

GREENSPIRED



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executive summary

Despite the grand and beautiful parks scattered around the city, Paris faces an issue with its overall lack of green spaces and overbearing concrete landscape. Greenspired hopes to expand on the Paris Greening Program by engaging in urban greening through an artistic and whimsical approach. Drawing inspiration from pufferfish nest construction, which transforms the mundane seafloor into a beautiful and functional circular pattern, we want to renovate Paris' cityscape into an environmentally-friendly model for sustainability. Our project has three main initiatives: create moss art on blank building walls, develop unused alleyways into community green spaces, and reimagine advertising with the creation of green billboards along the Péripherique. This "urban-greening through artwork" approach uses moss to beautify the city and rethink the future of visual art and green advertising. As a result of our greening, we also tackle one of Paris' other most pressing problems: air pollution. With sustainability at the core of the Paris 2024 Olympic bid, Greenspired's initiatives help the city commit to their promise to be sustainable by advertising that way, too, with our green billboards. Greenspired will tailor its plans to the needs of the city, creating a legacy of sustainability, vibrancy, and innovation for Paris.



“The future will either be green or not at all.”

Bob Brown, Australian Environmentalist

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BACKGROUND

sustainable development goals

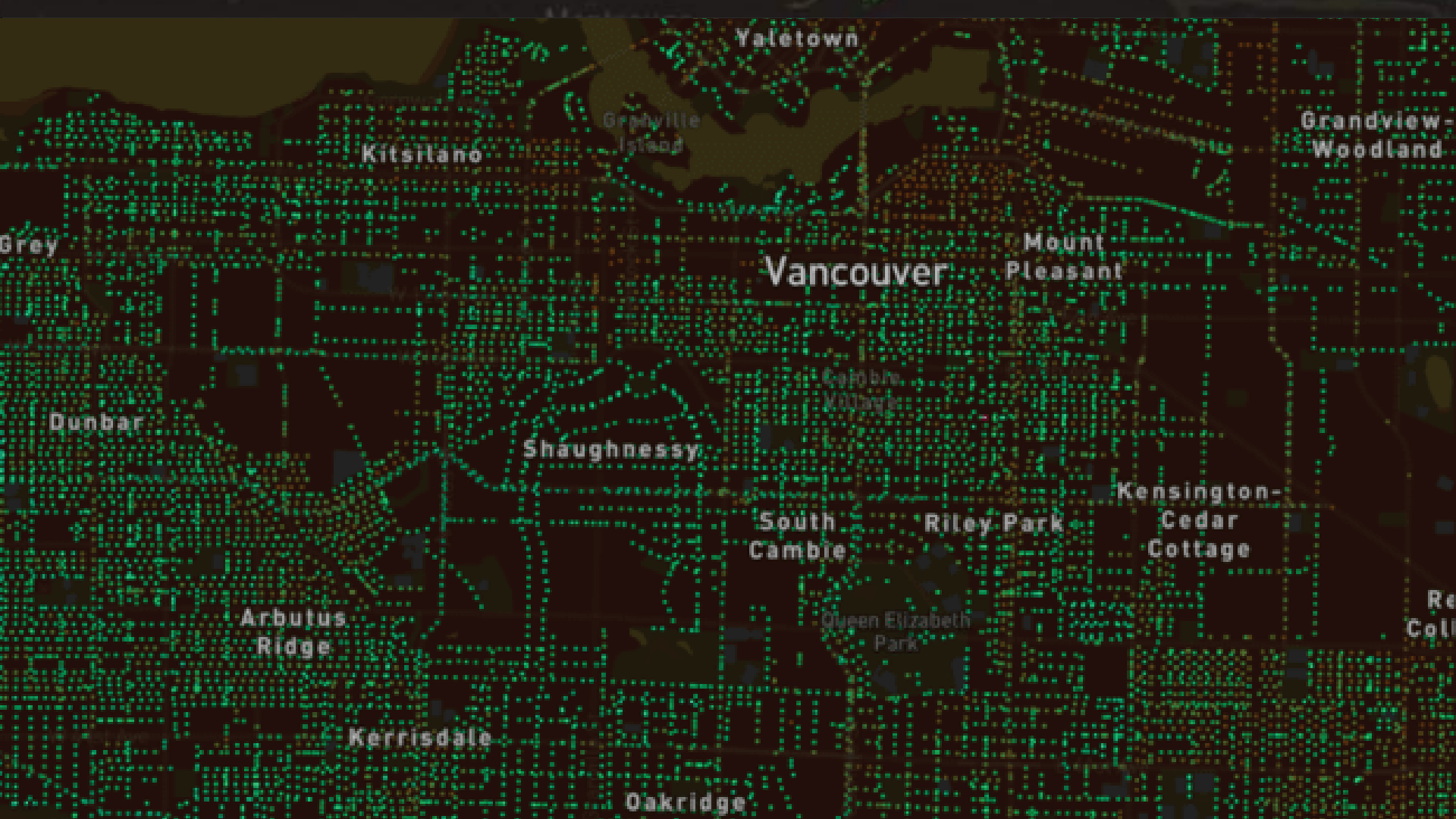


In September 2015, the United Nations adopted 17 Sustainable Development Goals, which aim to protect the planet and ensure prosperity for all over the course of the next 15 years. Greenspired tackles United Nations Sustainable Development Goals #3 and #11 by engaging in urban greening through innovative and artistic ways. We aim to subtly transform Paris into a more sustainable city by expanding upon current urban greening programs to integrate green spaces into the core and culture of Paris. As a result, we also tackle one of Paris' other most pressing problems, which is an obstacle to a healthy and fulfilling life: air pollution.



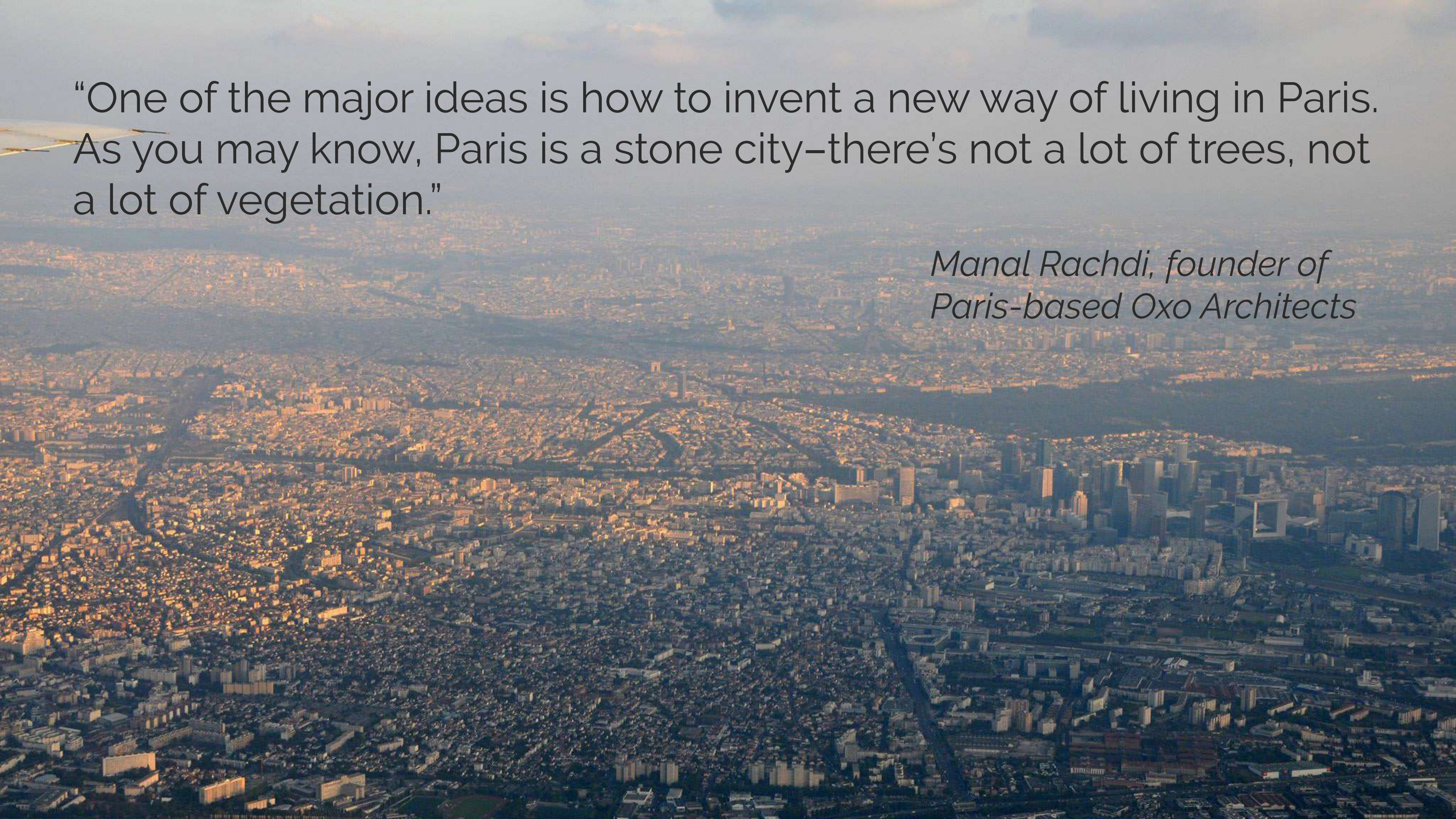
lack of greenery in paris

Given the beautiful parks in Paris, the overall lack of greenery throughout the city is very surprising. MIT's Senseable City Lab recently developed a new project called Treepedia, a map website that catalogues the density of the tree canopy in 23 global cities. Paris has the worst green view index of all, with only 8.8% coverage (top image). In comparison, the bottom image shows Vancouver, which is among the best cities surveyed with 25.9% coverage. The European Court of Auditors recently reviewed the policy on increasing green spaces, forests and walks in Île-de-France that the Agence des Espaces Verts, (AEV, or green spaces agency) created in 1964; in 2016, the Île-de-France was still short of its goals by 1,040 ha of urban green areas.



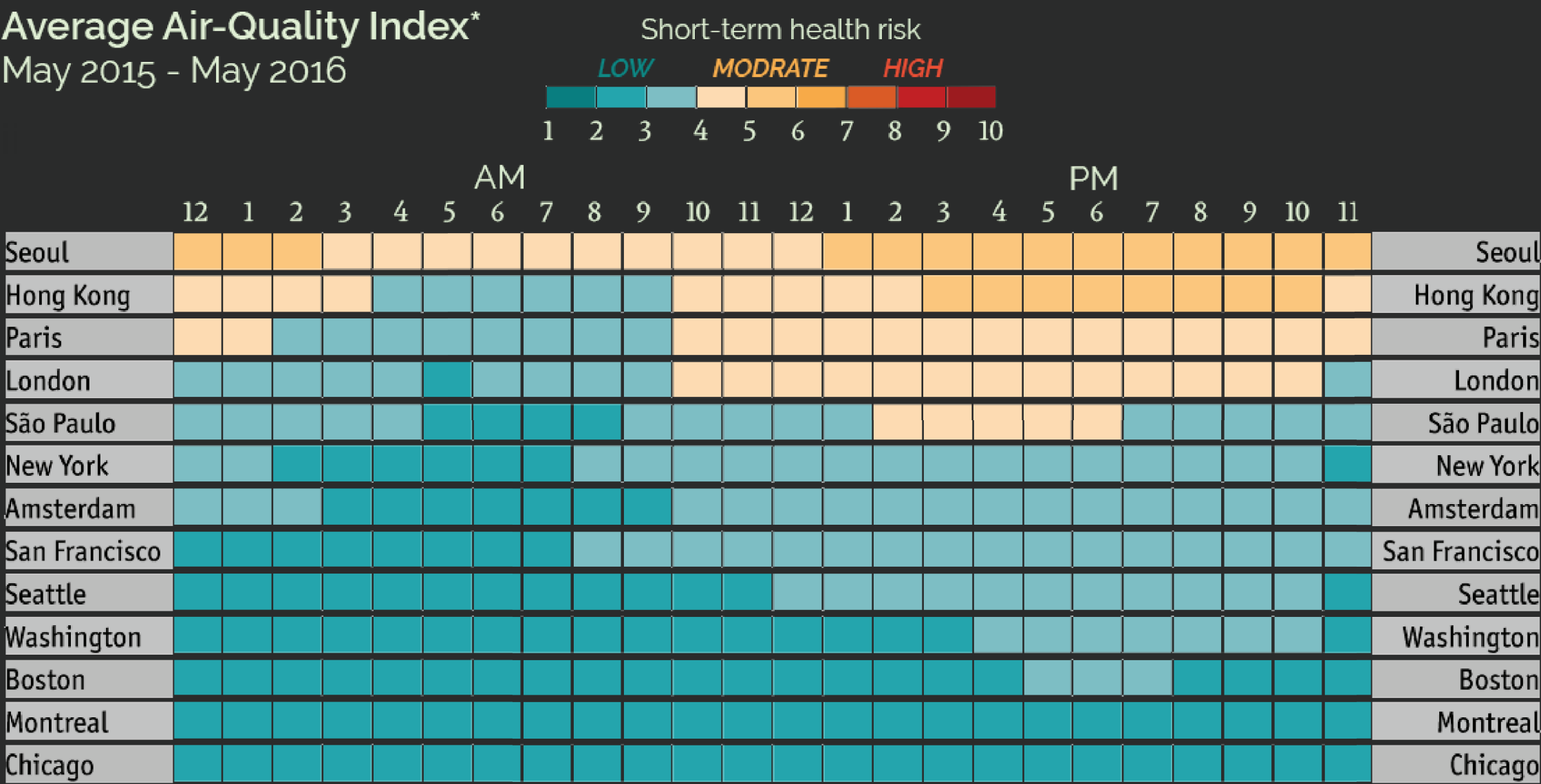
“One of the major ideas is how to invent a new way of living in Paris. As you may know, Paris is a stone city—there’s not a lot of trees, not a lot of vegetation.”

*Manal Rachdi, founder of
Paris-based Oxo Architects*



air pollution

Air pollution is one of the most urgent problems that Paris currently faces, and much of this issue stems from the lack of greenery around the city. Every year, air pollution causes over 2,500 premature deaths in Paris. Just last December, Paris went on a state of alert after its worst winter pollution peak of the last decade, forcing the city to make public transportation and bicycle-sharing schemes free, in the hopes of avoiding residential car usage to reduce smog. However, air pollution is not only a threat during pollution peaks, but also when pollutants are below the recommended levels. Between 2007-2010, 93% of all deaths and hospitalizations linked to cardiac issues caused by PM10 air pollution in Paris were associated with levels below the 80 µg/m³ alert threshold. In ad-



dition to causing death, the five major pollutants (benzene, nitrogen dioxide, ozone, PM10, and PM2.5) also have serious effects on public health, including irritation of skin and eyes, provocation of asthma attacks, and increased risk of heart and respiratory diseases.

Graph from Plume Labs and The Economist showing the annual average of pollution in major cities around the world by time of day. The average air quality in Paris was the third worst in the world from May 2015-May 2016.

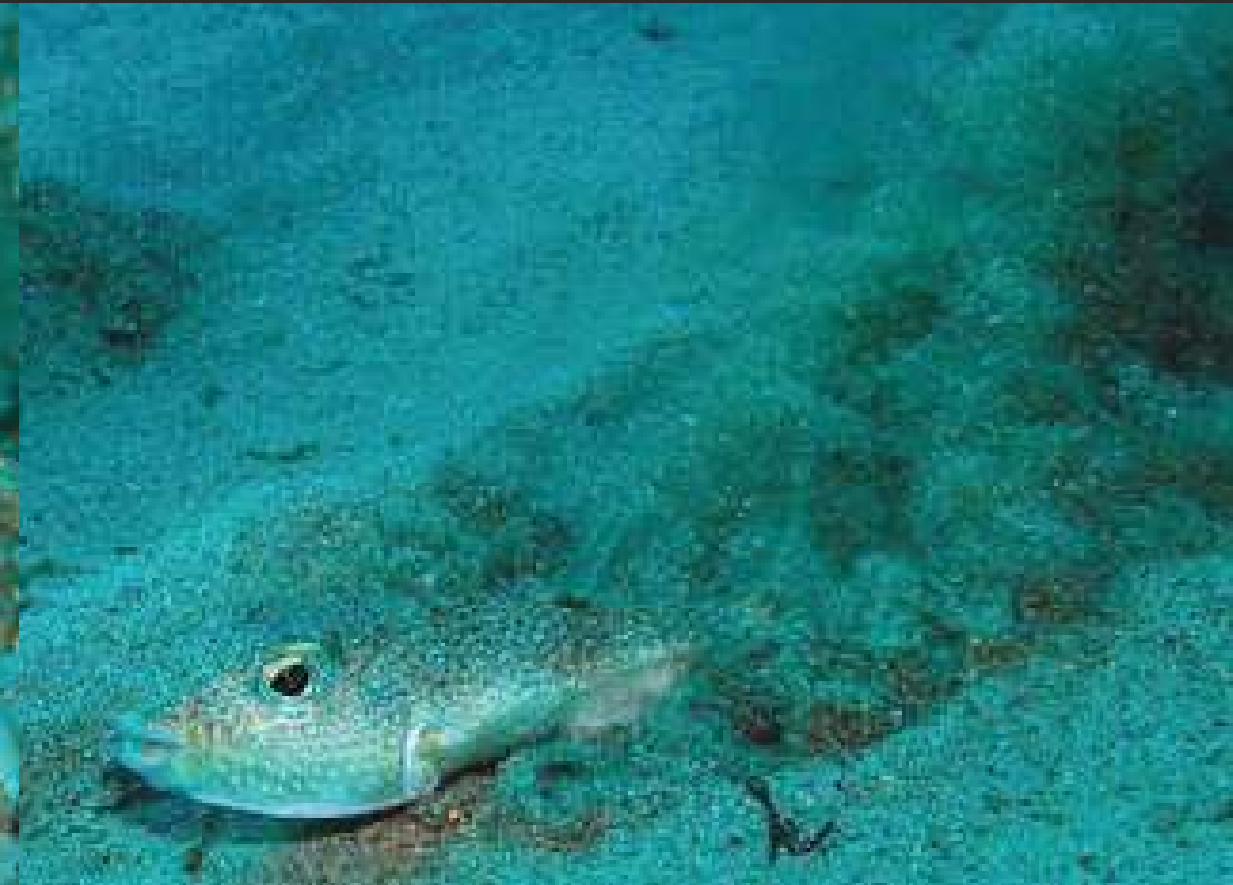
We aim to **transform** Paris into a more sustainable and vibrant city by **recreating** the cityscape and **rethinking** the future of visual art, green spaces, and moss advertising.



BIOLOGICAL INSPIRATION

beautifying the natural landscape

Torquigener albomaculosus, or white-spotted pufferfish, is a unique fish species: the males construct large geometric circular structures on the seabed by laboriously flapping their fins as they swim along the seafloor, disrupting sediment to create amazing circular patterns. Although the fish are only about 12 centimeters long, the formations they make measure about 2 meters in diameter. These are nests, created to attract mates through an impressive design; the male then decorates the ridges with fragments of shells and gathers fine sediments to give the resulting formation a distinctive look and coloring.





Drawing inspiration from the biological model of pufferfish nest construction, we plan to improve Paris' visual landscape by rethinking the future of visual art and urban advertising in the city. Just like this pufferfish attracts his mate by shaping seafloor sand into circular nest structures, our team plans to appeal to city officials, the Paris 2024 team, advertising agencies, companies, and the citizens of Paris with our Greenspired initiative. While a pufferfish may redesign the ocean floor, we aim to redesign the city of Paris by bridging the culture and history of the city with sustainability and modernity through our creative and playful approaches to urban greening.

CONTEXT



reinventing paris



Parisians relax by the Seine on a former highway, which became a pedestrian walkway in September 2016 after the city closed it to vehicles.

Paris has been anything but idle since Anne Hidalgo was elected as the mayor in 2014. Since then, Paris has announced its bid for the 2024 Olympic Games, hosted the Paris Climate Conference (COP21), launched car-free days, advocated for more green space, closed the highway along the Seine to vehicles, created a participatory budget to make democracy more inclusive, opened the largest startup incubator in Europe, and

more. Mayor Hidalgo even launched an initiative called “Reinvent Paris”, which is an international competition to transform neglected public sites into environmentally-friendly urban spaces. We, too, want to reinvent Paris into a model for modernity and sustainability through an initiative that will create a new urban landscape, while also combating air pollution and maintaining the rich history of Paris.

paris 2024

In June 2015, Paris announced its bid for the 2024 Summer Olympic Games. In an effort to become a global leader in sustainable development, the Paris 2024 Initiative committed itself to becoming the first Olympic Games in accordance with the Paris Agreement on Climate Change, which was adopted in December 2015 at COP21. While the city's targets for sustainability include improving water and air quality, increasing green space, and developing more housing, we would like to propose that Paris take their efforts one step further by creating sustainable advertisements and changing the visual landscape of the city in order to show their commitment to transforming Paris.



street art

Parisian street art started in 1971, when artist Gérard Zlotykamien painted silhouettes of reclining human figures on the renovation site of Les Halles, depicting the nuclear destruction of Hiroshima during WWII. Unlike graffiti, which refers to simple lettering, street art is composed of images, stenciling, murals, and other innovative expressions that seek to evoke an emotional response or call for social, political, or cultural change.

Today, the 13th arrondissement and Belleville are home to a number of large-scale artworks by French and international street artists. Buildings in the 13th

arrondissement have a much lower historical architectural value than in other Parisian neighborhoods, meaning that with the support of the deputy mayor, the local government actually commissions street artists to do work on the sides of buildings. For the biggest works, local residents even vote to have a say on what gets painted. In 2013, with the support of City Hall, over 100 French and international street artists occupied a tower marked for destruction in an event called La Tour Paris 13, solidifying the 13th arrondissement's status as a world-renowned street art destination. Belleville, too, is a center for street art in

Paris, with contemporary urban art becoming something like a giant billboard for artists to sell their work and share political and social messages.

Paris is also home to TED Prize winner, JR, a French-born street artist whose photographic portraits have appeared all over the world. As a city that is familiar with the revolutionary spirit and resistance, Paris has become a global leader in street art, helping us to better understand this new and thriving global art movement.



A mural created by Shepard Fairey. Located in the 13th arrondissement, on Paris' Left Bank.



A mural created by Jef Aerosol. Located in the 2nd arrondissement, near the Centre Pompidou.

advertising: historical trends

By the end of the 19th century, Parisian advertising had become something akin to an art. From the early 1870s through the 1890s, legislation regarding advertising became extremely relaxed, after the French Parliament decided to reduce newspaper censorship and eliminate the need to register advertisements. The newspaper and advertising industries then used this new civic liberty to help visual communication flourish. Additionally, this new form of advertising coincided with cultural changes and the explosion of the entertainment industry, allowing artists such as Toulouse-Lautrec (famous for his advertisements of the Moulin Rouge) to blur the line between art and marketing. Embracing its rich culture and history, Paris became a dominant model for the advertising world, and a symbol of modernity.



Advertisements in the 18th arrondissement.
Photograph taken by Albert Kahn, ca 1914.

“Paris’ golden age
of advertising bred
a bold, exciting
new art form and
changed the face of
the city.”

*Anna Jamieson, University of
London*



advertising: present day

Throughout the 20th century, Parisian enthusiasm for outdoor advertising declined. Advertisements became less of a symbol of art and culture, and more of a symbol of globalization, which detracted from the nostalgia of historical and classical Paris. Advertisements were a visual eyesore, something that Parisian citizens and government officials wanted to remove in order to combat visual pollution of the city.

In 2011, Paris decided to reduce advertising by a third. The city council banned large, imposing advertisements from the center of Paris, and reduced the maximum size of outdoor billboards from 12 m² to 8 m². Only two exceptions to the current legislation exist, and both apply to advertisements that hide renovations

around the city. The first exception allows larger, temporary advertisements (up to 16 m²) to be displayed on the side of buildings under renovation, as long as the advertiser pays an artist to design the advert. Similarly, advertising campaigns for global brands are permitted to cover the facades of historic monuments undergoing renovation because the advert helps pay for the cost of restoration.



Advert for an Apple iPhone 6 to help pay for the restoration of the Musée des Art Decoratifs.



our vision

We hope to recreate Paris' urban landscape by rethinking the future of visual art and green advertising. Our goal is to bridge the culture and history of the city with sustainability and modernity. We will transform street art and nostalgic advertisements, symbols of Paris' classic history, through our Greenspired initiative, which capitalizes on the Paris 2024 Olympic Games bid and the problem of air pollution to rethink green spaces around the city. In doing so, we hope to create a more visually-pleasing and environmentally-friendly city for Parisian citizens. By engaging in urban greening through a more artistic and innovative approach, we believe that the citizens of Paris will benefit from a city that is more vibrant, beautiful, colorful, and clean.



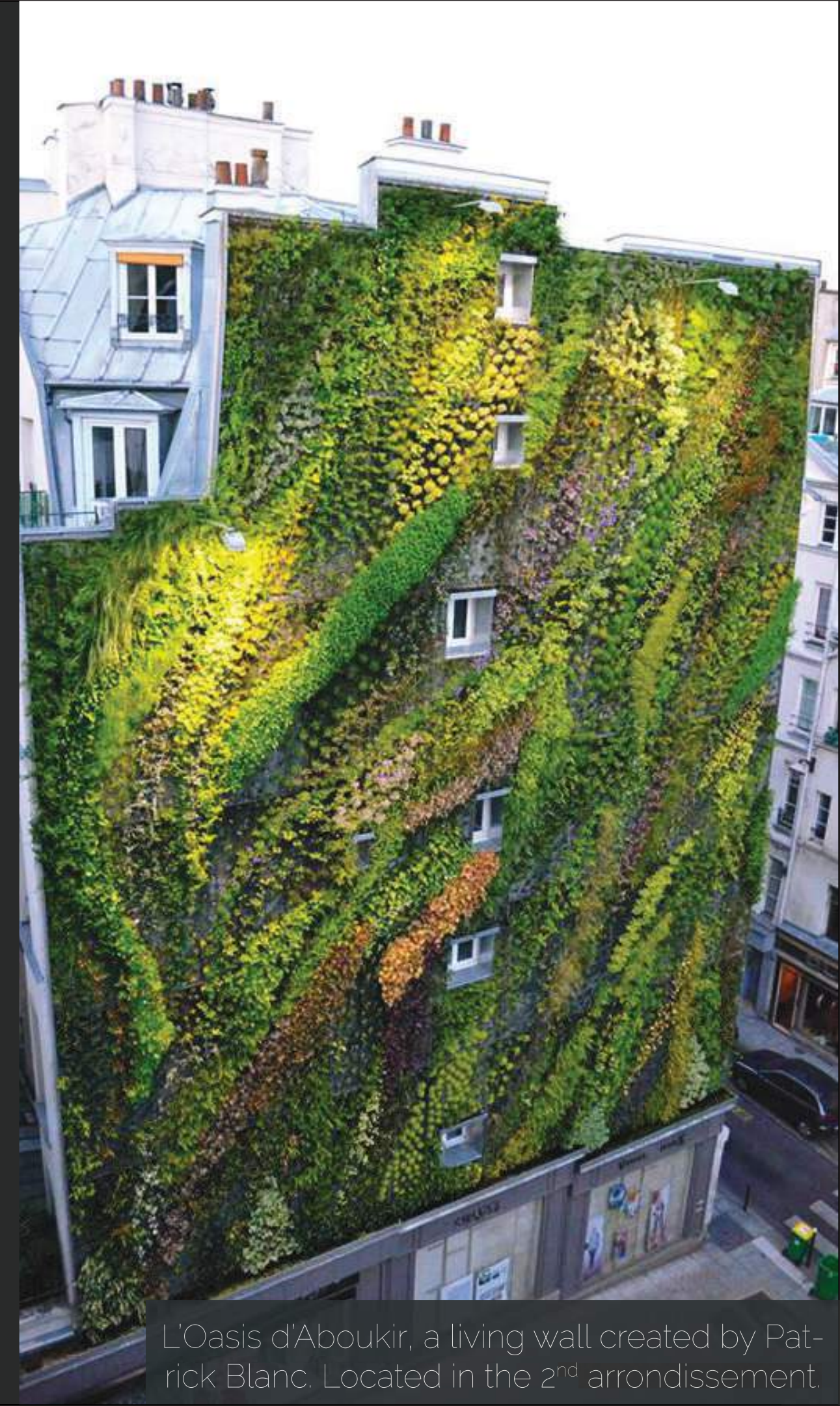
PREVIOUS APPROACHES

what is paris already doing?



Urban greening at the Forum des Halles.
Located in the 2nd arrondissement.

The Paris Greening Program is responsible for much of the recent urban greening within Paris. The program pledged to cover 23% of Paris with vegetation, provide 100 additional hectares of roofs for urban greening, and add 20,000 more trees within the city limits by 2020, among other goals. Residents can now apply for a renewable three-year permit to start their own urban gardens, for which the city will provide necessary seeds and topsoil. Living walls are becoming more prominent throughout the city center, thanks to Patrick Blanc's vertical gardens that adorn the Musée du Quai Branly and L'Oasis d'Aboukir. Our project fits within the context of Paris' Greening Program and their broader move towards a sustainable city, and Paris' current efforts validate the need for redesigning the city within the context of sustainability.



L'Oasis d'Aboukir, a living wall created by Patrick Blanc. Located in the 2nd arrondissement.

moss initiatives

One of the inspirations for our idea is a product called CityTree, which is an air purification system that uses moss to combat air pollution. With an area of 3.5 m², each CityTree system has the environmental benefit of 275 trees. Similarly, the city of Stuttgart created a moss wall that filters and degrades fine par-

ticulate matter in order to combat air pollution. Environmental engineers in Stuttgart chose two moss species, *Ceratodon purpureus* and *Racomitrium canescens*, specifically because pollutants cling to the surface of the moss, before being converted into the biomass of the plant by bacteria.

We were also inspired by a new form of urban greening called moss graffiti, which is painted or attached to walls as a new form of street art. While the more elab-

orate moss art works require research and routine care, simple do-it-yourself moss graffiti methods exist. Although researchers have not yet studied whether moss art has a positive impact on the environment, moss art is important in making nature and greenery more visible throughout the city. Not only does it raise awareness about the importance of urban greening, but it also permits citizens to get involved in creating a more sustainable and beautiful city.



A CityTree in Hanover, Germany



A geometric moss art installation at King's Cross, created by Anna Garforth.

diy moss art

Creating moss art is relatively simple because the only necessary infrastructure, the walls of buildings, already exists. To create a moss art mural, artists simply need to find an unused wall, create the moss mixture, paint the mural, and then spritz the moss with water every day to keep it moist and allow it to grow. Once the moss has grown, it only has to be watered a couple of times a week, or when it is really hot. While the artists could return to water the moss, this could also become a community project in which nearby residents water the moss.

Complicated or large moss art murals would require artists to paint the design in several installations so that it becomes thick and luscious. The largest murals would also require a more complicated irrigation system, with a water-storing structure at the top, and a misting system that releases water on a timer.

YOU NEED...



STEP 1

Gather the moss.



STEP 2

Clean the moss.



STEP 3

Break the moss into pieces and place it into a blender.



STEP 4

Add buttermilk/yogurt, water, sugar, and corn syrup



STEP 5

Paint your moss onto a wall!



london olympic games

The London Olympics were the greenest Olympics ever. Although most of their sustainability initiatives focused on reducing transportation emissions to help cut down on air pollution, London also created new urban green spaces, developed the Queen Elizabeth Olympic Park, and planted over 4,000 trees to increase biodiversity.

Additionally, London created a living wall at the Queen Elizabeth Olympic Park, and mowed the Olympic Rings into the grass at Richmond Park (visible on the Heathrow flight path) to welcome athletes and visitors to the Games. London's previous efforts fit with our own project's goals of pursuing large-scale, visually transformative urban greening initiatives. This provides us with proof that event promotion can be supported by urban greening, and that the Olympic Games can be a catalyst for reinventing the city.

rio olympic games

Despite a proposal inspired by the unique flora and diversity in Brazil, the Rio Olympic Games failed to carry on London's legacy of sustainability. Rio disrupted the natural ecosystem by constructing a 3rd golf course at the sandbank of the Marapendi Environmental Protection Area, a hotspot for biodiversity, and planted just 8 million of their promised 24 million trees throughout the city.

If Paris wins the 2024 Olympic bid, we hope that they will not fall victim to the same issues. What makes our Greenspired initiative different from Rio's efforts is that our vision of sustainability is woven into the core of the Games through advertising and art. Through advertising and recreating the cityscape, Paris shows its commitment to urban greening, sustainability, and improving air quality

by integrating it within the core of the city. Greenspired does not merely plant trees or create living walls; rather, we are changing the way that people view Paris by bridging the gaps between art, visual design, advertising, and urban landscaping.



CONCEPT



overview

Greenspired aims to rethink the future of visual art and urban advertising in Paris. Two of our major concerns are the lack of green space throughout Paris and air pollution. We were inspired by Mayor Hidalgo's Reinvent Paris competitions, so we decided to create a project that bridges the culture and history of Paris with sustainability. Our project has three main initiatives: create moss art on blank building walls, develop unused alleyways into community green spaces, and re-imagine advertising with the creation of green billboards along the Péripherique. We chose moss as our medium because it is low-cost, low-maintenance, and effective at removing pollutants from the air.



Map showing the lack of green spaces in central Paris, with Bois des Vincennes to the east and Bois de Boulogne to the west.

our greenspirations



Create moss art
on underutilized vertical
spaces to beautify the city



Develop unused alleyways
into green spaces to
promote social interaction



Reimagine advertising
with the creation of green
billboards along the Péripher-
ique to combat air pollution

moss art

When we decided to focus on rethinking the future of visual and urban art within Paris, while also making it greener and more sustainable, we realized that we could not pursue traditional urban greening methods. Moss art allows us to build upon the rich culture of history and art in Paris because we can transform traditional street art into modern artwork that forces citizens to see the city in a new, more sustainable light. We noticed that vertical spaces on the facades of buildings in Paris are extremely underused; our company wants to treat them as blank canvases and commission artists to create moss art that will adorn the sides of undecorated buildings throughout central Paris.



A moss art installation in the UK by Anna Garforth



Moss graffiti mural in Vancouver, Canada.



Guerilla moss graffiti by an unknown artist.



A moss art mural by Carly Schmitt



alleyways

The Pigalle basketball court, located in the 9th arrondissement, is a great example of how artists can transform the city landscape, while also maintaining its culture and beauty. The bold and abstract aesthetic inspired our idea for developing green alleyways throughout Paris. We envision public spaces where citizens can relax and socialize, while surrounded by living walls, moss art, and small gardens.



Rendering of a future green alleyway on Rue d'Écosse that intersects with Rue de Lanneau.
Image by Benjamin H. Lee



green
alleyways

billboards

The third way in which we hope to redesign the city is by creating visually-pleasing, environmentally-friendly, sustainable advertisements that reinforce Paris' vision of a "green" Olympics and help combat air pollution. Inspired by CityTree's air purification system, we will create moss billboards that use the capacity of moss to ab-

sorb pollutants from the air, making Paris a greener city. The most strategic location for these billboards is along the Périphérique because of the low levels of urban greening and the high levels of air pollution. Installing green billboards along the Périphérique also allows us to treat the entire city as our canvas, incorporating lower-income areas into a project whose focus is on transforming the city into a more vibrant community.



Rendering of a future green billboard along the Seine.
Image by Benjamin H. Lee

“Art has never changed the world, but it can
change your vision – and that, for me, is
already changing things.”

JR, French Photographer and street artist

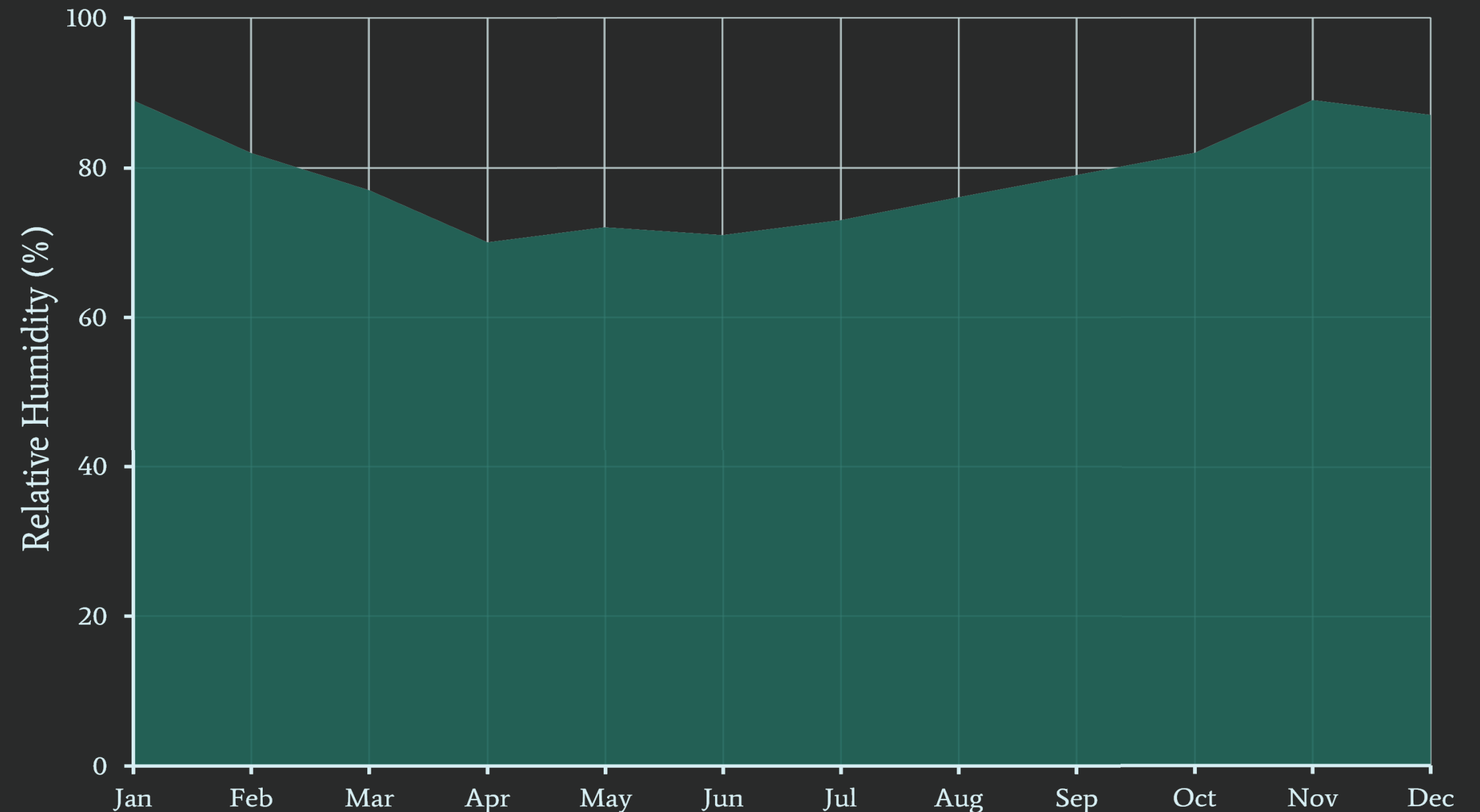
irrigation system

One of the challenges that Greenspired must tackle is the development of a low-cost, low-energy irrigation system that will support moss grown in different locations around Paris. We will create a new hydroponic irrigation system, inspired by a billboard created by Peru's University of Engineering and Technology (UTEC). In December 2012, UTEC partnered with Mayo Publicidad, a Peruvian advertising agency, to create a roadside billboard that transforms atmospheric humidity into drinkable water. We want to work with UTEC on this existing technology to create an irrigation system that will condense humidity from the air and transform it into water that can be stored at the top of the bill-

board, and then released on a timer to water the moss. Moss graffiti that decorates unused vertical spaces around Paris will be watered similarly, but with a

misting system, rather than a water-drip system. We also hope to create a rainwater collection system that will act as a backup in times of low humidity.

Mean Monthly Relative Humidity in 2016 in Paris, France



Data collected from World Weather and Climate Information.

social media & outreach



Concept Snapchat geofilter.
Image by Benjamin H. Lee

We hope to reach the broader community of Paris by engaging in a technology-based approach to raise awareness about urban greening and air pollution. At each location that features a Greenspired design, smartphone users will be able to access a Greenspired Snapchat geofilter. We also believe that a Snapchat geofilter is a great way to help users reimagine Paris, because Snapchat is image-based, just like our project; while we are rethinking the future of visual art and urban advertising in the city, Snapchat users get to reimagine their photos in the context of a greener and more sustainable city.

We also intend to imbed QR codes within each of our designs, allowing passersby to scan the images and access our Greenspired website. In an effort to increase citizen engagement in redesigning the city, our website will have several key features that allow people to learn about the dangers of air pollution, as well as what Greenspired is doing to redesign the city and combat air pollution. We will display the amount of air pollution captured by each of our advertisements that year, as well as allow citizens to submit suggestions for future designs or the locations of future designs.



EXECUTION

Our goal is to bridge the culture and history of the city with **sustainability** and modernity by recreating Paris' urban **landscape** and rethinking the future of visual art and green advertising.

stage 1: develop our technology

Before our project can be successfully installed throughout the city, we must develop the technology to support our irrigation systems. UTEC will be a key partner in creating an irrigation system that will condense humidity from the air and transform it into water that will be stored and released on a timer to mist water on each moss installation. Since UTEC's current technology includes a water purification system, we can simplify their technology down to the air filter, air condensing system, carbon filter, and control unit programmed to release water on a timer. CityTree will also be a valuable partner in the develop-

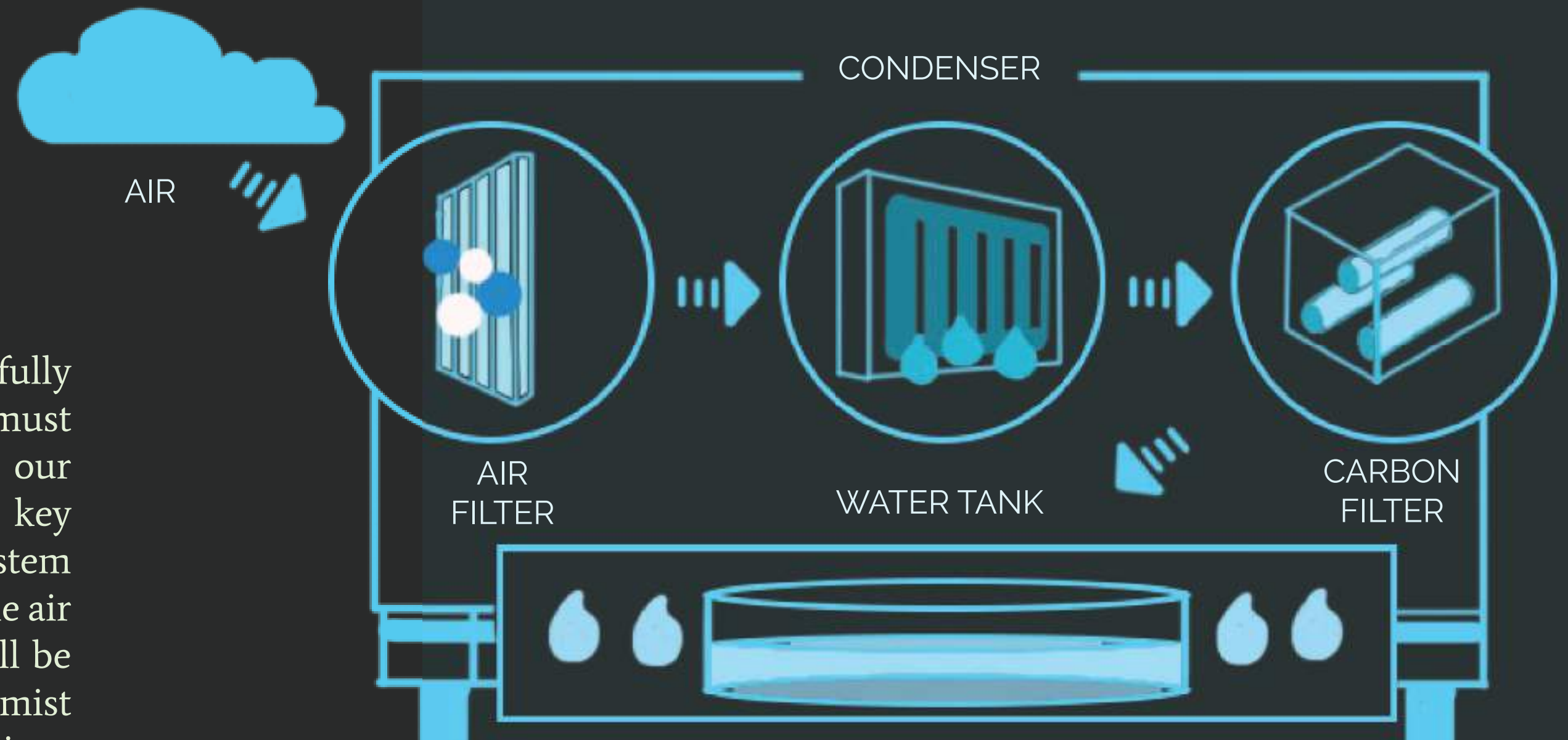


Diagram of irrigation system. Image by Benjamin H. Lee

ment of our technology because their team has spent several years improving their irrigation system to be able to water the moss and plants in a larger radius; they also have biologists who are

currently researching moss that can reduce air pollution effectively and stay fresh in many different climates. We plan to fund our research and development using grants from the city of Paris.

stage 2 : identify locations of interest

A key aspect of our project is choosing locations where our moss art installations, green alleyways, and green billboards will make the most impact. For moss art, this means that any undecorated vertical surface, such as where two buildings of different heights meet to reveal a blank façade, is a candidate for an installation. The most preferable options for moss art installations would be surfaces that are several stories up in order to prevent vandalism of the artwork or irrigation technology.

Scoping out locations for green alleyways will take time because we want to find neighborhoods that are underserved by parks, and could benefit from a green space for social interaction. This would require an analysis of park locations throughout Paris, and would probably start in locations that are less tourist-heavy (such as the outer arrondissements).

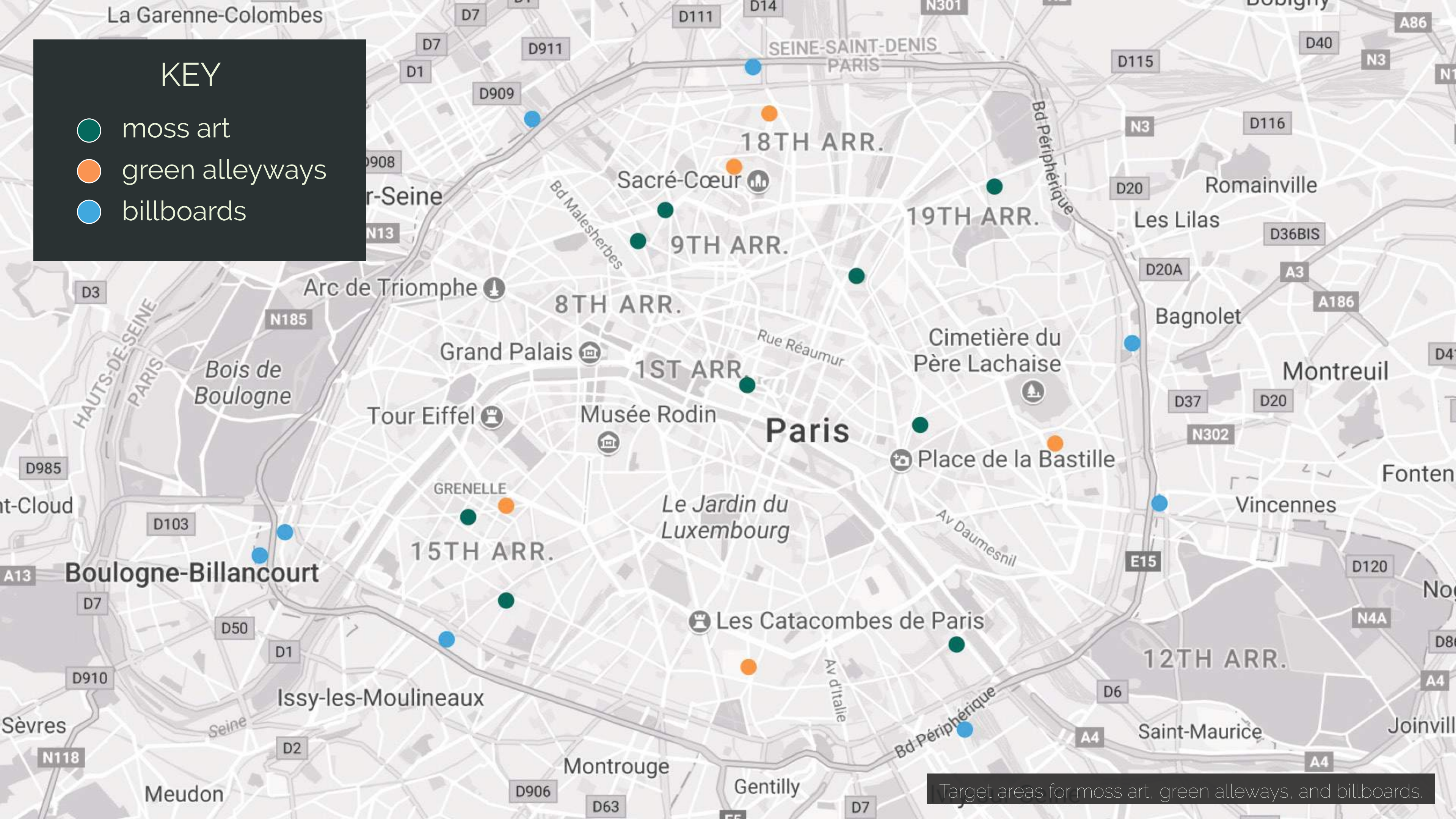


Future Greenspired installation. Image by Benjamin H. Lee

We want to choose a location for our first green billboards based on distance from the Péripherique, analyses of foot and car traffic through the area, and proximity to athletic centers and Olympic venues. This data would allow us to choose locations that most positively impact air quality. Additionally, the zoning regulations for advertising are very strict within central Paris, so it will be easiest to gain approval for green advertisements if they are located near the Péripherique and could provide a clear benefit to air quality in the area.

KEY

- moss art
- green alleyways
- billboards



Target areas for moss art, green alleyways, and billboards.

stage 3 : meet with government officials

Once we choose the optimum locations for the first round of our project installations, we must meet with city officials, state officials, and private building owners to get approval at each location. Changing the façade of privately-owned, non-historic buildings only requires a building permit, while altering public or historic buildings requires authorization from the Architectes des Bâtiments de

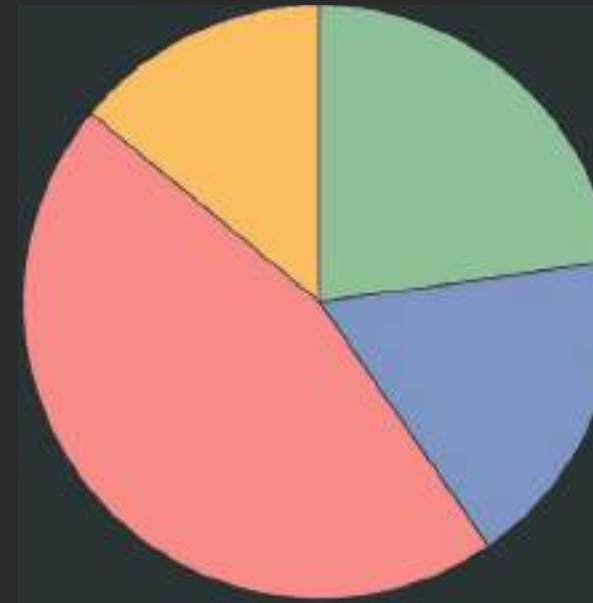
France. We plan to take both approaches, with moss art being installed on privately-owned buildings, and green alleyways and advertisements gaining approval from the public sector. The Paris City Council, Architectes des Bâtiments de France, and private building owners will be key partners at this stage of the process.



stage 4 : acquire funds

Our next step is to gain funding for the installation of our moss art murals, green alleyways, and green billboards. A key partner in this stage is JCDecaux, the main outdoor advertising agency in Paris. We must also work with the Paris 2024 Olympic Committee and other companies who could finance our work and pay for green advertisements along the Péripherique. The combination of Paris' strict advertising regulations (which increase competition for advertising space in Paris) and the desire of companies to be associated with sustainability and the Olympic Games can be used to our advantage because advertisers want the benefits of being associated with Paris, the Olympics, and sustainability.

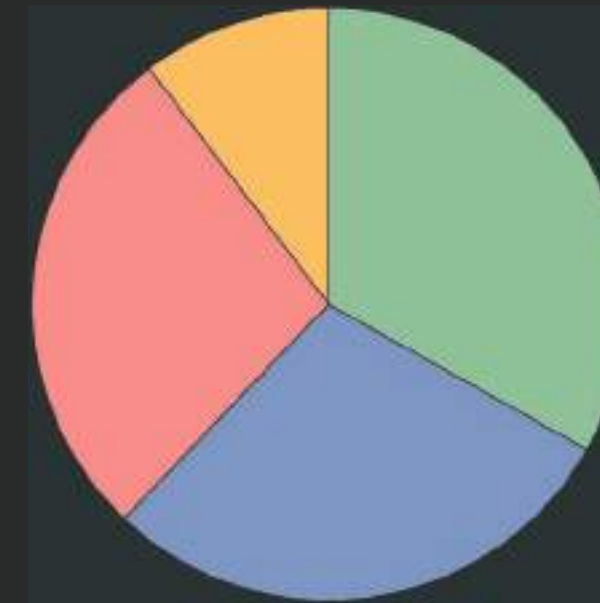
moss art
(6.5m² – 10m²)



- Maintenance
- Moss
- Irrigation
- Artists

TOTAL COST :
\$ 9,300 - 15,310
€ 8,070 - 14,060

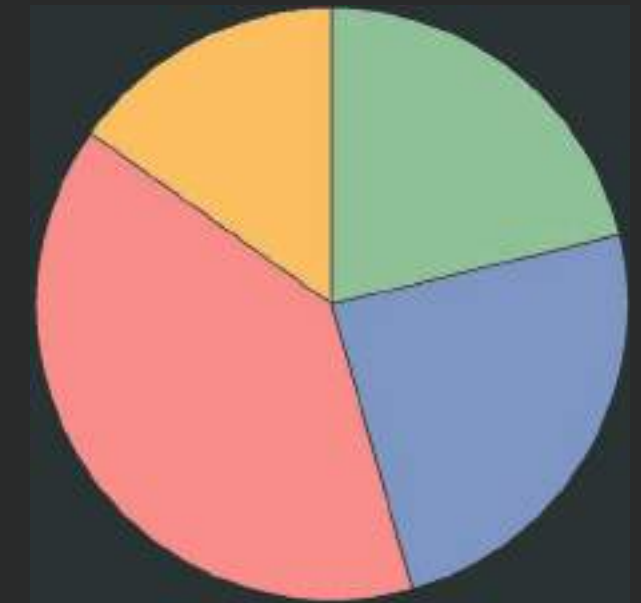
alleyways



- Installation & Maintenance
- Moss
- Irrigation
- Accessories

TOTAL COST :
\$ 29,032
€ 25,280

billboards
(16m²)



- Installation & Maintenance
- Moss
- Irrigation
- Steel Structure

TOTAL COST :
\$ 19,766
€ 17,180

stage 5 : beautify the city

moss art

After gaining approval and funding for our moss art, we need to commission local artists to design and implement the artwork. Moss art designs would then go through an approval process by Greenspired and the Paris City Council before being installed. Once approved, moss would be transported into the city, much like trees are currently transported into Paris as part of the Paris Greening Program, and each local artist will be given the necessary tools by Greenspired to create the piece.

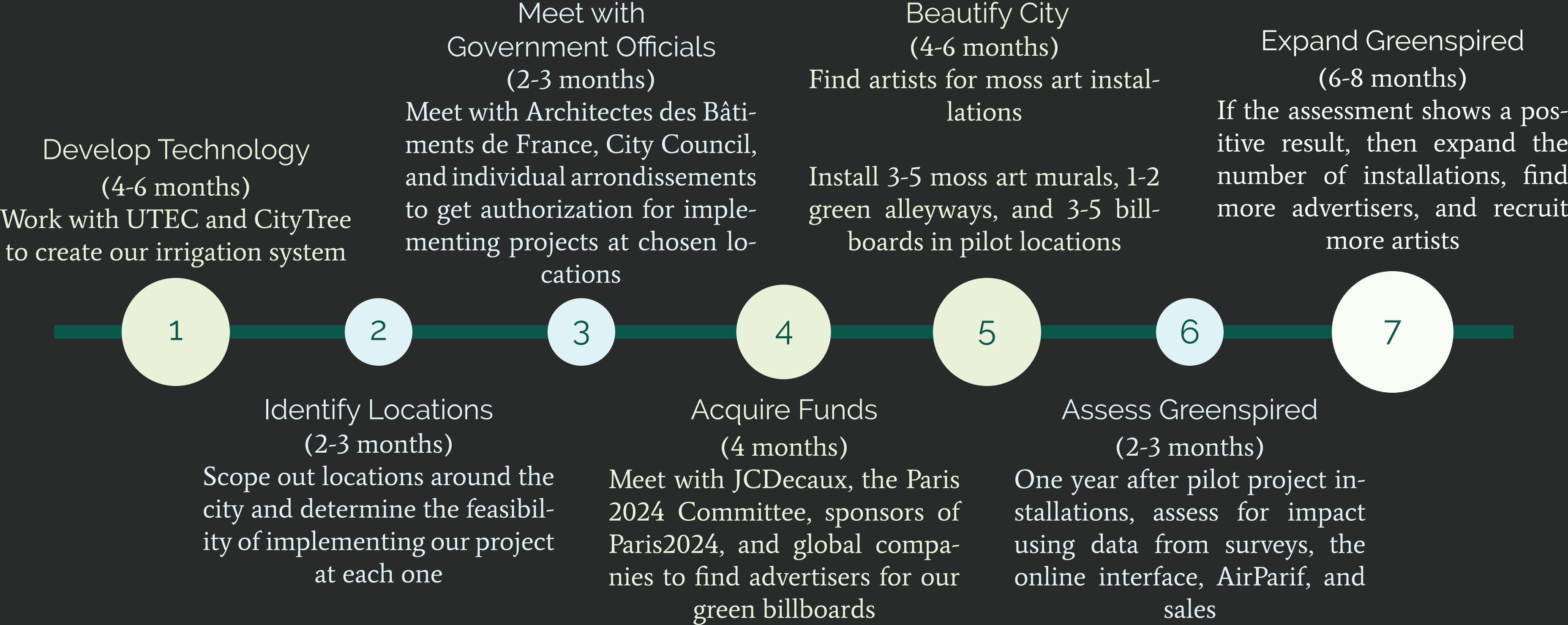
green alleyways

Since the construction of green alleyways is a much larger task than moss art, we want to prototype the plan with one installation. The 9th arrondissement would be an ideal location for our first green alleyway because of its proximity to the Péripherique (making it less tourist-central), lack of large parks, and community support for the Pigalle basketball court (our inspiration for green alleyways). Each alleyway would feature a living moss wall, a wall filled with moss art created by local artists, benches to socialize, and grassy areas to sit and have picnics.

billboards

The design of each green billboard would be up to the advertiser, as long as each billboard is at least 70% moss. We believe that the Porte de Clignancourt, located next to the Marché aux Puces, Centre Sportif Bertrand Dauvin, and Péripherique, would be a great location to test our first billboards because the area receives a lot of foot and car traffic, and tends to have higher concentrations of pollutants. Since part of our goal is to capitalize on the sustainable vision of the Olympics by actually advertising in an environmentally-friendly way, too, we would love to work with the Paris 2024 Olympic Committee to advertise the Olympics on our first billboards.

timeline





ASSESSMENT



In the same way that a male pufferfish molds and reshapes his nest until it is immaculate and unique, we must also assess and redesign our plan to create a beautiful and welcoming city based on the feedback that we receive. Much like the ocean floor is the canvas for a pufferfish's artwork, the Paris cityscape is our canvas to create a sustainable, green, and beautiful city.

qualitative measurements



Create moss art

Survey: question residents about their perceptions of moss art. Are the designs visually pleasing? Is there a difference in the way that residents view the Parisian cityscape? Does sustainability appear to be a core component in the transformation of Paris?

Website: drop-box where residents can submit designs ideas for upcoming moss art installations



Develop unused alleyways

Survey: question residents about the impact of green alleyways on their community. Do they feel that the government is taking steps to reduce air pollution and increase green spaces around the city? Is this an effective way to socialize with others in the community? Has it had a positive impact on air quality and citizen happiness in the community?



Reimagine advertising

Survey: question residents and commuters along the Péripherique about their perceptions of green advertising. Are ads visually pleasing? Are green billboards the future of advertising? Would residents be opposed to increasing the number of billboards around the Péripherique?

quantitative measurements



Create moss art

Tally the number of art installations across the city

Data sourcing: track the number of people using our Snapchat geofilter and accessing our website



Develop unused alleyways

Tally the number of transformed alleyways across the city

Data sourcing: track the number of people using our Snapchat geofilter and accessing our website

Air pollution: work with AirParif to collect data on trends in air pollution levels in the area

Record how many people come each week to socialize



Reimagine advertising

Tally the number of installations

Air pollution: use built-in sensors to measure the amount of air pollution captured by each living billboard

Sales: record the number of companies who are interested in advertising with us and how much money we make on an annual basis

staying greenspired



Concept of future moss art in Paris. Image by Benjamin H. Lee

What We Do

Our “urban-greening through artwork” approach rethinks the future of visual art and green advertising by using moss to beautify the city and combat air pollution.

How We Do It

We recreate Paris’ landscape by creating moss art, develop unused alleyways into green spaces, and reimagine advertising with the creation of green billboards along the Péripherique.

Why We Do It

We hope to subtly transform the cityscape by integrating green spaces into the core and culture of Paris, making the city a model for sustainability. By engaging in urban greening through a more artistic and innovative approach, we believe that the citizens of Paris will benefit from a city that is more vibrant, beautiful, colorful, and clean.



GREENSPIRED

CREATE • DEVELOP • REIMAGINE





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REFERENCES



A responsible project. (n.d.). Retrieved June 29, 2017, from <http://www.paris2024.org/en/article/responsible-project>.

Advertising Used to Finance Restoration Of Historic Buildings. (2017, May). Retrieved July 10, 2017, from <http://www.gettyimages.pt/evento/advertising-used-to-finance-restoration-of-historic-buildings-700057996#advertising-campaigns-displayed-on-large-canvases-cover-facades-of-picture-id691959840>.

Airparif - Pollution - Effets de la pollution - Sur la santé. (n.d.). Retrieved July 13, 2017, from <https://www.airparif.asso.fr/pollution/effets-de-la-pollution-sante>.

“Average Humidity in Paris.” Weather and Climate: Average monthly Rainfall, Sunshine, Temperatures, Humidity,

Wind Speed. N.p., n.d. Web. 13 July 2017.

Azzarello, N. (2017, June 26). Paris’ Pigalle Basketball Court Canvassed in a Gradient of Smooth, Iridescent Hues. Retrieved July 11, 2017, from <http://www.designboom.com/art/pigalle-basketball-court-ill-studio-paris-06-26-2017/>.

Bamat, J. (2017, January 24). Is Paris winning the war against air pollution? Retrieved June 29, 2017, from <http://www.france24.com/en/20170124-paris-winning-war-against-air-pollution-cars-home-heating>.

Bambic Kostov, A. (n.d.). History of Street Art in France: A Quick Overview. Retrieved July 19, 2017, from <http://www.widewalls.ch/history-of-street-art-in-france/>.

Chow, L. (2016, October 11). Paris Becomes One of the Most Garden-Friendly Cities in the World. Retrieved July 11, 2017, from <https://www.ecowatch.com/paris-urban-garden-ing-2039785049.html>.

CityTree Benefits. (n.d.). Retrieved June 29, 2017, from <https://greencitysolutions.de/en/solutions/>.

“Comparing Urban Air Pollution.” The Economist. N.p., 1 Aug. 2016. Web. 13 July 2017.

Dixon, K. (n.d.). The Power of Plants in Urban Pollution Reduction. Retrieved July 6, 2017, from <http://voicesforbiodiversity.org/articles/the-power-of-plants-in-urban-pollution-reduction>.

Dunnett, N. (2012, August 7). London Olympic Park: Star of the Show. Retrieved July 6, 2017, from <http://www.greenroofs.com/blog/2012/08/07/london-olympic-park-star-of-the-show/>.

Garforth, Anna. "A Geometric Installation at Kings Cross." Moss Graffiti Grows on Walls, DesignBoom, accessed 13 July 2017, <http://www.designboom.com/art/moss-graffiti-grows-on-walls-by-anna-garforth-09-30-2013/>.

Gee, O. (2016, July 4). The 22 key maps that paint a picture of Paris. Retrieved July 12, 2017, from <https://www.thelocal.fr/20160704/the-maps-that-paint-a-picture-of-paris>.

"Graffiti mural workshops by Street Art Paris." Streetartparis.fr. (n.d.). Retrieved July 19, 2017, from <http://streetartparis.fr/graffiti-mural-workshop/>.

Green Street Media. (n.d.). Retrieved July 6, 2017, from <http://greenstreetmedia.eu/>.

Jäger, K. (2017, March 9). Stuttgart builds moss-covered wall to fight air pollution. Retrieved July 6, 2017, from <http://www.dw.com/en/stuttgart-builds-moss-covered-wall-to-fight-air-pollution/a-37866760>.

Jamieson, A. (2016, May 23). The Art of Advertising. Retrieved July 9, 2017, from <http://www.historytoday.com/anna-jamieson/art-advertising>.

Jobert, M. (2016, June 6). L'agence francilienne des espaces verts six pieds sous terre - Journal de l'environnement. Retrieved July 13, 2017, from <http://www.journaldelenvironnement.net/article/l-agence-francilienne-des-espaces-verts-six-pieds-sous-terre,71124>.

"Just a little further up the street from Le Coupe Chou, a corner of Paris that time forgot." Paris around Place Maubert, Paris Provence Van Gogh, 5 February 2012. <http://www.paris-provencevangogh.com/paris/paris-around-place-maubert>.

Kawase, H., Okata, Y., & Ito, K. (2013). Role of Huge Geometric Circular Structures in the Reproduction of a Marine Pufferfish. *Scientific Reports*, 3, srep02106. <https://doi.org/10.1038/srep02106>.

Kevin. “Not a bad sight to see on the way to work.” These Amazing Living Walls Make Us Green with Envy, Epic Gardening, 14 December 2013, <http://www.epicgardening.com/amazing-living-walls-make-us-green-envy/>.

Klöser, L. (2015, September 10). Greening Paris. Retrieved July 11, 2017, from <https://www.toposmagazine.com/greening-paris/>.

Lindgaard, J. (2016, September 25). A Paris, les morts de la pollution se comptent par milliers. Retrieved July 13, 2017, from <https://www.mediapart.fr/journal/france/250916/paris-les-morts-de-la-pollution-se-comptent-par-milliers>.

London’s Green Olympics: Urban Renewal, Public Transport, Ped-Power. (2012, July 17). [Environment News

Service]. Retrieved July 6, 2017, from <http://www.ens-newswire.com/ens/jul2012/2012-07-17-01.html>.

Main, D. (2013, October 2). Pufferfish Love Explains Mysterious Underwater Circles. Retrieved July 13, 2017, from <https://www.livescience.com/40132-underwater-mystery-circles.html>.

Matsuura, K. (2015). A new pufferfish of the genus *Torquigener* that builds “mystery circles” on sandy bottoms in the Ryukyu Islands, Japan (Actinopterygii: Tetraodontiformes: Tetraodontidae). *Ichthyological Research*, 62(2), 207–212. <https://doi.org/10.1007/s10228-014-0428-5>.

Maurrasse, D. (2012, August 21). London Olympics: How the Games Help Urban Development [State of the

Planet: Earth Institute, Urban Development]. Retrieved July 6, 2017, from <http://blogs.ei.columbia.edu/2012/08/21/london-olympics-how-the-games-help-urban-development/>.

“Moss Graffiti: Guerrilla Gardening Recipe.” Accessed 13 July 2017. <http://www.growsomethinggreen.com/moss-graffiti-guerrilla-gardening-recipe/>.

OMS | Qualité de l’air ambiant et santé. (n.d.). Retrieved July 13, 2017, from <http://www.who.int/mediacentre/factsheets/fs313/fr/>.

Orlovic, M. (2016, August 16). Rio Olympics 2016: How GREEN were the Games really? Retrieved July 6, 2017, from <http://www.urbanmeisters.com/rio-olympics-2016-how-green-were-games-really/>.

O'Sullivan, F. (2017, January 4). Mapping Tree Cover in Major Cities. Retrieved July 13, 2017, from <http://www.citylab.com/design/2017/01/mit-sensible-city-lab-treepedia-mapping-urban-trees/512132/>.

Paris to ban large advertising billboards from city centre. (2011, June 23). Retrieved June 29, 2017, from <https://www.connexionfrance.com/Archive/Paris-cracks-down-on-ad-billboards>.

Paris_Programme-vegetalisation_2014_en.pdf. (n.d.). Retrieved from http://www.energy-cities.eu/db/Paris_Programme-vegetalisation_2014_en.pdf.

Prois, J. (2013, March 18). Billboard In Lima, Peru Creates Drinking Water Out Of Thin Air (VIDEO). Huffington Post. Retrieved from <http://www.huffingtonpost.com/2013/03/18/billboard-li>

[ma-peru-water-crisis_n_2901882.html](http://www.huffingtonpost.com/2013/03/18/billboard-li).

RFI. (2015, July 14). Billboard advertising banned from small French towns. Retrieved June 29, 2017, from <http://en.rfi.fr/visiting-france/20150714-billboard-advertising-banned-small-french-towns>.

Smith-Strickl, K. (2013, April 25). A Billboard that Condenses Water from Humidity. Retrieved June 29, 2017, from <http://www.popularmechanics.com/science/environment/water/a-billboard-that-condenses-water-from-humidity-15393050>.

Sooke, A. (2011, February 28). JR: Artist with the city as his canvas. Retrieved from <http://www.telegraph.co.uk/culture/art/art-features/8351889/JR-Artist-with-the-city-as-his-canvas.html>.

“Street scene of Paris in 1935.” Vintage Everyday, 2 July 2013, <http://www.vintages.com/2013/07/street-scene-of-paris-in-1935.html>.

Thibault, Claude. “Les Berges, the new Seine river, Le Grand Palais.” 1 August 2013. <http://www.alamy.com/stock-photo-les-berges-the-new-seine-river-le-grand-palais-and-pont-alexandre-59345315.html>.

Van Hasselt, John. “Advertising campaigns displayed on large canvases cover facades of historic buildings and monuments.” Getty Images, 25 May 2016, <http://www.gettyimages.fr/événement/advertising-used-to-finance-restoration-of-historic-buildings-700057996?#advertising-campaigns-displayed-on-large-canvases-cover-facades-of-picture-id691963346>.

Vidal, J. (2012, July 16). Olympic athletes could be impaired by London pollution, experts warn. The Guardian. Retrieved from <https://www.theguardian.com/environment/2012/jul/16/olympic-athletes-london-pollution>.

Westburg, D. (2015, March 17). Billboard Construction Costs. Retrieved July 20, 2017, from <http://www.billboardloans.com/billboard-business/billboard-construction-costs/>.

Willsher, K. (2016, April 15). “Paris has changed permanently”: a day on duty with mayor Anne Hidalgo. The Guardian. Retrieved from <https://www.theguardian.com/cities/2016/apr/15/paris-changed-permanently-mayor-anne-hidalgo>.