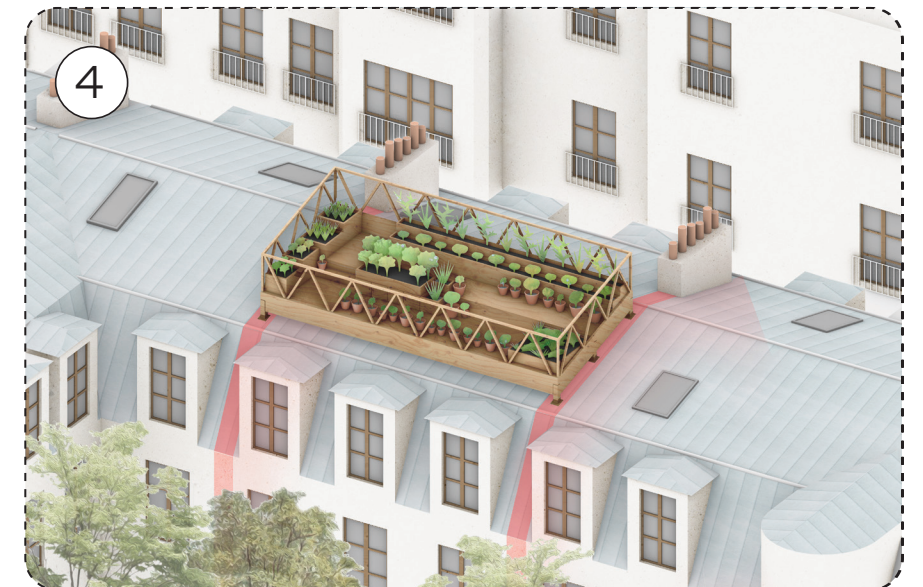
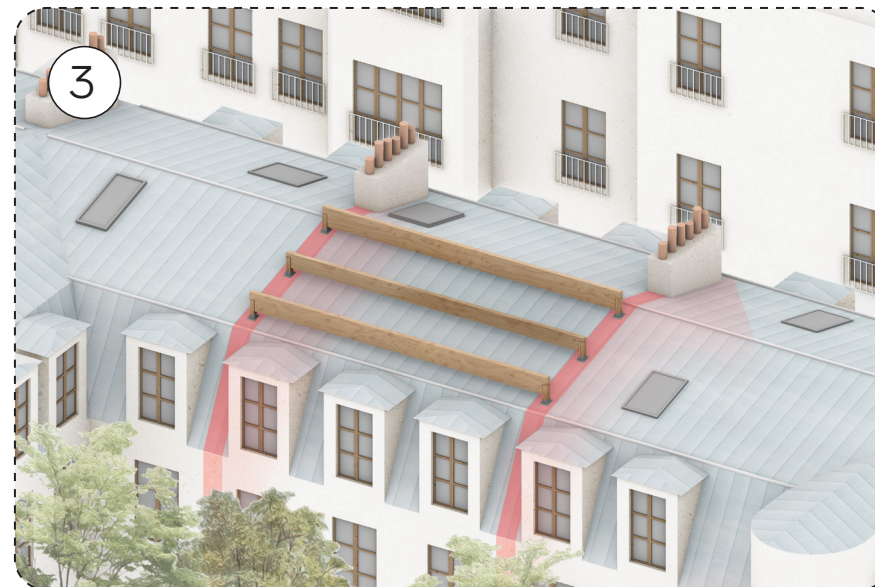
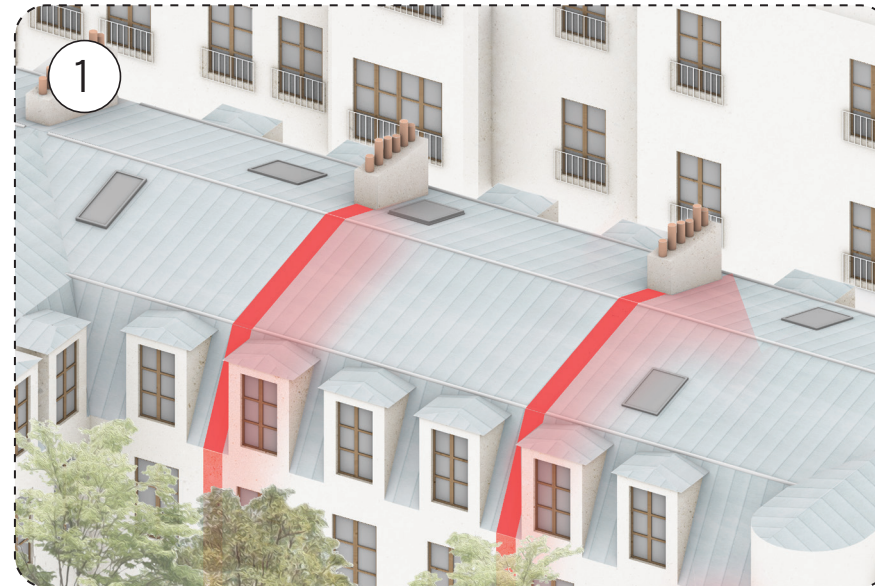
Step 1 - Locate load-bearing walls

Étape 2 - Anchor vertical supports

Étape 3 - Install primary structure

Étape 4 - Install green roof modules

Roofscapes' replicable structural strategy >



COMPETITIVE LANDSCAPE I/2

Benchmark of current roof uses

Roof deck
(not planted)



accessibility

Roofscapes



environmental
value

Bituminous
roof



Zinc
roof

Tiled
roof



Unaccessible
green roof

Reflective paint
(cool roof)

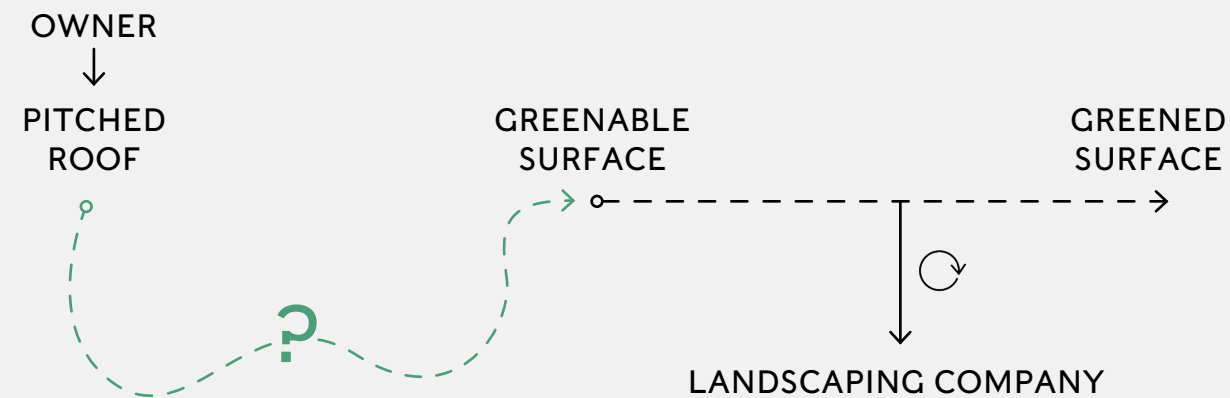
Wind
turbine

Solar
panels

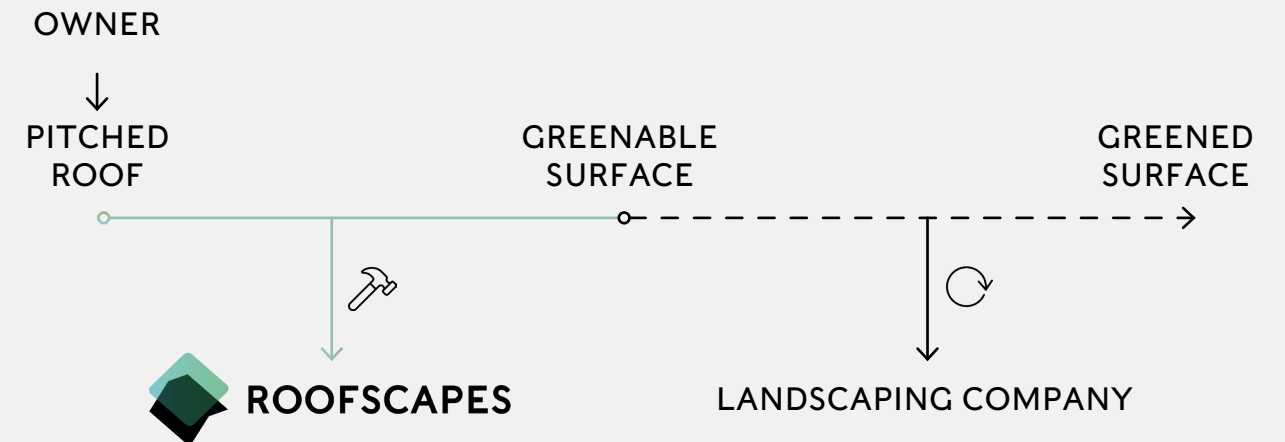
COMPETITIVE LANDSCAPE 2/2

The only way to make pitched roofs green and accessible

Current situation



Improved situation

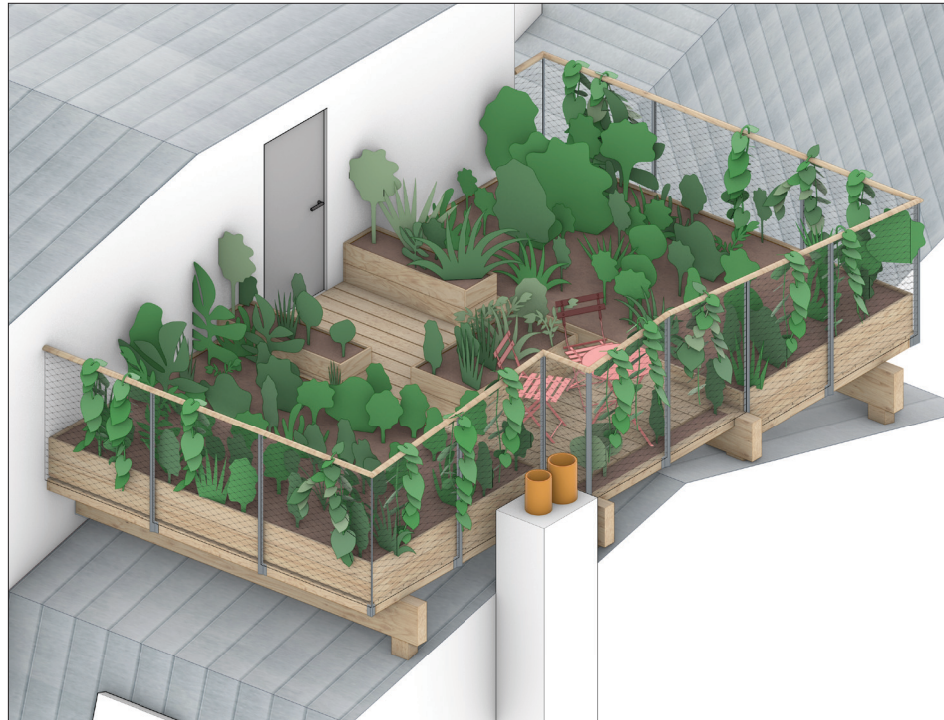


Roofs must be **operational** to install planted surfaces and benefit from their **ecosystem services**. Though flat roofs can easily be greened by landscaping companies, there is **no current player** who **designs** projects on pitched roofs while **coordinating** the various sub-contractors required for their installation.

Roofscapes allows roof owners to **add value** to their property and enjoy the **untapped spaces** above their heads, while **preserving** architectural heritage and **greening** cities.

CURRENT PILOT PROJECTS

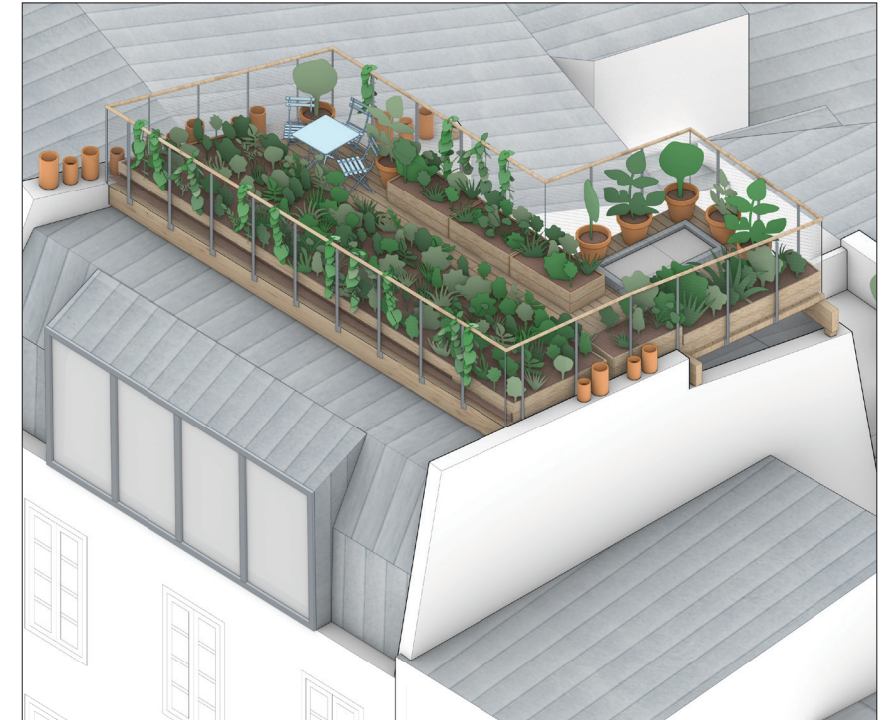
With condominium associations ...



Pilot project in Paris
Image: Roofscapes, 2022



Pilot project in Paris
Image: Roofscapes, 2022



Pilot project in Paris
Image: Roofscapes, 2022

CURRENT PILOT PROJECTS

... and public authorities



Pilot project in Paris
Model: Roofscapes, 2023

TEAM & TIMELINE



Eytan Levi

Co-Founder | Public Relations & Organization
EPFL, Bachelor's in Architecture
MIT, Master's in Architecture
MIT, Master's in Real Estate Development

Tim Cousin

Co-Founder | Conception & Construction
EPFL, Bachelor's in Architecture
MIT, Master's in Architecture & Digital Fabrication

Olivier Faber

Co-Founder | Communication & Environmental Impact
EPFL, Bachelor's in Architecture
MIT, Master's in Architecture & Sustainable Design



Education | 2014-2017

Swiss Federal Institute of Technology
Lausanne, Switzerland



Education & Research | 2018-2022

Massachusetts Institute of Technology
Boston, Massachusetts, United States



Winner of the Renov'Action Hackathon | 06/2020

Ministry of Social and Environmental Transition
Paris, France



Shortlisted in the IGNfab Accelerator | 06/2020

National Institute of Geographical and Forestry Information
Saint-Mandé, France



Support | 12/2020-06/2022

Urban Lab @ Paris&Co (City of Paris' laboratory for urban experimentation)
Paris, France



Exhibition | 12/2020-09/2021

2021 Seoul Biennale of Architecture and Urbanism
Seoul, South Korea



Member | since 07/2022

French Green Roof and Green Wall Association (Adivet)
Paris, France



Contributor | since 09/2022

Information and evaluation study "Paris at 50°C" by Paris City Council
Paris, France



Winner of the Innovation & Resilience call for projects | 12/2022

Paris Mayor's Office
Paris, France



Support | since 03/2023

Le Perqo Incubator | Regional Council of Île-de-France x Schoolab
Saint-Ouen, France



New European Bauhaus Prize winner & ambassador | 06/2023

New European Bauhaus | European Commission
Brussels, Belgium



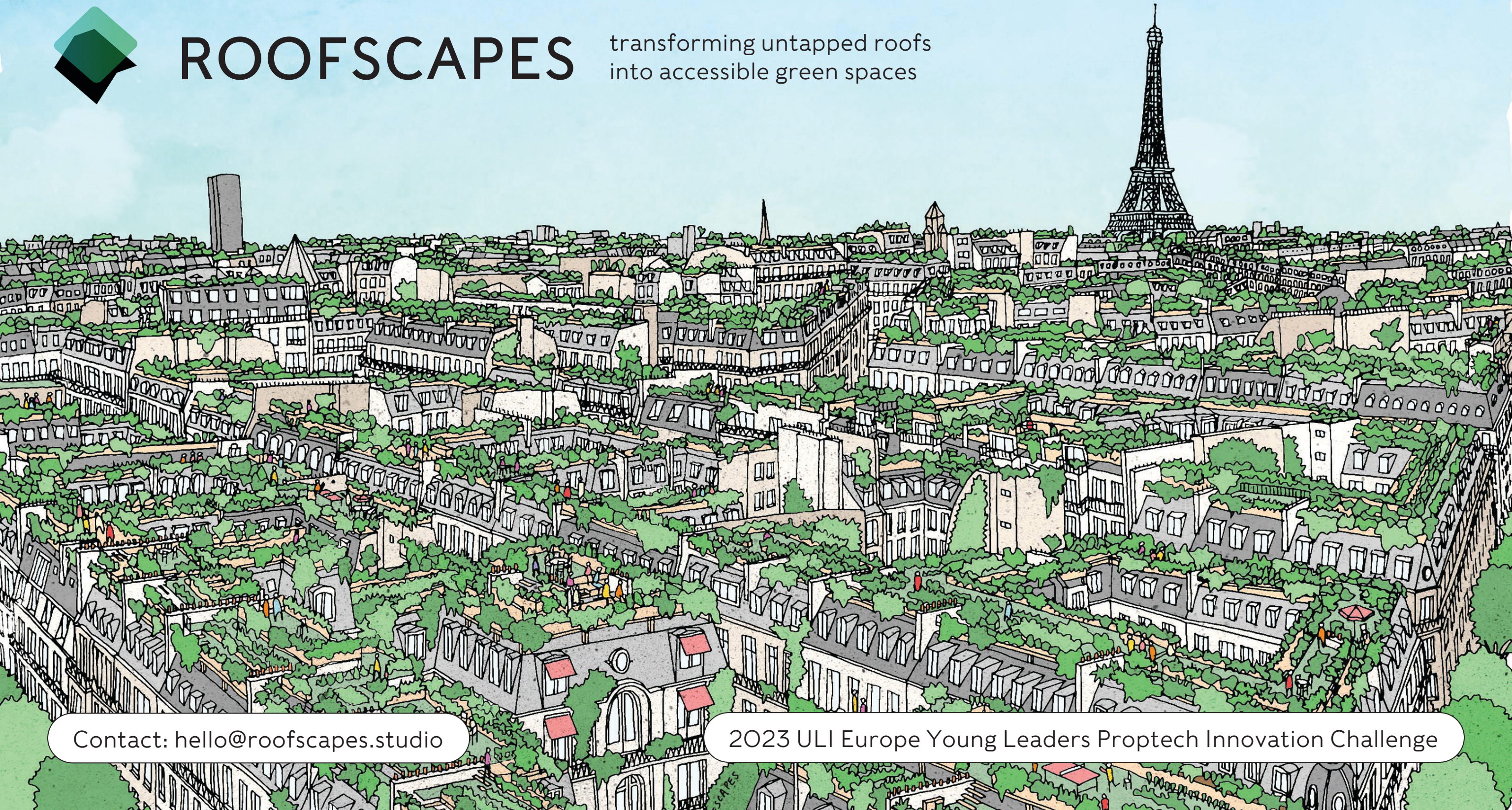
Coorganizer | 09/2023

Paris Rooftop Days
Paris, France



ROOFSCAPES

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