t?f

The Why Factory



The Green Dip

Covering the City with a Forest

Hicab imillesti il et faceatur ra ipsaerio cus a sant qui omnihil illa dolut quisque nonsequi te comnim num que conse la dolorit iundigenis cor remped quibus, que quat odiam, omnition non numque ne corectam con et ulparunt, testendent alictium eatem. Acepta nonseca temque sunt porepero modio core essit destian tiusdaes aut aliquas est, num rem fuga. Itatur, estis utem conse plita nit duci dolentio. Lam hillabor alisinia natur ad qui sectae volut offic torions equiducitem acest ut velit dolore nonsedi aceatibus ut ipid eum del ium assequam serchit aspedio nsequi ut asitatus natquo officae veliquam qui oditem fugiat repel is aut volorro id et et, consed utemquiam reroviditem rerfers peratibusae pratur molorecum rem voluptas et, sed unt idellabor audi acepedit as explita quoditem. Olor aniani as reiur molorum hicatem. On culpa dolum latus eum landus aut labori deliquis con ratioss imporem fugiatis aped et qui blamusa sum debis alis et

Hicab imillesti il et faceatur ra ipsaerio cus a sant qui omnihil illa dolut quisque nonsequi te comnim num que conse la dolorit iundigenis cor remped quibus, que quat odiam, omnition non numque ne corectam con et ulparunt, testendent alictium eatem. Acepta nonseca temque sunt porepero modio core essit destian tiusdaes aut aliquas est, num rem fuga. Itatur, estis utem conse plita nit duci dolentio. Lam hillabor alisinia natur ad qui sectae volut offic torions equiducitem acest ut velit dolore nonsedi aceatibus ut ipid eum del ium assequam serchit aspedio nsequi ut asitatus natquo officae veliquam qui oditem fugiat repel is aut volorro id et et, consed utemquiam reroviditem rerfers peratibusae pratur molorecum rem voluptas et, sed unt idellabor audi acepedit as explita quoditem. Olor aniani as reiur molorum hicatem. On culpa dolum latus eum landus aut labori deliquis con ratioss imporem fugiatis aped et qui blamusa sum debis alis et

Table Of Contents

1. The Green Fashion
    - Green Alibi
    - Green Trolling
    - Green Visions
    - The Green Dip
        - Taxanomy of Projects
        - Green Timeline
        - Green A-Z
        - Green Trends

2. Green Potential
    - The 1%
        - The Urban Sprawled
        - The Urban Packed
        - Inside the 1%
        - Parts of the 1%
        - Urban Built Up Area
        - Urban Roads Area
        - Urban Unbuilt Area
        - Outside the 1%
        - The Urban Burden
        - Urban Carbon Dioxide
        - Urban Fresh Water Consumption
        - Urban Energy Consumption
        - Offset the 1%
        - The 1% Across Biomes
        - The Green Cubes
        - Date Palm
        - Hong Kong Orchid
        - European Nettle
        - European Beech
        - Norway Maple

3. Green Performances
    - Living in the Green City

Throughout history and across the world flora has been integrated into architecture of all scales. From the tropical jungles of southern Asia to the alpine tundra of Scandinavia, builders across generations have used plants not just as structural materials (i.e., timber) but also as ornament designed to wonder and delight. In recent times, while greenery has increasingly been adopted as a real estate selling point, it has also started becoming vital to building environment systems. From cooling to solar protection and sound mitigation, greenery has become a practical addition to buildings across the planet.

The Green Fashion

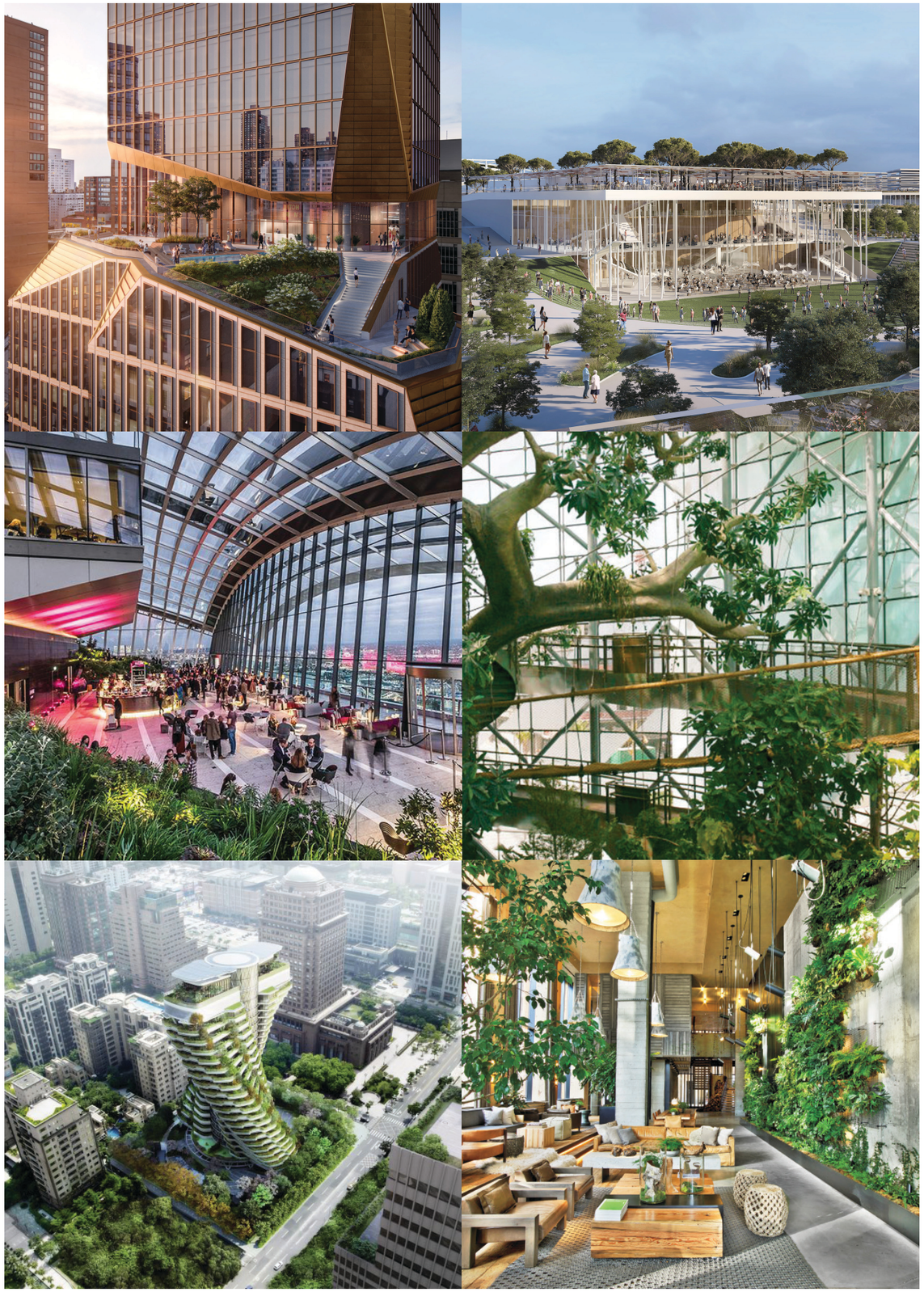
Green has been adopted by real estate developers as a selling point. The idea that a person can live in an urban area and still have personal access to "nature" is increasingly popular as urban populations rise.Often these projects incorporate green in a superficial fashion, ignoring the local biome and environment.

Green Alibi

Superficial fashion.



Ignoring the local biome.



People have become aware of the "insincerity" of contemporary greening. Critics rightly view greening as an attempt to increase property values on the part of developers, essentially profiting from anxieties around climate change. Often developments heavily incorporating green are in the luxury category, unavailable for the majority of the community.

Green Trolling



I doubt this "designer" knows anything about nature!

6 ^ | v • Reply • Share ›

Airborne ➚ treehugger • 5 years ago • edited

Didn't know this site attracts tree-huggers.

I have seen trees in large pots before. They are a great enhancement to any site or building where there is not enough soil. Great project.

11 ^ | v • Reply • Share ›





Jamie • 2 years ago • edited

Really depressing, right up to the green-roof apology-for-a-roof.

^ | v • Reply • Share ›

Donacio Cejas Acosta • 2 months ago • edited

Garden roofs, garden bridges, garden facades, garden towers – garden boredom.

1 ^ | v • Reply • Share ›

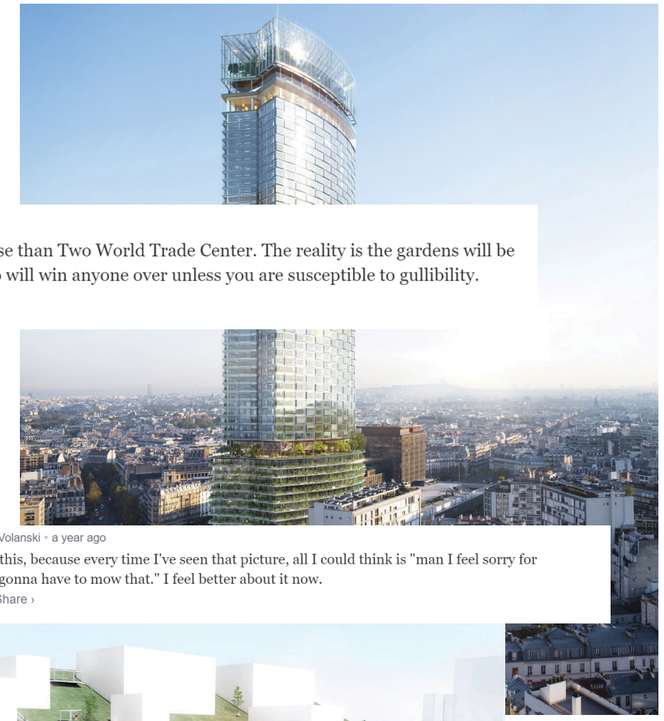


Marty • 5 years ago • edited

Written: "The diverse vegetation will provide urban habitats for birds and insects, and will also create a humid micro-climate that produces oxygen whilst shading residences from harsh sunlight."
Read: "Be ready for all of the bugs and bird poo all over your balcony. Oh yeah, and don't expect any natural light to come in through those nice big windows. You can't remove leaves like you can open blinds you know. PS. It's gonna be humid as hell in the summer... Enjoy!"

1 ^ | v • Reply • Share ›





Zea Newland ➚ Donacio Cejas Acosta • 2 months ago • edited

Gardens are awesome but they are best left on the ground where they are most accessible and easiest to maintain.

^ | v • Reply • Share ›



chris • 3 years ago • edited

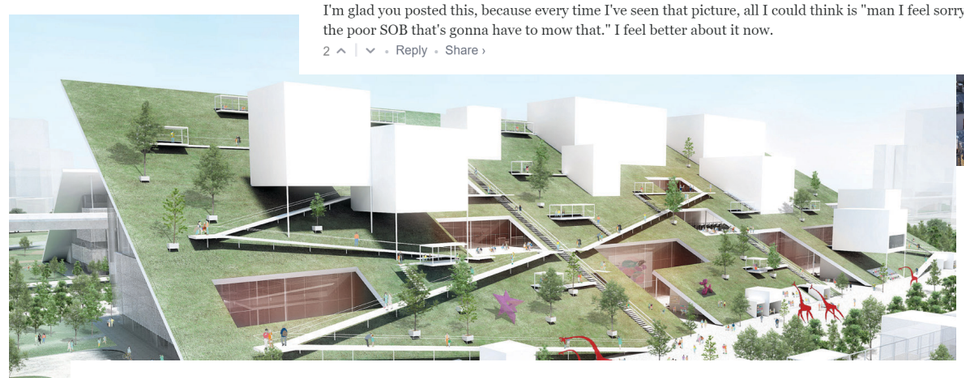
I'm sorry but what a lame concept that is even worse than Two World Trade Center. The reality is the gardens will be unusable and windswept. I can't see how this video will win anyone over unless you are susceptible to gullibility.

1 ^ | v • Reply • Share ›

Frida Peeple ➚ Jacob Volanski • a year ago

I'm glad you posted this, because every time I've seen that picture, all I could think is "man I feel sorry for the poor SOB that's gonna have to mow that." I feel better about it now.

2 ^ | v • Reply • Share ›





Ton Haas • a year ago

An unusable lawn that only has a visual function. And with what kind of mowing machine can this be maintained?

1 ^ | v • Reply • Share ›





Jean Nouvel • 6 years ago

Who vomited on my building?

10 ^ | v • Reply • Share ›



DrSchömer Ervin • 2 years ago • edited

It is nothing-y , sort of blah-blah architectural trying.

^ | v • Reply • Share ›

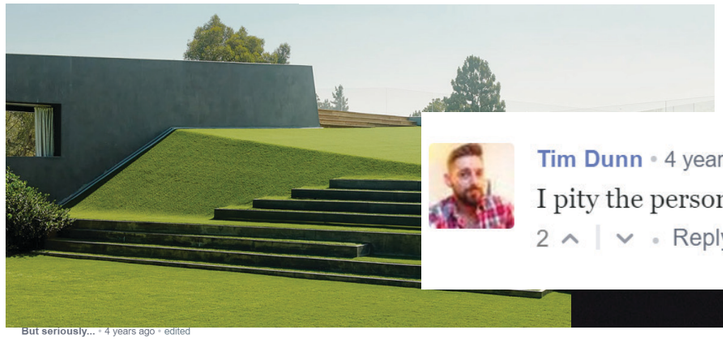


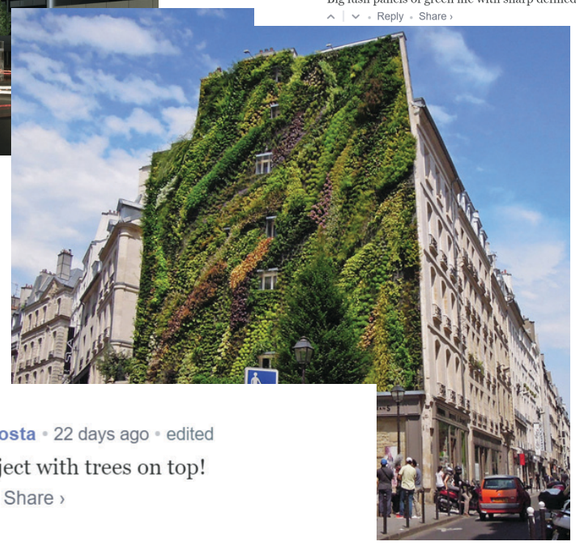






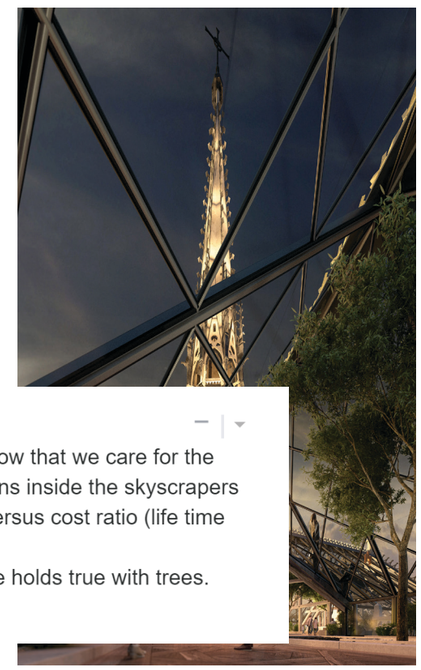












Donacio Cejas Acosta • 2 months ago • edited
In a 100 years' time, somebody will look back at our era and think, "all they really wanted was to plant trees on top of everything."
12 | Reply • Share ›

Obesa Adipose ➚ Donacio Cejas Acosta • 2 months ago • edited
Ok, we get it – you hate trees and plants. Thanks for sharing.
1 | Reply • Share ›

idplano • 6 years ago • edited
I see something green. But it's just paint or makeup... No! is sustainability. Ah, OK.
Reply • Share ›

Christopher Becket • 2 years ago
I wonder if the future inhabitants of these buildings will be prepared for the animal and insect life these plants will inevitably attract?
1 | Reply • Share ›

Obesa Adipose ➚ Christopher Becket • 2 years ago • edited
OMG – insects and animals...how terrible!
3 | Reply • Share ›

Christopher Becket ➚ Obesa Adipose • 2 years ago • edited
I love insects and animals. But others might not...
Reply • Share ›

Concerned Citizen • 6 years ago
I'm just wondering... how does Blanc take credit for living walls that predate his birth?
1 | Reply • Share ›

Shen • 6 years ago
Why all this 'green wall' trend, it doesn't even look right in this context. I am sure you all know 'house being green' has more than one meaning.
1 | Reply • Share ›

LLL ➚ Shen • 6 years ago • edited
Exactly! This project just demonstrates another meaning for a 'house being green'.
Reply • Share ›

Nickoj • 6 years ago • edited
Like most of Mr Blanc's work, it is spectacular in effect. However, his installations never make aesthetic sense to me. Big lush panels of green life with sharp defined edges?
Reply • Share ›

Tim Dunn • 4 years ago • edited
I pity the person on the ground when a 15th-storey branch falls
2 | Reply • Share ›

But seriously... • 4 years ago • edited
Trees with no roots? I'm sorry but I'm so sick of seeing architects parading pseudo sustainability and biodiversity concepts when they clearly have no clue what a tree needs to grow. And apparently there's even a 'plant specialist' involved in this particular project. It's embarrassing really.
5 | Reply • Share ›

livid lili ➚ But seriously... • 4 years ago • edited
If architects are going to keep sticking trees into their designs, they really ought to have some basic horticulture knowledge.
1 | Reply • Share ›

The_Pinchhitter ➚ But seriously... • 4 years ago • edited
It seems stuffing trees in every nook and cranny of the skyscraper is a trend these days. It gives the rendering boys in the architecture studio the opportunity to play around with population and carbon-scatter softwares!

Donacio Cejas Acosta • 22 days ago • edited
Oh! Another project with trees on top!
Reply • Share ›

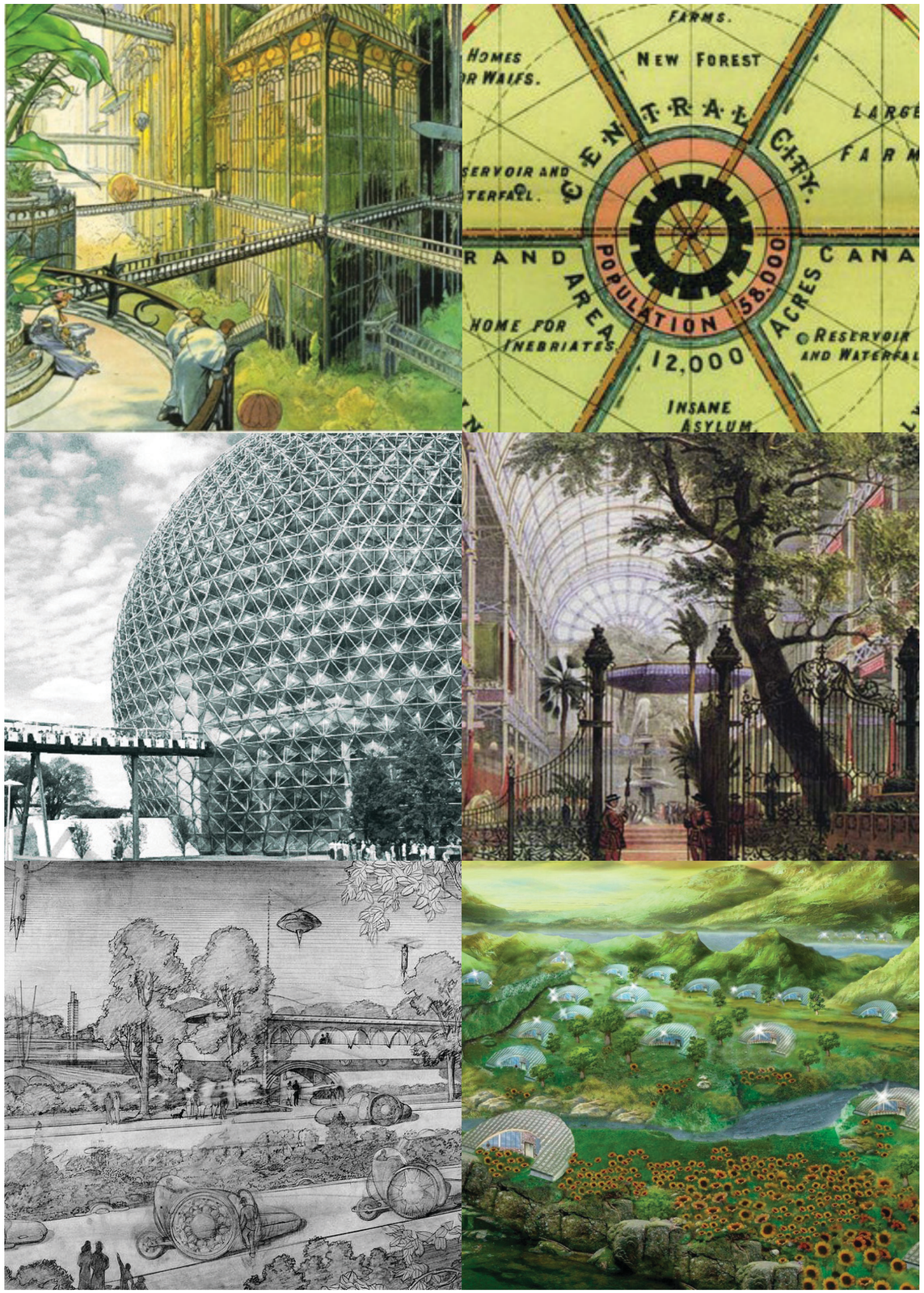
RP • 3 years ago • edited
Maybe it's me who can't appreciate the finer things in life, but this recent need to cram trees and foliage wherever possible seems really lazy. There's no sense or thought behind it anymore and half of it isn't even possible with real plants.
1 | Reply • Share ›

Sanjay Kumbhare • 2 years ago
First of all, whats the use of trees on skyscrapers? False show that we care for the green? Or just a fad? The trees wont affect climatic conditions inside the skyscrapers as skyscrapers are mechanically ventillated. The benefits versus cost ratio (life time costing) would be too low to be economically feasible.
And as animal looks nice in wilderness than in a cage, same holds true with trees.
1 | Reply • Share ›

Green Visions

While there is considerable cynicism concerning greening buildings due to the vicissitudes of capitalism, there remains a genuine vision of an urban future harmonizing with nature.Often seen in science fiction and fantasy, ideas of a green utopia stretch back centuries in fiction. More serious proposals have also been prominent throughout history, with the likes of Frank Lloyd Wright and Buckminster Fuller drawing up ideas of the ideal green future.

Proposals throughout history.



Science fiction and fantasy.



The large scale adoption of plants in architecture has received a new urgency due to climate change. However, developers often incorporate greenery as lucrative ornament and not out of any genuine concern for the environment. The result is flashy and ostentatious, often mismatched to the local biome, and expensive to maintain. The public is generally aware of this, seeing it as yet another extravagance for the growing class of ultrawealthy. This problem is especially acute in the United States where new "green" projects cater solely to the rich.

This problem is especially acute in the United States where new "green" projects cater solely to the rich. **Despite this, there remains a genuine desire to achieve a harmonious relationship between the built environment and nature, as evidenced through the work of both the academy and fiction. Architects such as Frank Lloyd Wright and Buckminster Fuller have all proposed visions of a green future, as well as purveyors of fiction such as Walt Disney. Indeed, the idea of a green utopia remains alive, though is yet to be seen whether such goals can be actualized.**

The Green Dip

The green dip refers to the physical architectural strategies used to incorporate plants into buildings. These strategies have been broken down into nine strategies which include green sticking, perching, dripping, lifting, the green hat, green infilling, camouflaging, scooping, and green timber. While many of these practices are age-old, many have been given new life due to the aforementioned real estate incentives as well as anxieties surrounding climate change. Other strategies are entirely new, a function of new technologies and building practices.

1. A-Z
2. Time
3. Trends
4. Biome

Sorting Act

Taxonomy of Projects

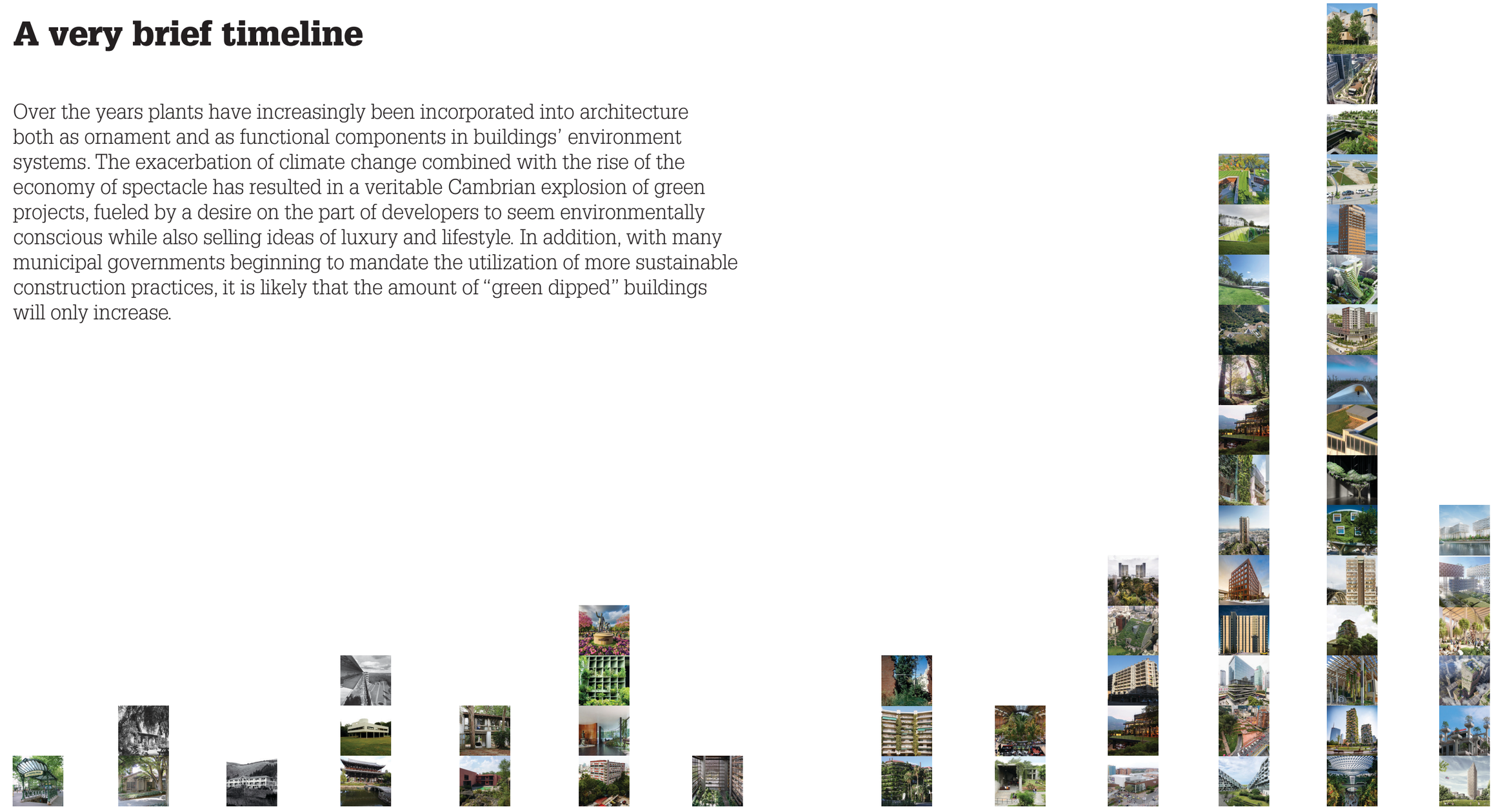


Projects from A-Z

20 Fenchurch Street (The Walkie Talkie)
8 Tallet
ACROS Fukuoka Prefectural International Hall
Agora Gardens
Asakusa Culture and Tourism Center
Atelier Tenjinyama
Atocha Station
Barclays Center
Best Products Forest Building
Biblioteque Nationale de France
Bosco Verticale
Breathing House
Casa Das Canoas
Chichu Art Museum
CSI Ideas Building
Dune Museum
Dutch Pavillion Expo 2000
Earth House
Eastgate Center
Eden Bio
Farming Kindergarden
Flower Tower
Ford Foundation
Gardens by the Bay
Horizontal Skyscrapers
Jewel Changi Airport
Kampuing Admiralty Building
La Planeta Building
Le Nouvel KLCC
M6B2 Biodiversity Tower
Maison Edouard francois
Miami Produce Centers
Military Housing Foundation
Mjøstårnet
Moganshan
Nanyang Technological University
New Street Center
Oasis of Aboukir
Oceanwide Center Tower
Palace of Aiete
Perez Art Museum
Planter Box House
Pool Pavillion
Seoul City Hall
Stacking Green House
T20
Tehran Book Library
Tietgenkollegiet
Transbay Terminal
Treet
W350
Wooden Skyscraper

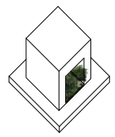
A very brief timeline

Over the years plants have increasingly been incorporated into architecture both as ornament and as functional components in buildings' environment systems. The exacerbation of climate change combined with the rise of the economy of spectacle has resulted in a veritable Cambrian explosion of green projects, fueled by a desire on the part of developers to seem environmentally conscious while also selling ideas of luxury and lifestyle. In addition, with many municipal governments beginning to mandate the utilization of more sustainable construction practices, it is likely that the amount of "green dipped" buildings will only increase.

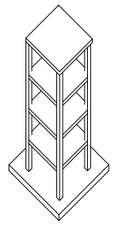




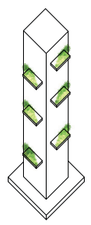
1. Stick



5. Infill



9. Timber



2. Perch



6. Camouflage

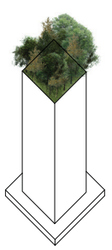
Trends



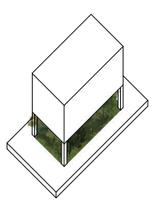
3. Drip



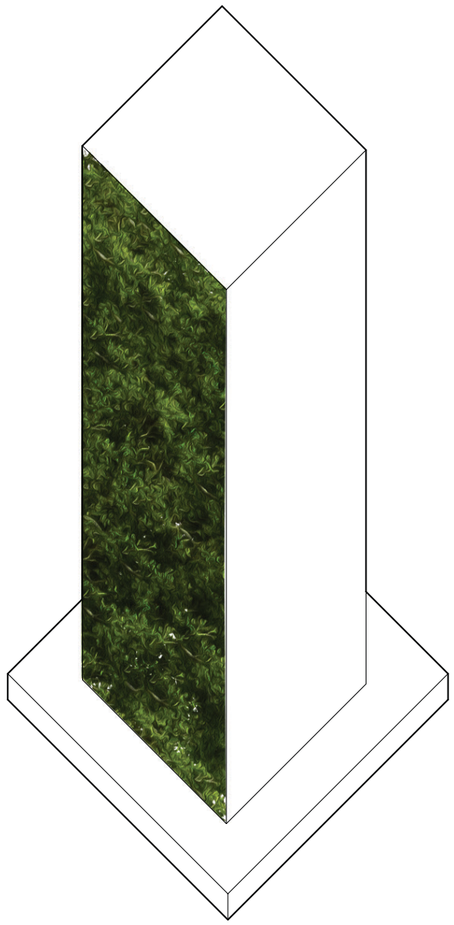
7. Scoop



4. Hat



8. Lyft



Green Stick

Green “sticking” refers to the practice of “greening the facade.”



CSI Ideas Building

Year: 2015 Location: Malaga, Spain Architect: Juan Blázquez



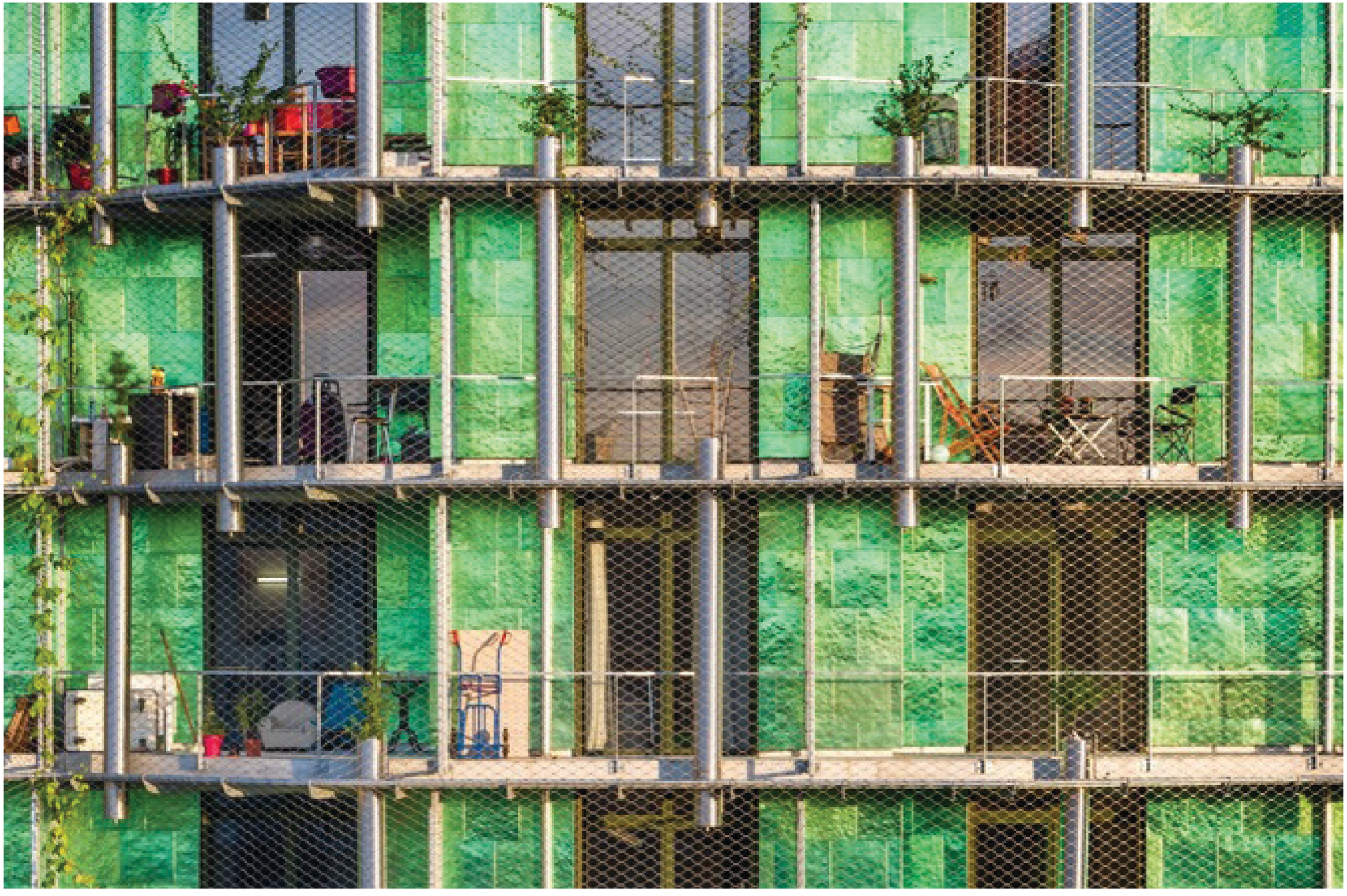
New Street Center **Year: 2011 Location: London, United Kingdom Architect: Biotecture**



Oasis of Aboukir **Year: 2013 Location: Paris, France Architect: Patrick Blanc**



Seoul City Hall **Year: 2012 Location: Seoul, South Korea Architect: Yoo Kerl**

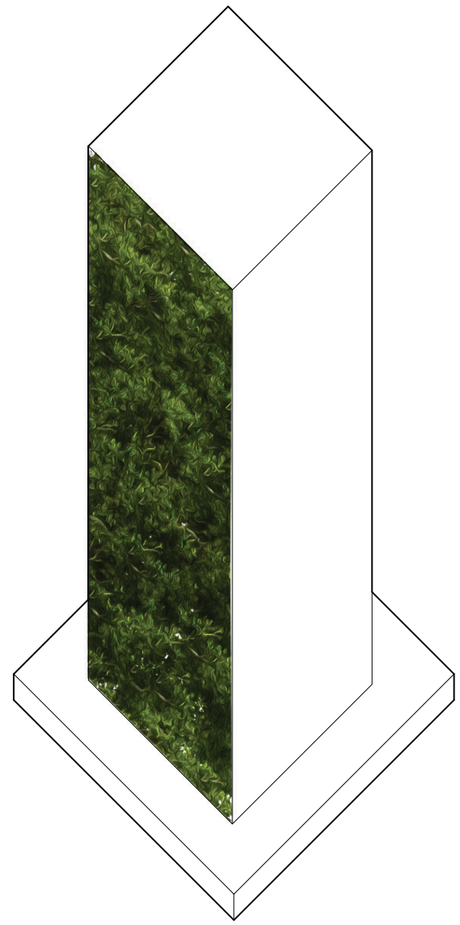


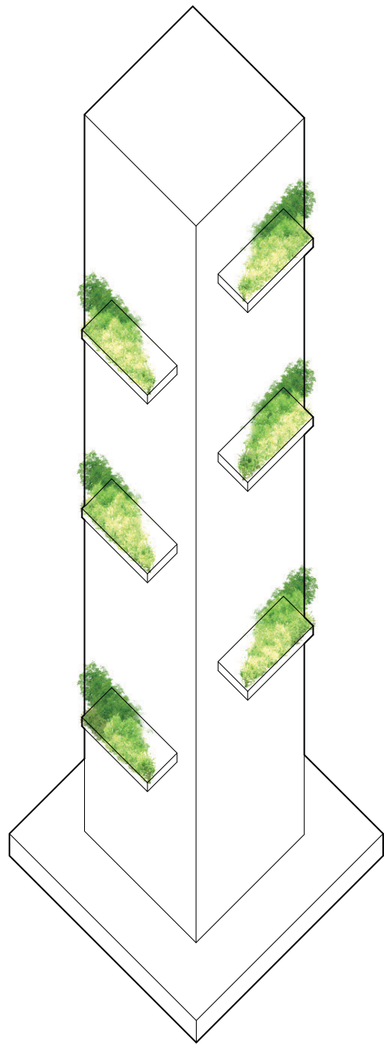
M6B2 Biodiversity Tower rdens **Year: 2016 Location: Paris, France Architect: Edouard Francois**

- **Green sticking is perhaps the most superficial form of the green dip.**

- **However, it can serve practical purposes for building environment systems.**

- **Green facades are often expensive and difficult to maintain.**





Green Perch

Green “perching” refers to creating architectural elements (generally balconies) specifically designed to contain plants.



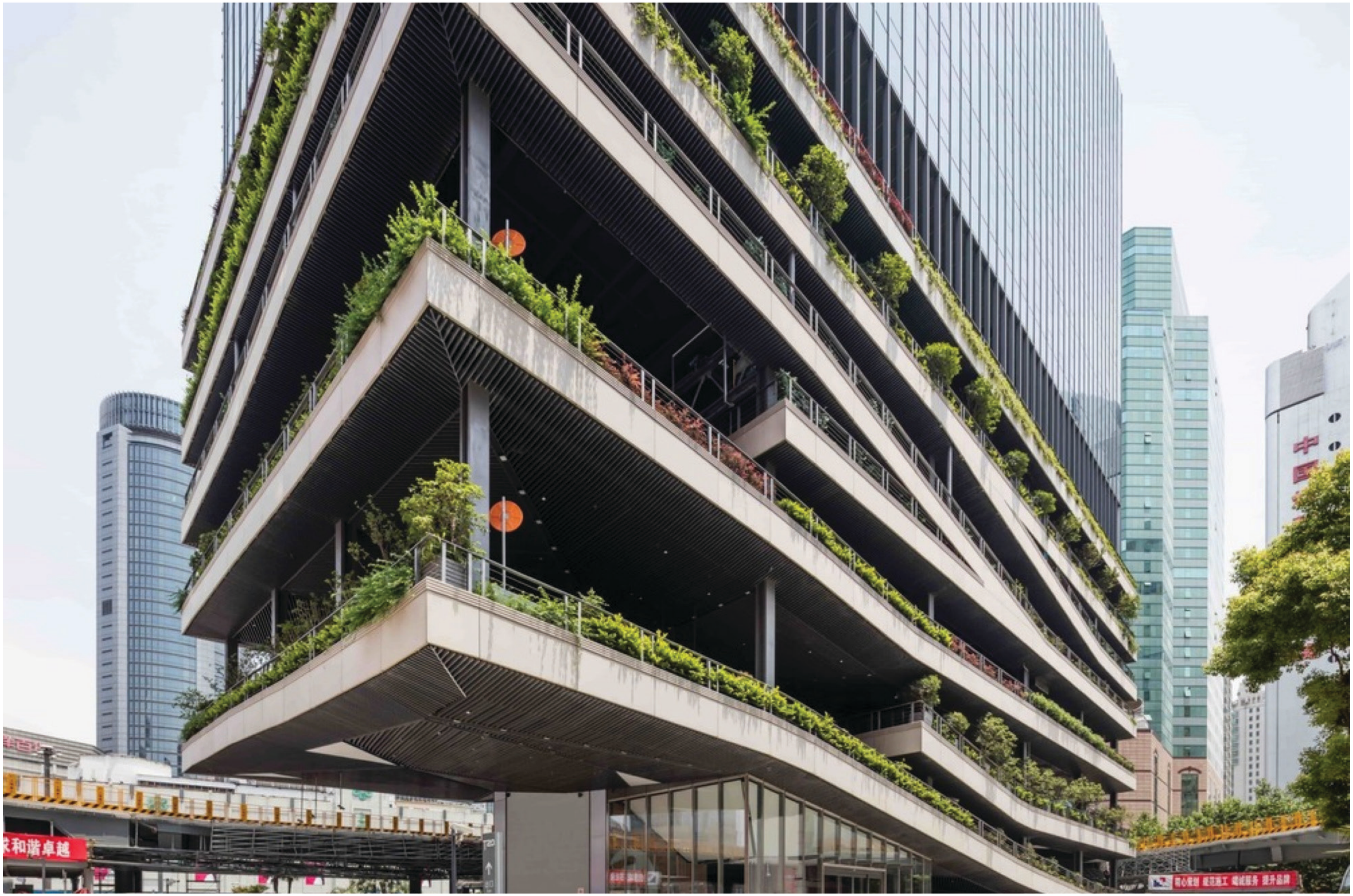
Stacking Green House **Year: 2012** **Location: Ho Chi Minh City, Vietnam** **Architect: Vo Trong Nghia**



Bosco Verticale **Year: 2014 Location: Milan, Italy Architect: Stefano Boeri**



Planter Box House **Year: 2017 Location: Kuala Lumpur, Malaysia Architect: Lee Cherng Yih**



T20 **Year: 2017 Location: Shanghai, China Architect: Jacquest Ferrier**

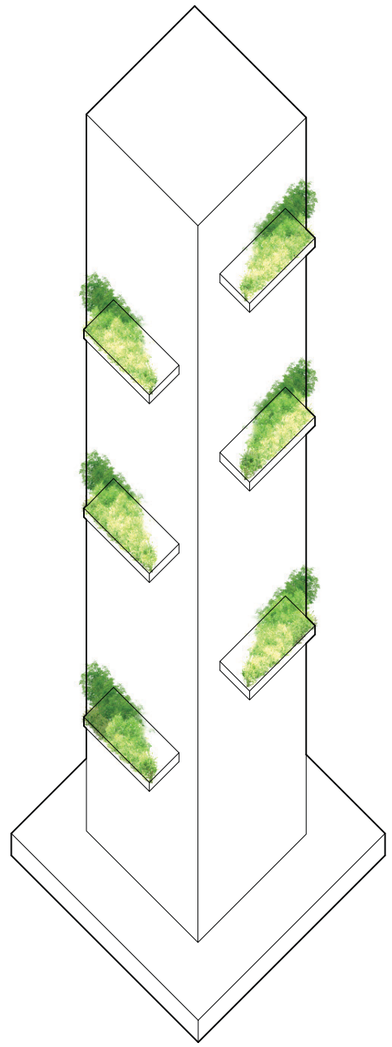


Flower Tower **Year: 2004 Location: Paris, France Architect: Edouard Francois**

- **Green perching is a generally an engineering challenge as the weight from live plants can be considerable.**

- **Green perching is considerably more “interactive” than perching, as it creates spaces with direct interaction with plants.**

- **Green perching has solar and sonic benefits, providing natural shade and sound buffering.**



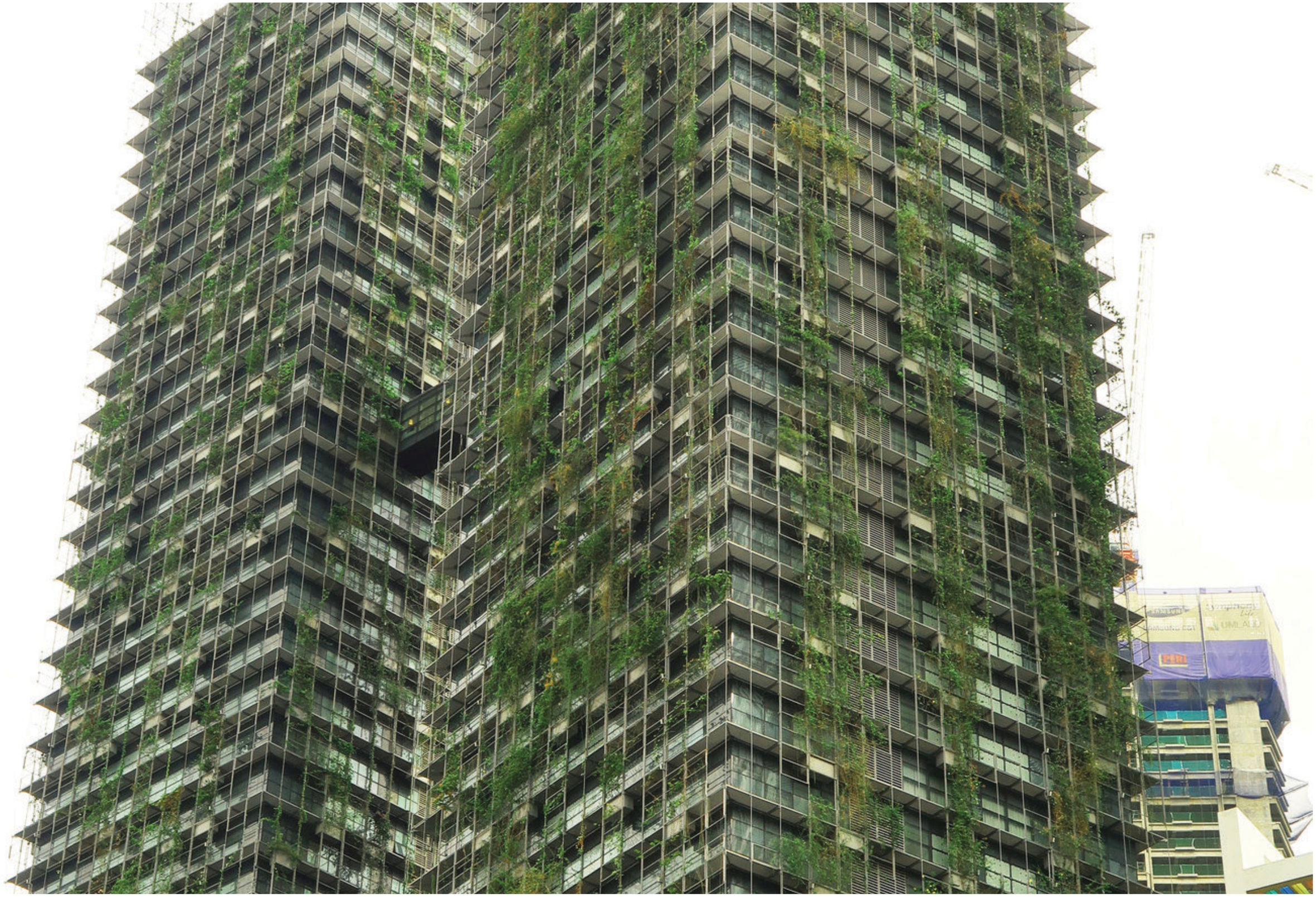


Green Drip

Green “dripping” refers to hanging flora off a building, generally with the intent of live, relatively unmaintained growth over time.



La Planeta Building **Year: 1978 Location: Barcelona, Catalonia Architect: Josep Maria Fargas**



Le Nouvel KLCC **Year: 2018 Location: Kuala Lumpur, Malaysia Architect: Jean Nouvel**



Military Housing Foundation **Year: 1974 Location: Madrid, Spain Architect: Fernando Higueras**



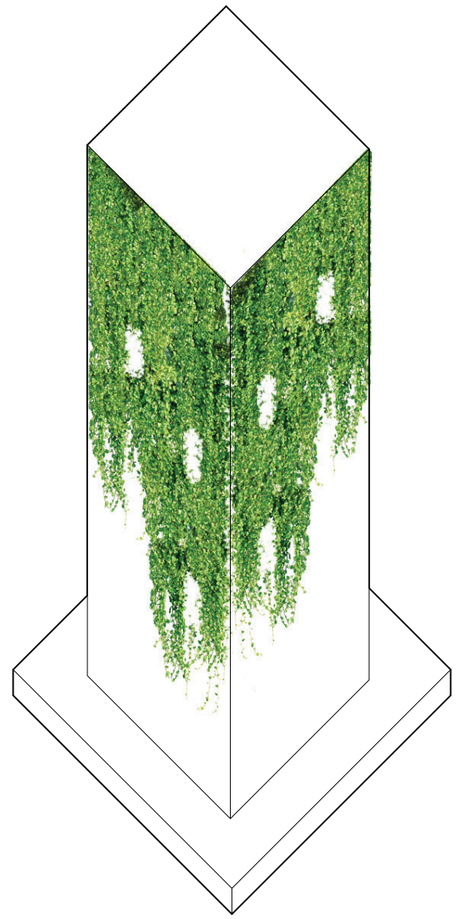
Perez Art Museum **Year: 2013 Location: Miami, United States Architect: Herzog & Demuron**

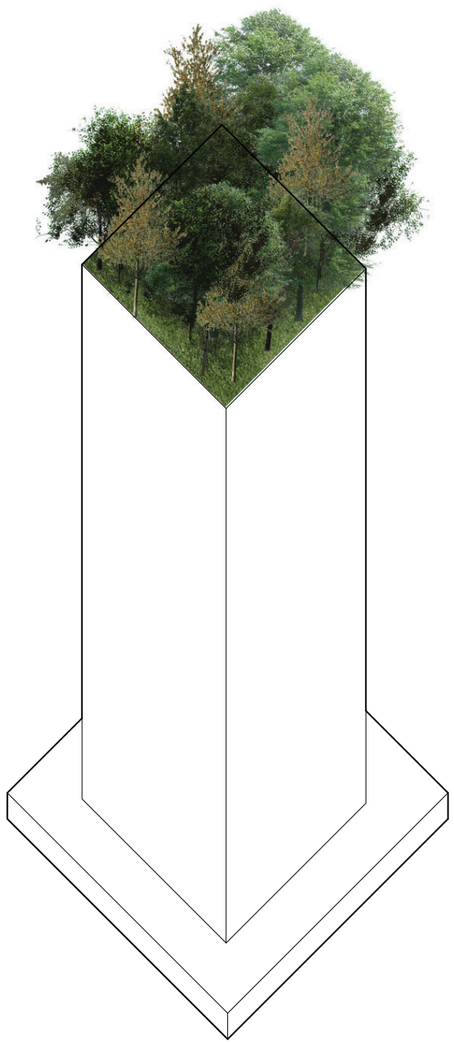


Eden Bio **Year: 2012 Location: Paris, France Architect: Edouard François**

- **Green dripping requires less maintenance than perching as the plants are specialized for vertical growth.**

- **Green dripping is generally a lengthy investment as it requires time for the plants to mature.**





Green Hat

The green hat refers to an increasing architecture predilection for green roofs.



ACROS Fukuoka Prefectural International Hall **Year: 1994 Location: Fukuoka, Japan Architect: Emilio Ambasz**



Moganshan

Year: 2020 Location: Shanghai, China Architect: Heatherwick Studios



Kampuing Admiralty Building **Year: 2018 Location: Singapore Architect: WOHA**



Tehran Book Library **Year: 2017 Location: Tehran, Iran Architect: Design Core [4s] Architects**



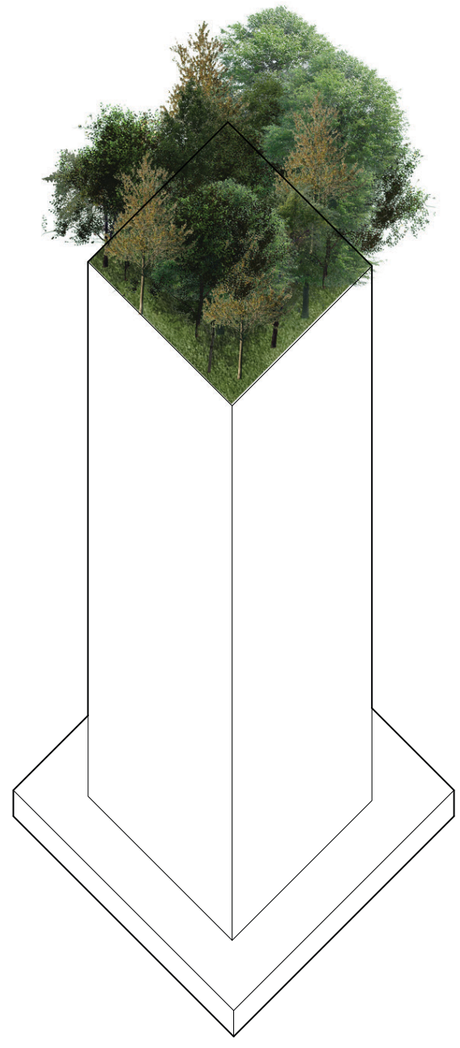
Nanyang Technological University

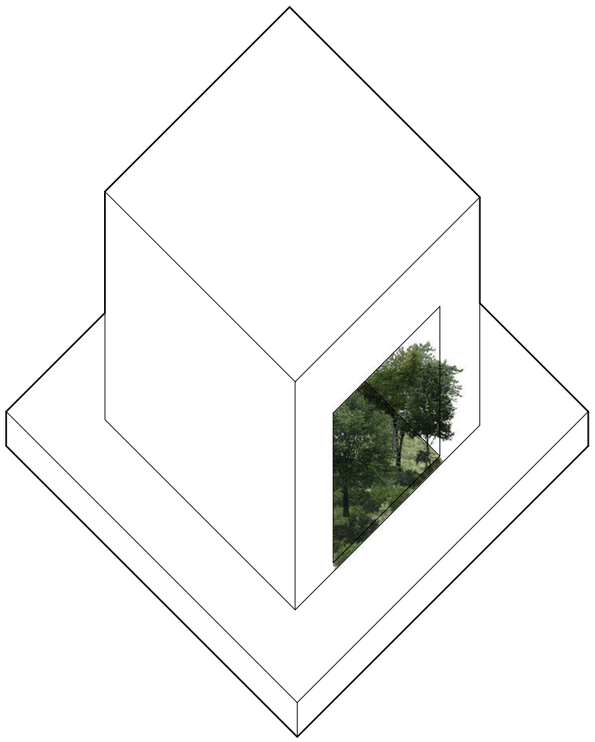
Year: 2006 Location: Singapore Architect: CPG Consultants

- **Green hats generally open up space, creating a pseudo-park on the roofs of buildings.**

- **Green hats are also an engineering challenge as the weight of the foliage is considerable.**

- **Green hats require considerable maintenance as the soil quality is not particularly rich.**





Green Infill

Green infill refers to the practice of creating indoor gardens or greenspaces.

Atocha Station **Year: 1985 Location: Madrid, Spain Architect: Rafael Moneo**

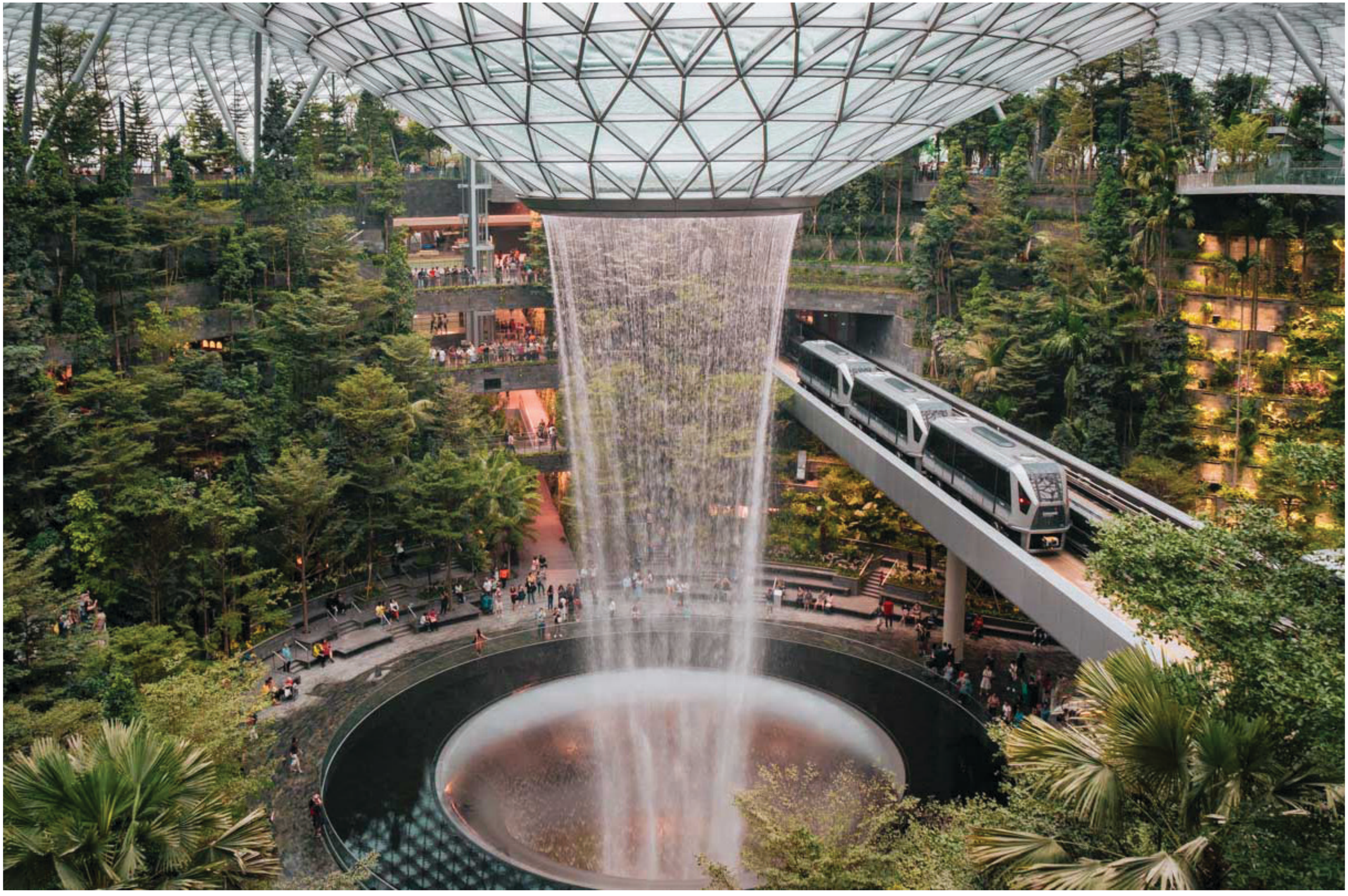


Atelier Tenjinyama

Year: 2011 Location: Takasaki, Japan Architect: Ikimono Architects



Ford Foundation **Year: 1968 Location: New York, United States Architect: Kevin Roche**



Jewel Changi Airport **Year: 2019 Location: Singapore Architect: Moshe Safdie**

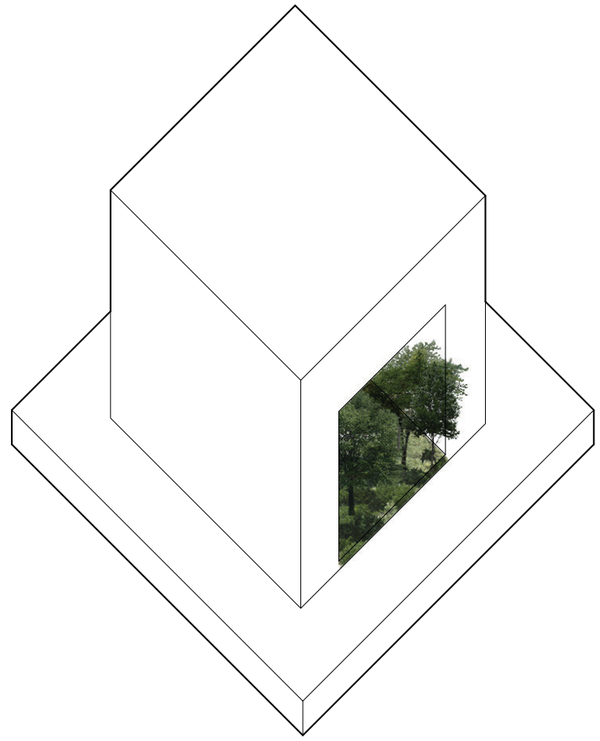


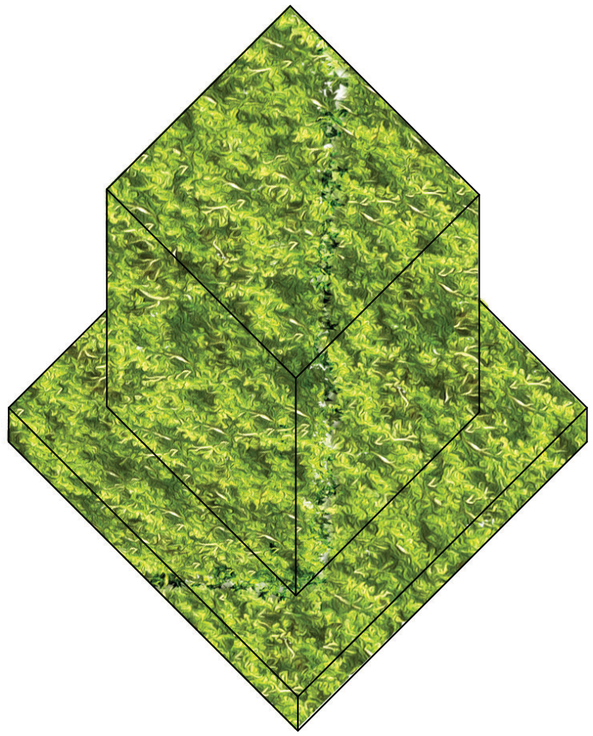
Gardens by the Bay **Year: 2012 Location: Singapore Architect: Wilkinson Eyre**

- **Green infills generally occur in commercial and institutional buildings versus residential.**

- **Infill requires considerable maintenance as plants are blocked from full exposure to natural sunlight and rainwater.**

- **Infill often improves the ambiance of a building.**





Green Camouflage

Green camouflaging refers to the practice of obfuscating architectural elements using flora, up to and including burying the building entirely.



Chichu Art Museum **Year: 2004 Location: Naoshima Island, Japan Architect: Tadao Ando**



Dune Museum **Year: 2018 Location: Qinhuangdao, China Architect: Li Hu, Huang Weng**



Earth House **Year: 2009 Location: Yangpyeong-gun, South Korea Architect: BCHO**



Pool Pavillion **Year: 2009 Location: Keene, United States Architect: GLUCK+**

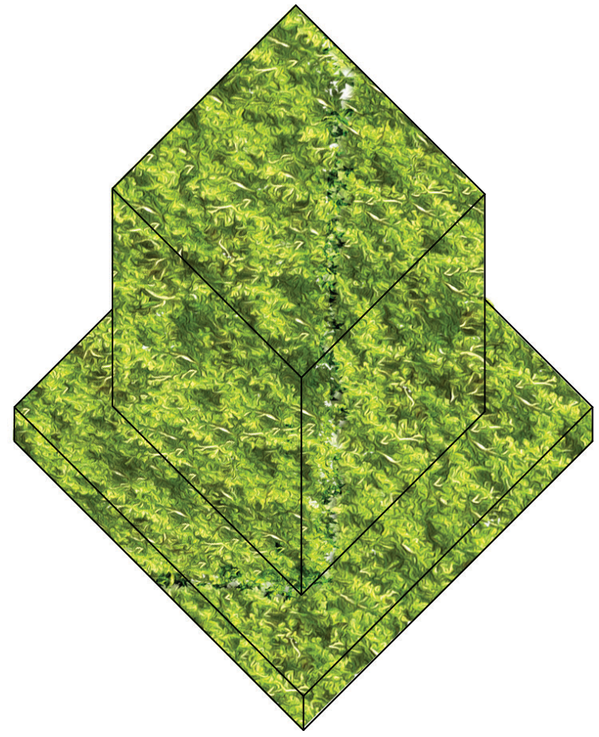


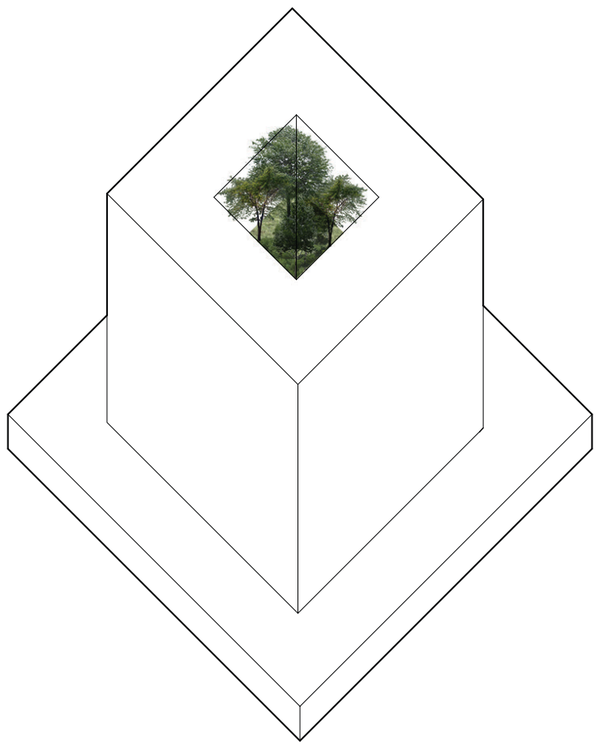
Palace of Aiete **Year: 2010 Location: San Sebastian, Spain Architect: isuuru arquitectos**

- **Green camouflaging is rarer in urban areas.**

- **Generally green camouflaging is used for museums and other institutional purposes.**

- **This technique also helps cool the buidling.**





Green Scoop

Green scooping refers to the practice of incorporating green into outdoor spaces of a building. Literally “scooping” green and putting it into the building.



8 Tallet **Year: 2006ww Location: Architect:**



Biblioteque Nationale de France **Year: 1996 Location: Paris, France Architect: Dominique Perault Jaega**



Tietgenkollegiet **Year: 2005 Location: Ørestad, Copenhagen Architect: Hakka architecture**



Farming Kindergarden **Year: 2013 Location: Biên Hòa, Dong Nai, Vietnam Architect: Vo Trong Nghia**

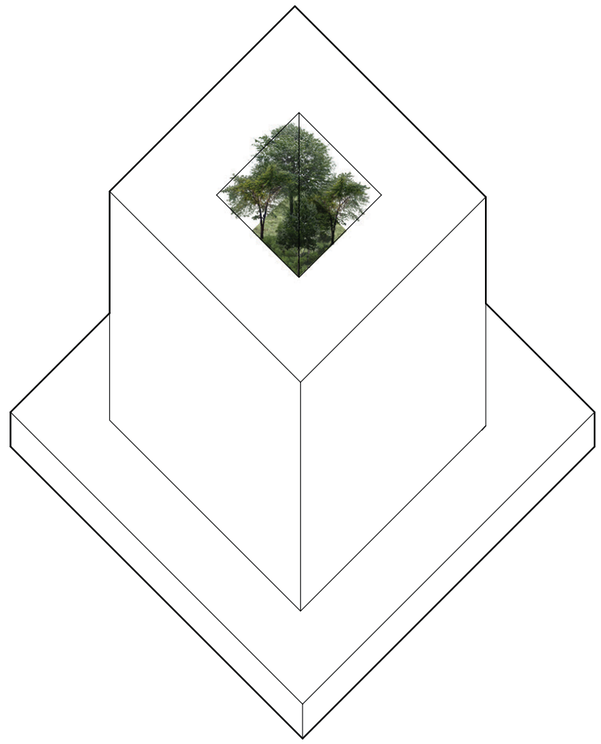


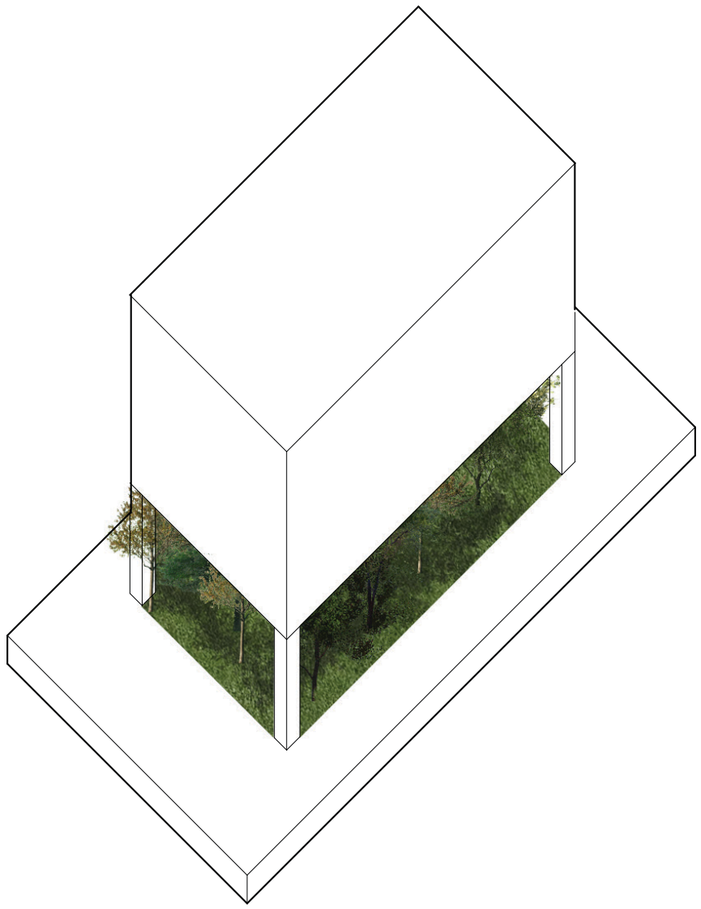
Best Products Forest Building **Year: 1979 Location: Richmond, Virginia Architect: James Wines**

- **Green scooping is perhaps among the oldest of greening strategies, having been practiced for centuries.**

- **Green scooping creates places of interface with nature for building inhabitants.**

- **Scooping stretches across all typologies, being used in commercial, institutional, and residential buildings.**





Green Lift

Green lift is a relatively new phenomenon referring to the practice of “lifting” a building off the ground plane to create space for flora below.



Dutch Pavillion Expo 2000

Year: 2000 Location: Hannover, Germany Architect: MVRDV



Maison Edouard francois

Year: 2018 Location: Grenoble, France Architect: Edouard Francois



Horizontal Skyscrapers **Year: 20__ Location: Berlin, Germany Architect: Herzog and De Meuron**



Miami Produce Centers **Year: 20__ Location: Miami, United States Architect: BIG**

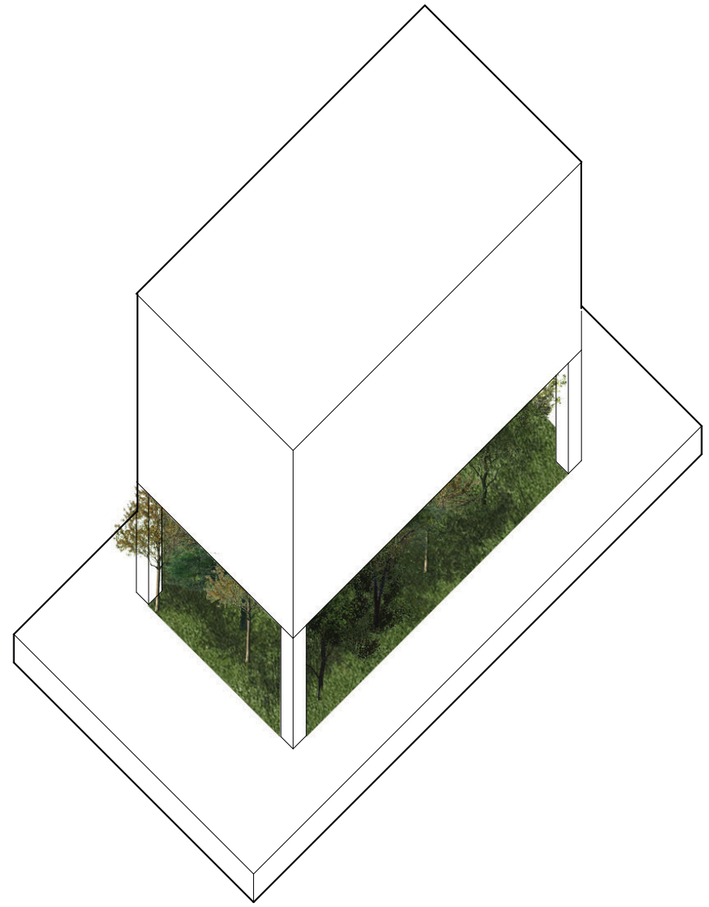


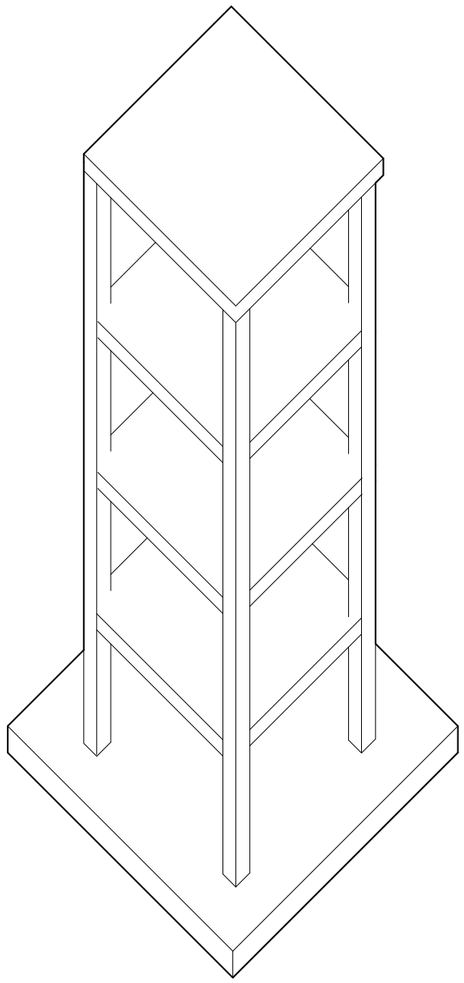
Oceanwide Center Tower **Year: 20__ Location: San Francisco, United States Architect: Foster & Partners**

- **Green lifts are generally a massive architectural gesture, itself defining the formal nature of the building.**

- **Green lifts blur the line between the project and the city, enabling the building to better integrate and themselves compose the urban fabric.**

- **More so than green hats, green lifts create new public spaces and parks.**





Green Timber

Green timber refers to using wood as a buildings' structural system, in lieu of concrete or steel. This is specifically referring to modern, high or mid rise construction.



Mjøstårnet **Year: 2019 Location: Brumunddal, Norway Architect: Voll Arkitekter**



Treet **Year: 2015 Location: Bergen, Norway Architect: Artec Arkitekter**



Asakusa Culture and Tourism Center

Year: 2012 Location: Tokyo, Jaegapan Architect: Kengo Kuma



W350

Year: 20__ Location: Tokyo, Jaegapan Architect: Sumitomo Forestry

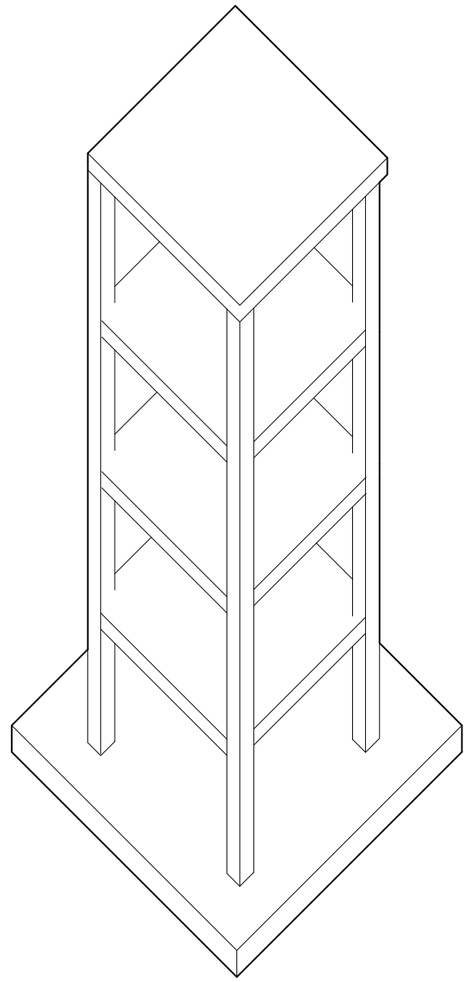


Wooden Skyscraper **Year: 20__ Location: Stockholm, Sweden Architect: C.F. Møller Architects**

- **While timber has been used for millennia in building construction, it is seeing a resurgence as a more environmentally friendly structural system than concrete or steel.**

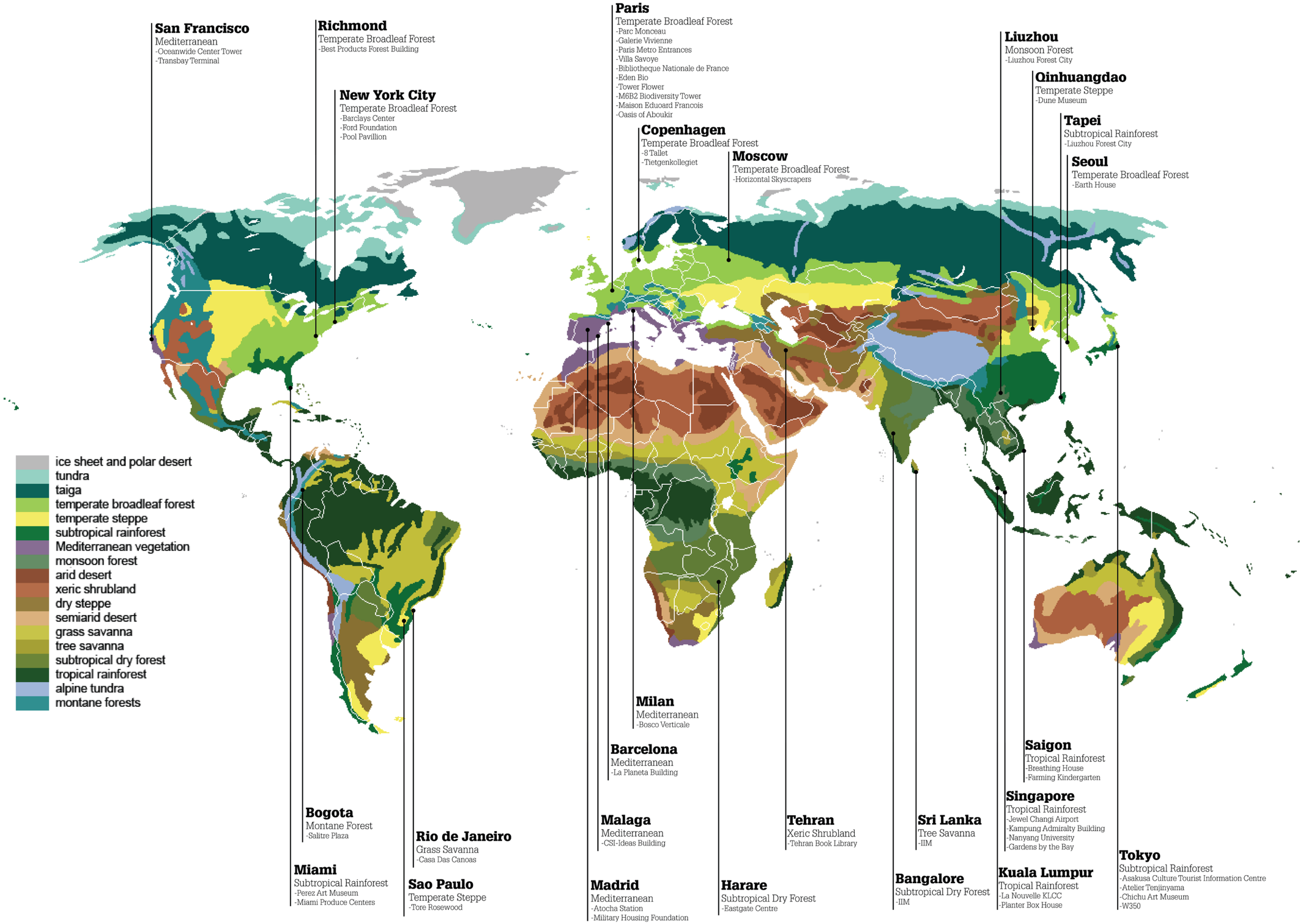
- **Mass timber is being used in increasingly ambitious ways, leading to taller and taller wooden structures.**

- **Mass timber does not necessarily include greenery, but is rather used as the structural system.**



A biome is a community of plants and animals that have common characteristics for the environment they exist in. They can be found over a range of continents. Biomes are distinct biological communities that have formed in response to a shared physical climate. Biome is a broader term than habitat; any biome can comprise a variety of habitats. A biome is also a big diagram.

Biomes



Biome Map of the World

The inclusion of flora in architecture is experiencing a renaissance both in terms of the frequency with which it used as well as its function within the built environment. Whereas for most of the 20th century plants were used in a primarily ornamental fashion, over the past decades greenery has played an increasingly functional role, serving as integral components of buildings' environmental system and strategy.

Despite the fact that greenery is often included in service of capitalistic ends, there is reason to be hopeful about the future of green buildings. Municipalities around the world are adopting stricter guidelines for green buildings, encouraging their future construction world-wide.

dellessit estoratium disci voloribus dollatur reniscilitat pra vollupt atibusa piditis ea aci que officita ped molupta diost, velecum alignis ciatianis enem. Itatature, audis incid et optat et illest, nimaximi, officie ndebist, sum quam expe re, omniscium fugitas sapedig enihill itaerferum sitendi te consequo expla voluptat quatiis mi, net aborehenihil et quiam esequo ium ulpa voluptatur? Evellit fugit es eum aspernam quatem ipsusciis quia voluptate aute mos que id molo tem con re, inveliqui blaborest laboratur, cus, temperitium idi re, venimus sed mollabo rehendanti test, nonsequos cullores aspient haria nones ipsam quo berchicae restiumniscium fugitas sapedig enihill itaerferum sitendi te consequo expla voluptat quatiis mi, net abopsusciis quia voluptate aute mos que id molo tem con re, inveliqui blaborest laboratur, cus, temperitium idi re, venimus sed mollabo rehendanti test, nonsequos cullores aspient haria nones ipsam quo berchicae restiu

The Green Potential

We often over emphasize humanity's conquest of the natural world. Yet, only a staggering 1% of all the Earth's land mass is classified as 'urban' by NASA's image sensing satellites. Our conquest of the natural world lies in the fact that 55% of the world's population, or over 3.5 billion people, reside in urban areas. The ripples of this density are deeply concerning and it's high time the 1% became more accountable for its impact.

The 1%

The Urban Sprawled



urban areas only account for 1% of the total land area

The Urban Packed



this 1% covers **595,600 km²** which is roughly the size of Madagascar

Although, we classify the 1% 'urban' land not all of it is built up. In fact, our urban areas are far denser than that as increasingly our cities become injected with parks, roads and other non developed tracts of land.

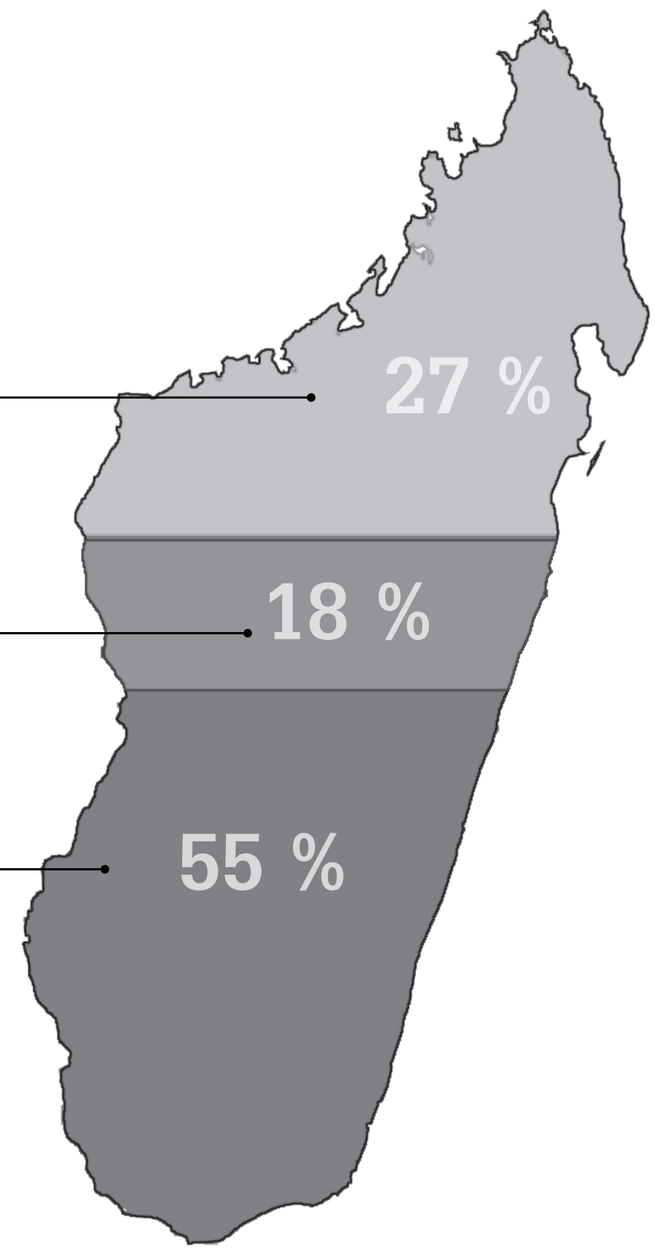
Inside the 1%

Parts of the 1%

27% Built Up Area

18% Roads

55% Unbuilt Area

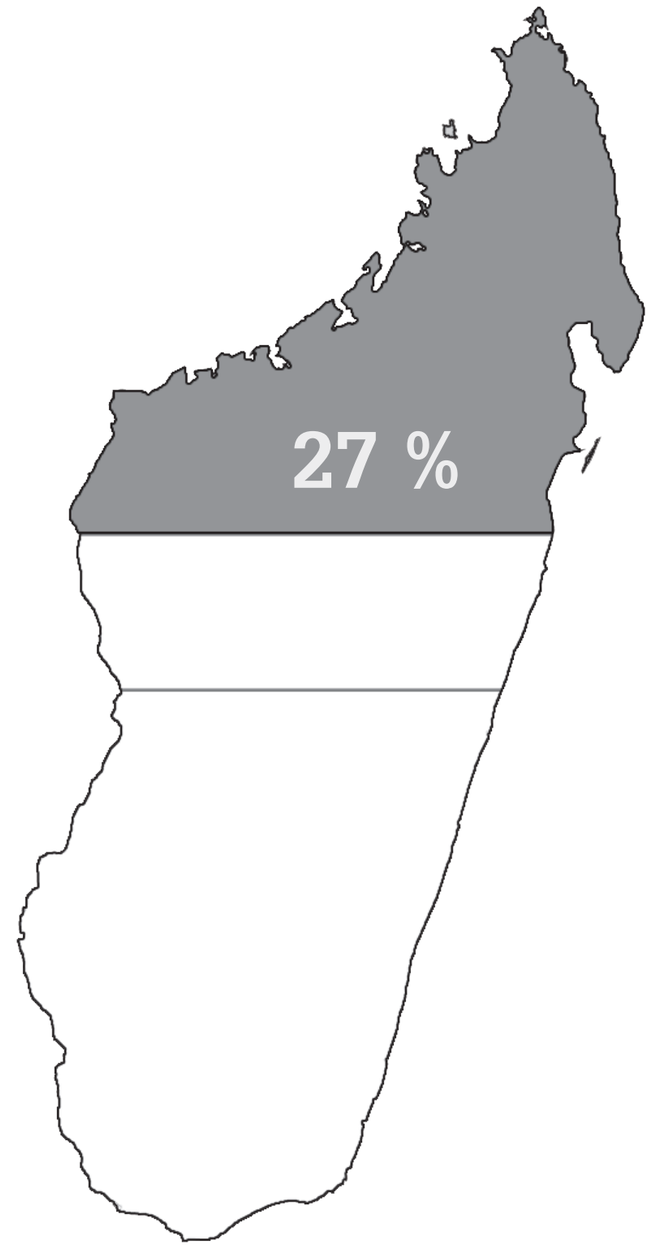




Urban Built Up Area

The total urban built up area is

165,600 km²

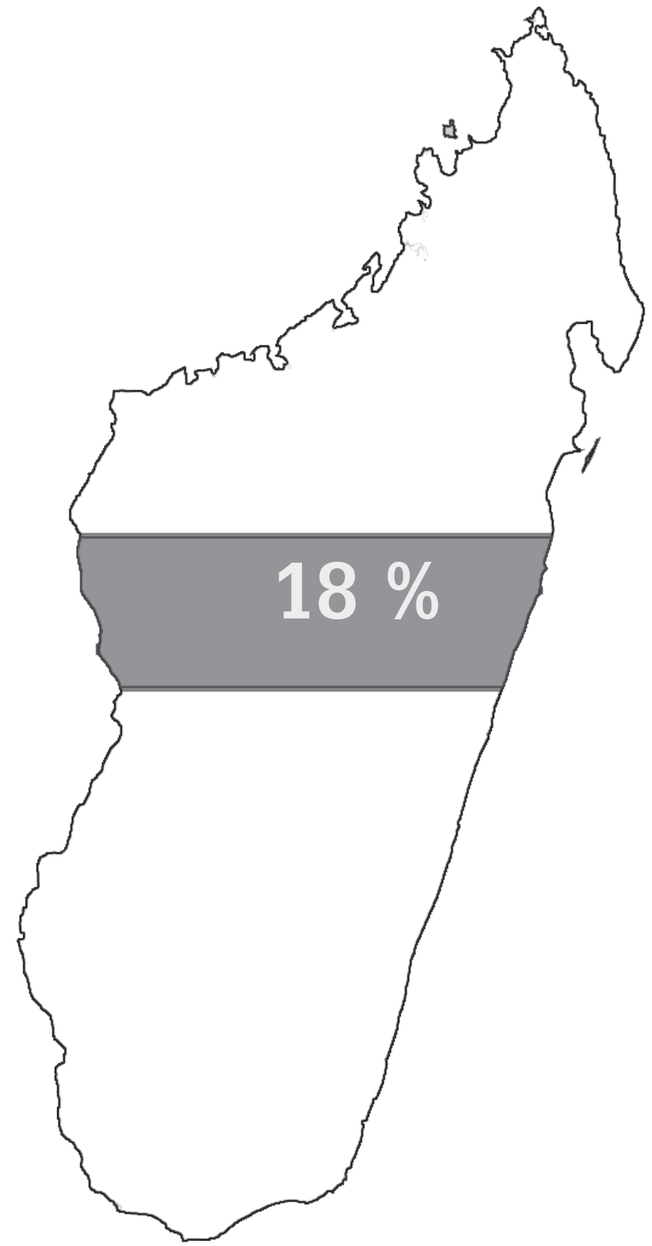


*Built up area is defined as areas where buildings, and/or non-building infrastructure is developed

Urban Roads Area

The total urban road area is

110,100 km²

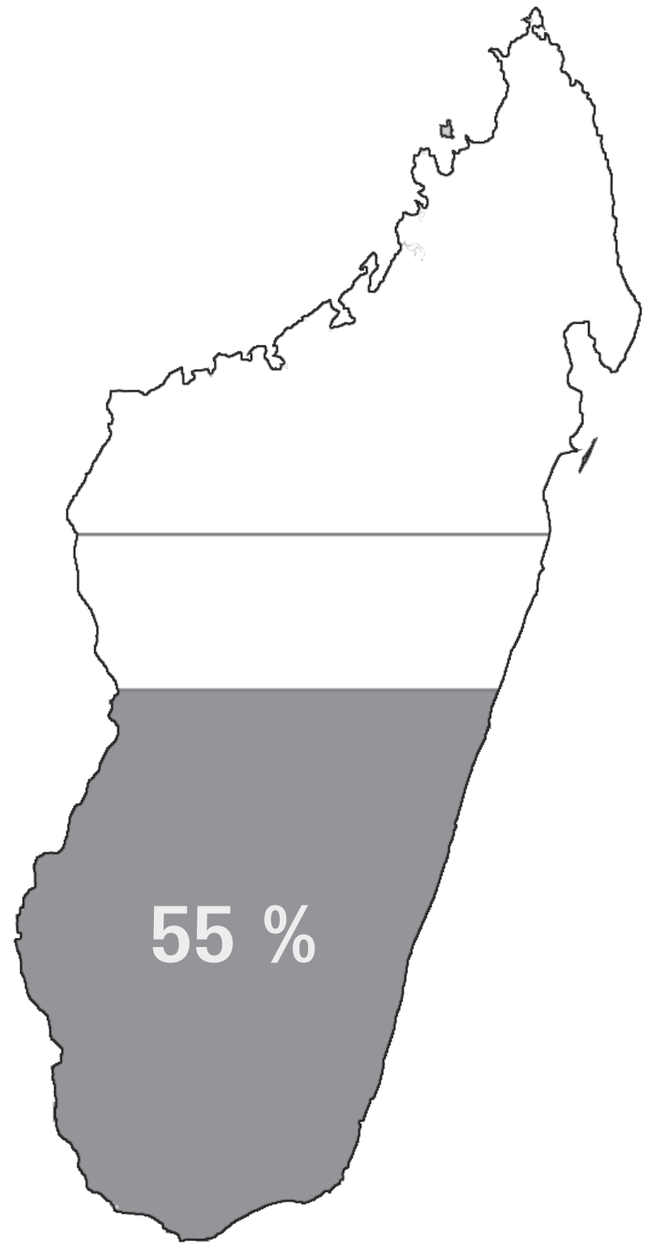


*Roads include all streets, highways, and paved surfaces like footpaths

Urban Unbuilt Areas

The total urban unbuilt area is

317,000 km²



*Unbuilt area is defined as areas of pervious surfaces like parks, empty lots, and water bodies



All urban built up area can fit inside **Tunisia**

The physical footprint of the urban 1% may be relatively small. But, the impact of these urban pockets are much larger. Indeed, the planet is bearing the urban burden.

Outside the 1%

The Urban Burden

Annually, the 1% urban areas are responsible for:

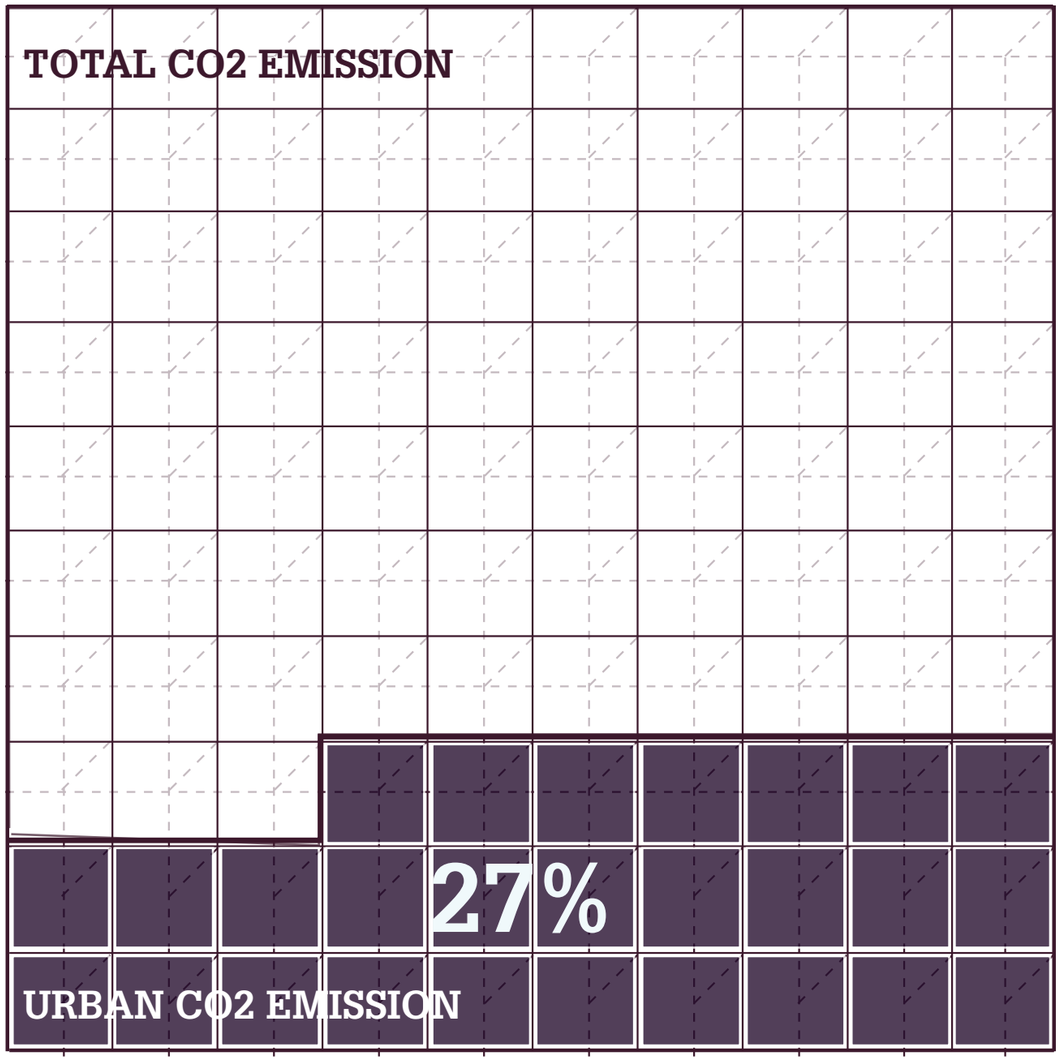
9,902,000,000 tons
Carbon dioxide emissions

1,616,171,700 m^3
Fresh water consumption

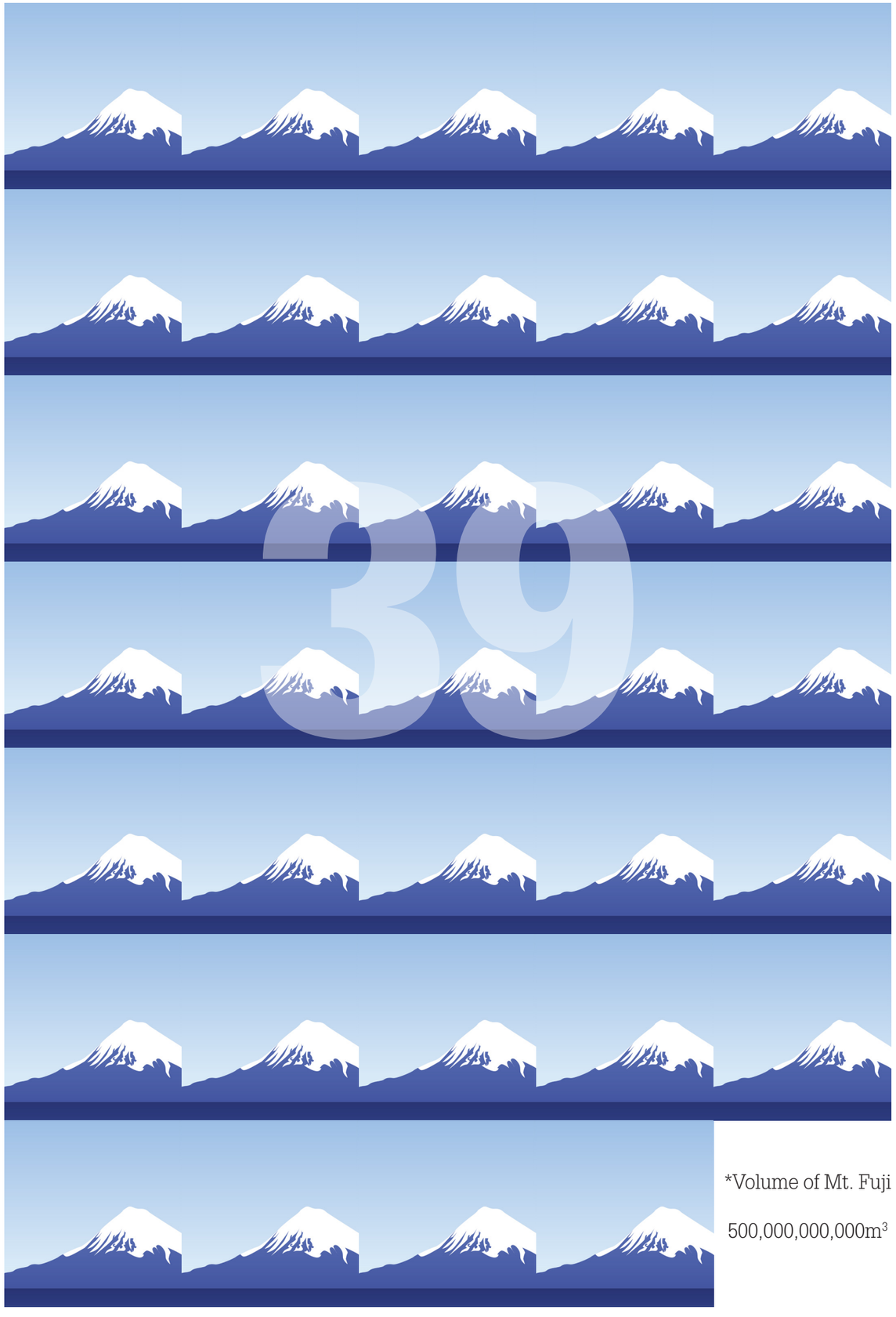
116,611 twh
Energy consumption

Urban Carbon Dioxide Emissions

Urban areas account for 27% of the annual total of Carbon dioxide emissions

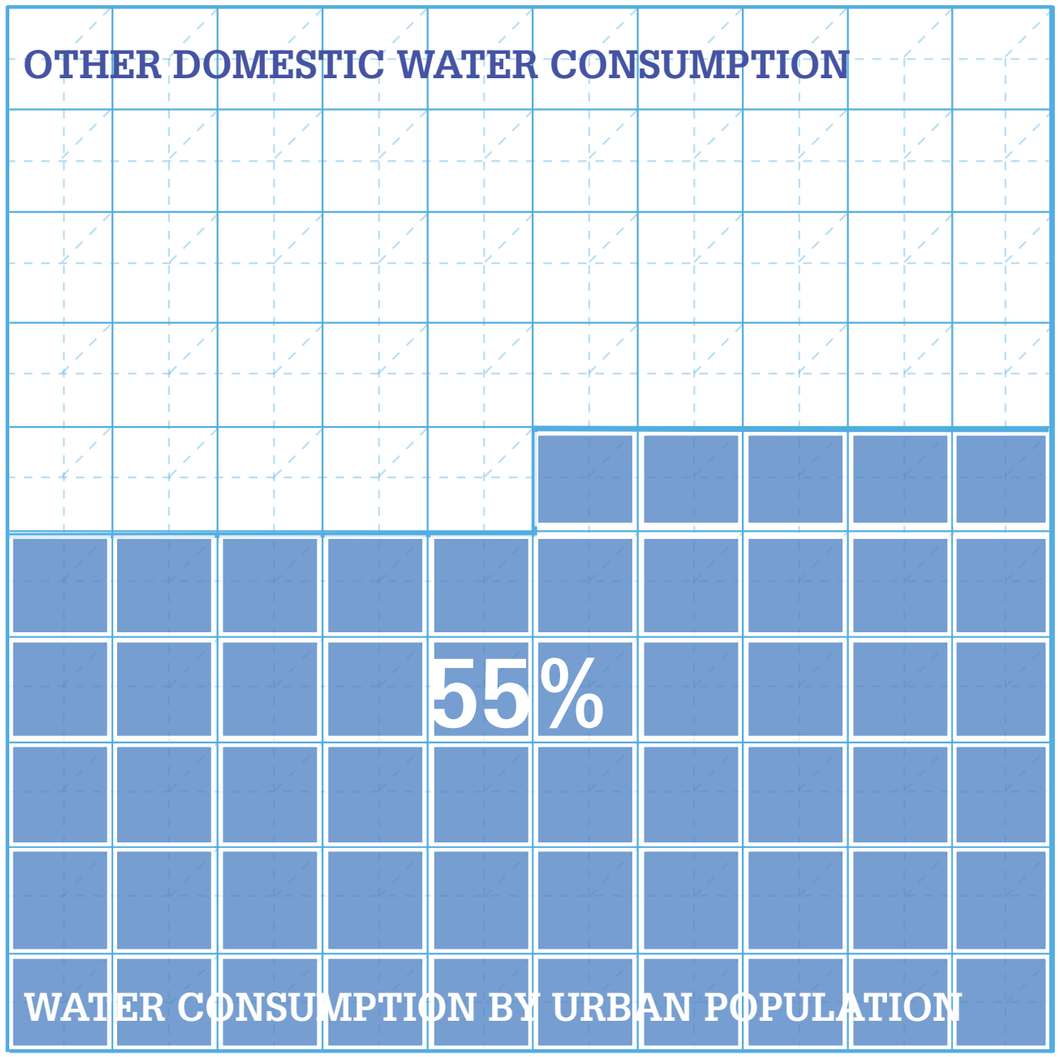


Urban areas produce 9,902,000,000 tons of Carbon dioxide annually which is the volume of 39 Mt. Fujis



Urban Fresh Water Consumption

Urban areas account for 55% of the annual domestic fresh water consumption



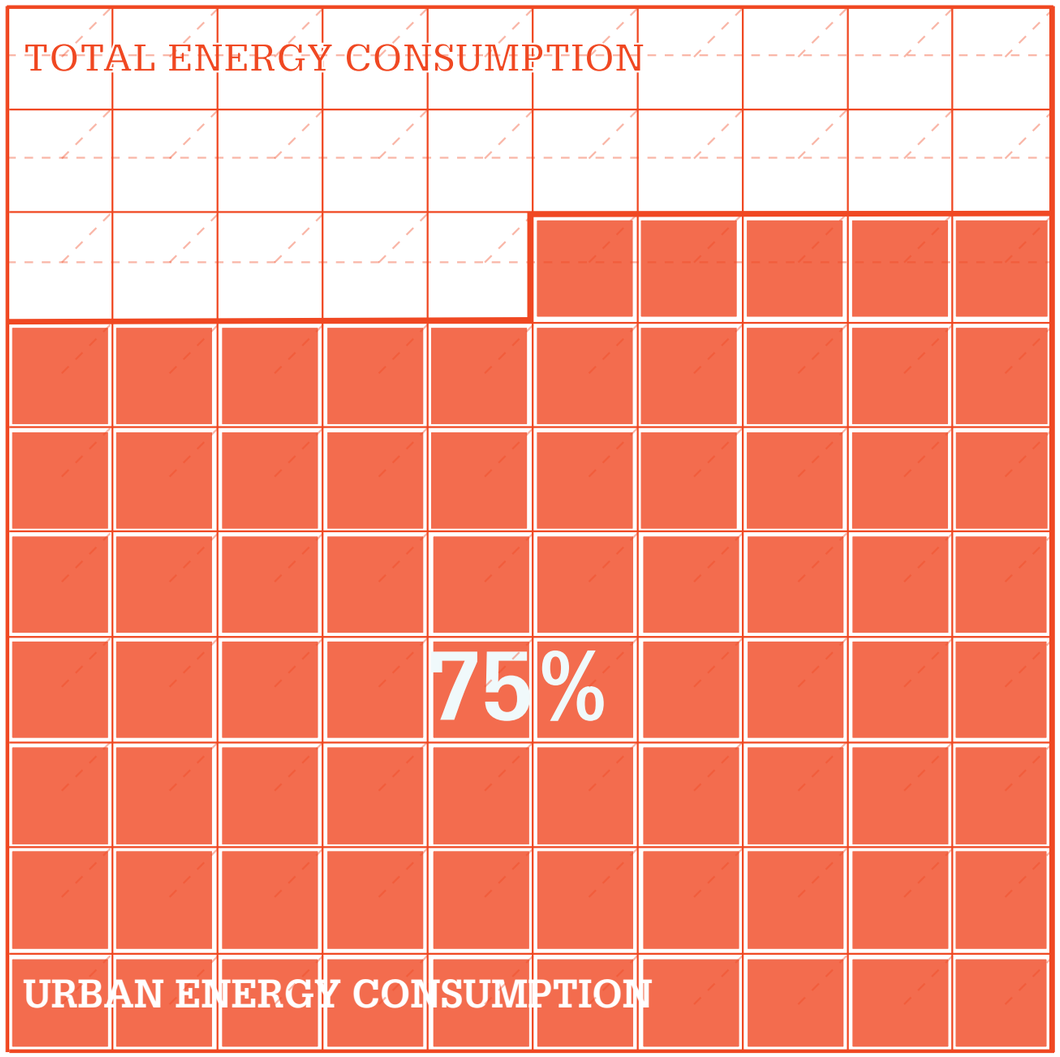
Urban areas consume 1,616,171,700,000 m^3 of fresh water annually which is the

volume of 3 of the Great Lakes

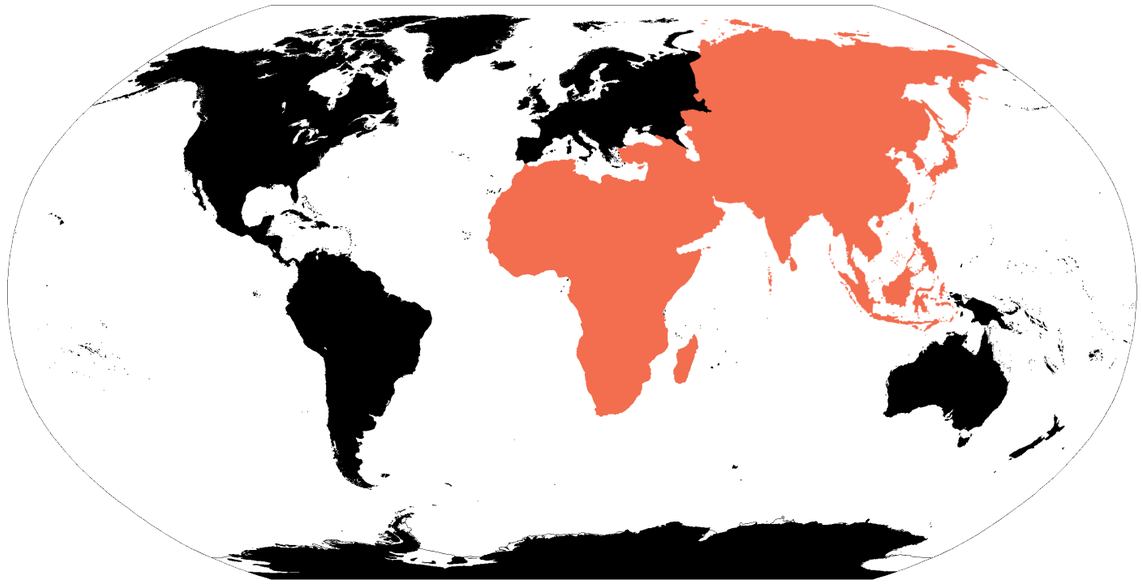


Urban Energy Consumption

Urban areas account for 75% of the annual primary energy consumption



The panels would cover the entire land area of Asia and Africa



Urban areas consume 116,611 twh of primary energy annually, which is the equivalent to the energy produced by

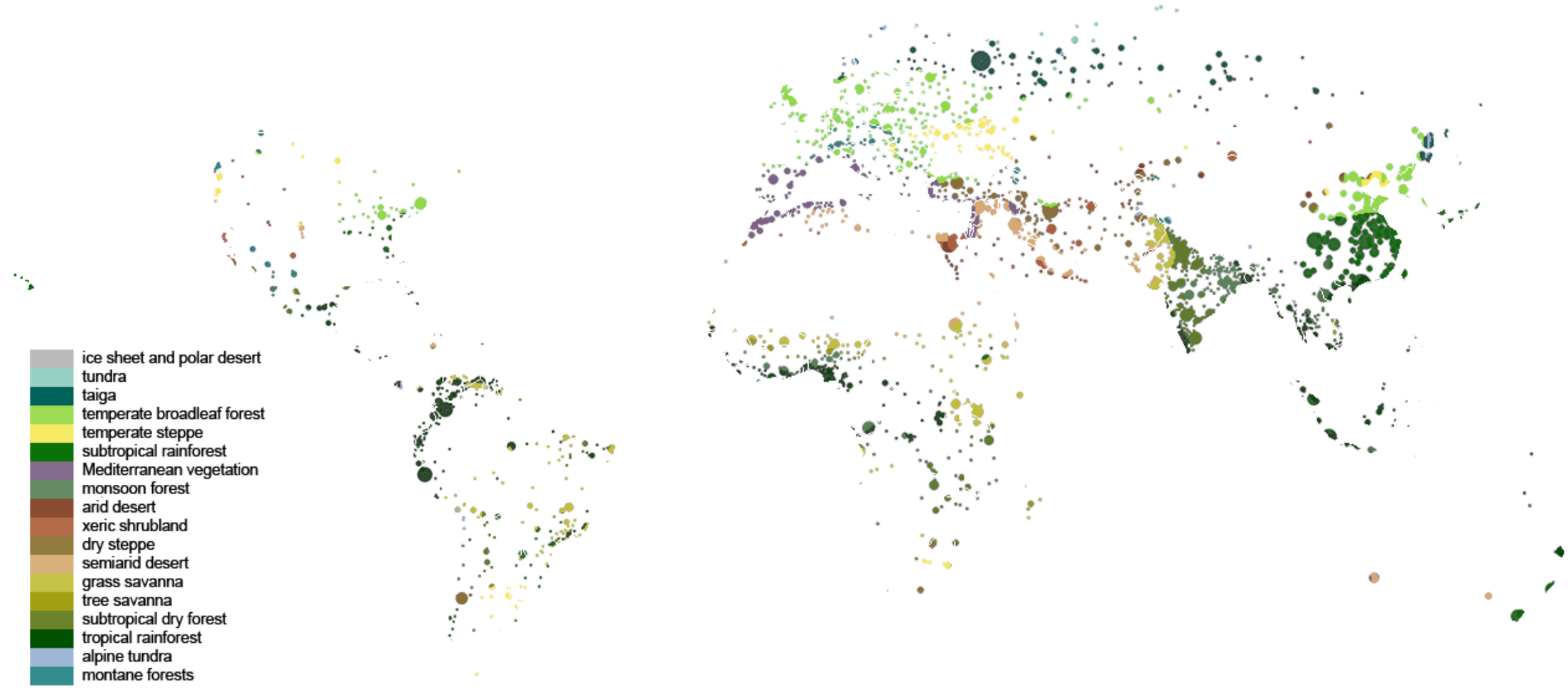
37,458,564 solar panels

*The total area of the solar panels is 67,800,000 km^2

Offset the 1%

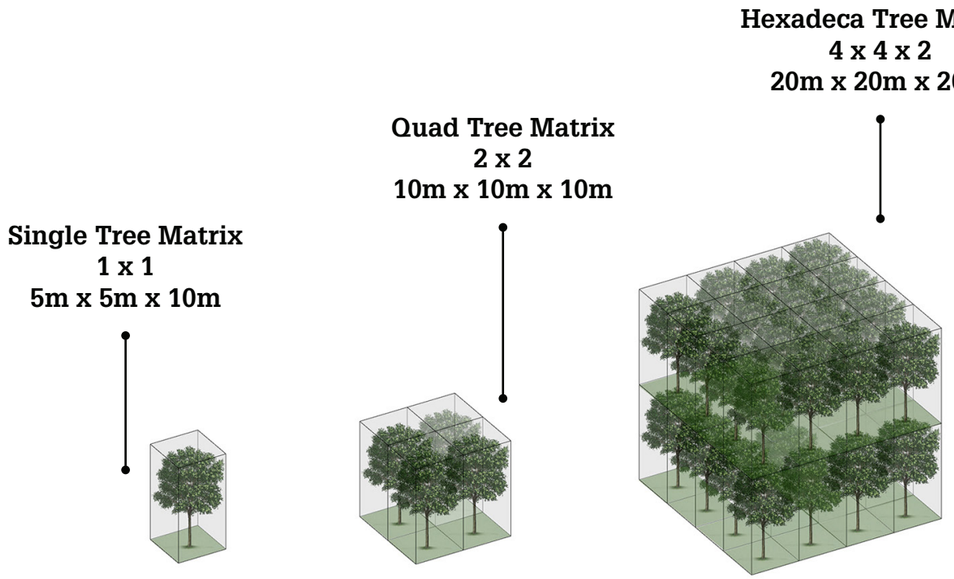
Can the 1% save the world? Given how significantly cities impact the planet it is worth considering how we may try and utilize this 1% as the agent of change. Whether we can pack our urban spaces with enough trees to compensate our carbon footprints.

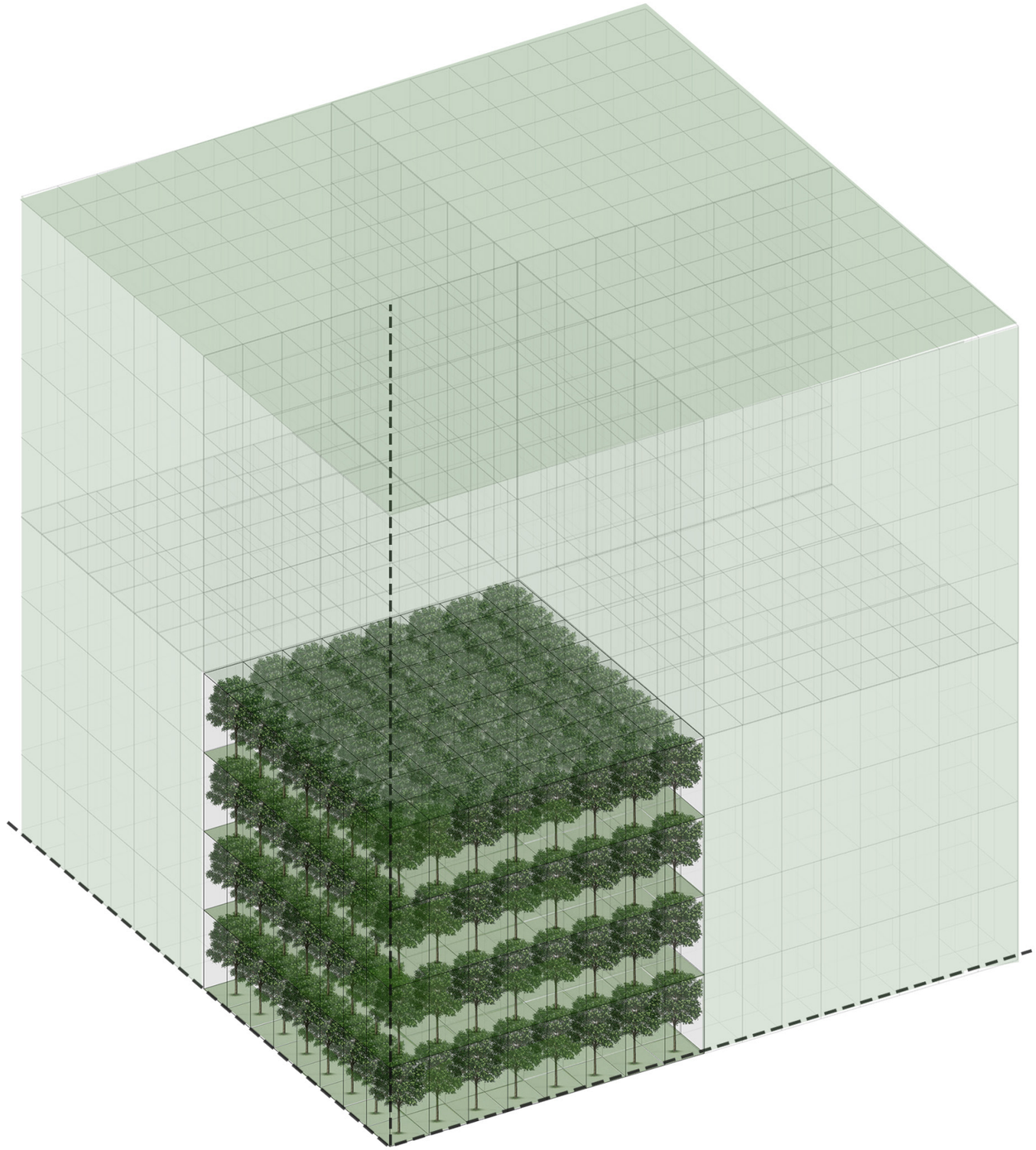
The 1% Across Biomes



Cities are spread all across the world, and across a wide range of climates. Each of these biomes are defined by their unique flora and fauna, flora that is capable of absorbing carbon dioxide at varying ranges. The most populated biomes are the tropical regions that include dense cities in Asia and Africa, while the temperate forests are where most of Europe and Northeast America resides. Finally, the Mediterranean climate has parts of southern Europe and Asia, along with big cities in California. These three densely urbanized biomes make for a good starting ground to test the hypothesis whether an intense greening of the 1% could save the world. Additionally, the extreme climates of the tundra and arid desert make for good bookends for comparison with these calculations.

The Green Cubes





‘Infinite’ Tree Cube

In order to study the volume required to plant all these trees a cube typology was developed. First, the heights and spreads of each tree were obtained to generate a volume of each individual tree. This block became a single unit within the larger block of the ‘total’ volume of trees required. To represent each tree proportionally we fixed a generic tree with the dimensions of 5mx5mx10m to serve as the base unit. These base units can aggregate infinitely to represent the total volume of trees needed for each tree type.

Arid Desert Biome: Date Palm



CO_2 Absorption: 5.7 kg/year

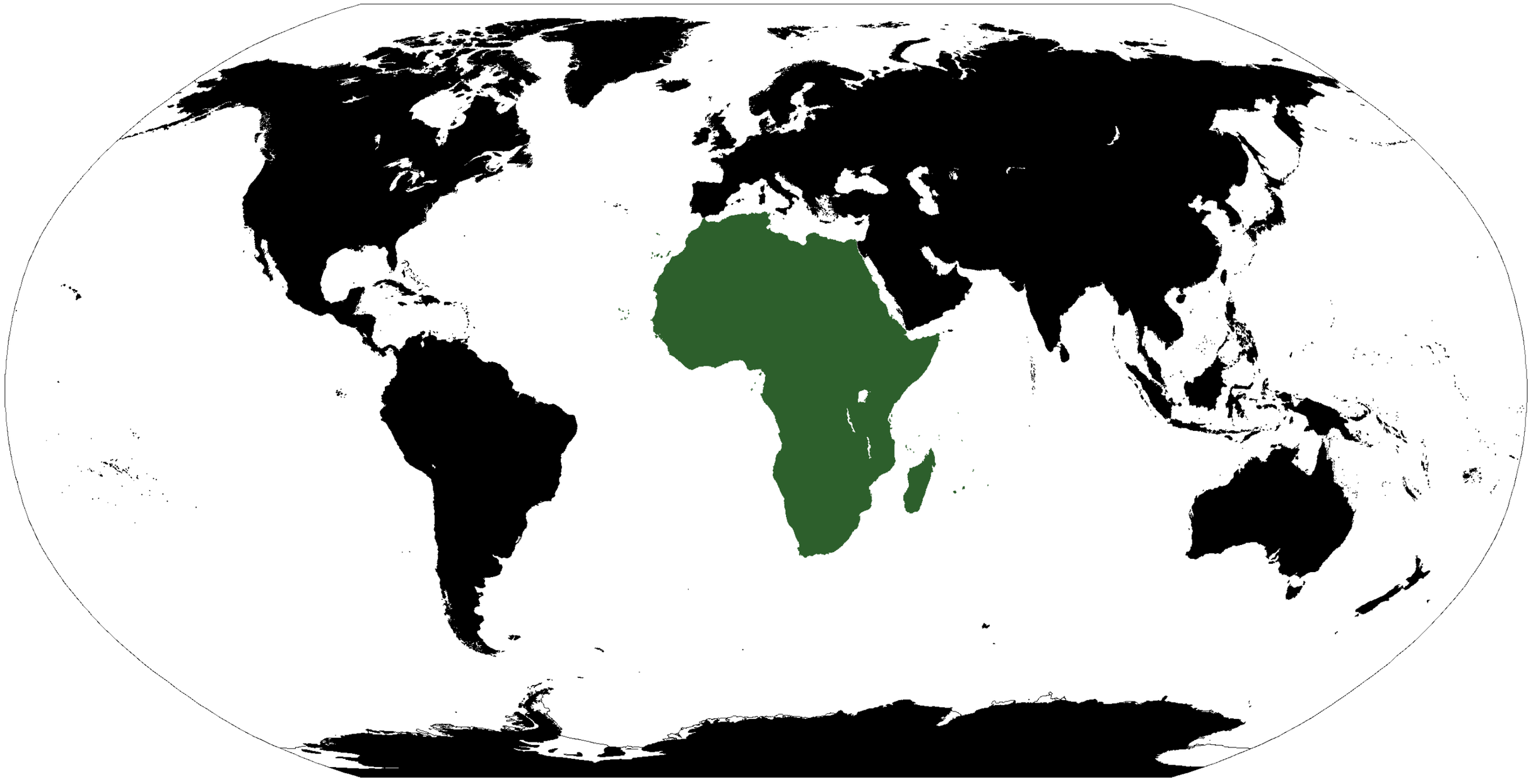
Scientific Name: *Phoenix dactylifera*

Energy savings from cooling (kwh/year): 49.0

Area (m^2): 49.0

Maintenance cost (EUR/year): 9.5

To absorb the world's annual CO_2 emissions we need **6 trillion Date Palms**

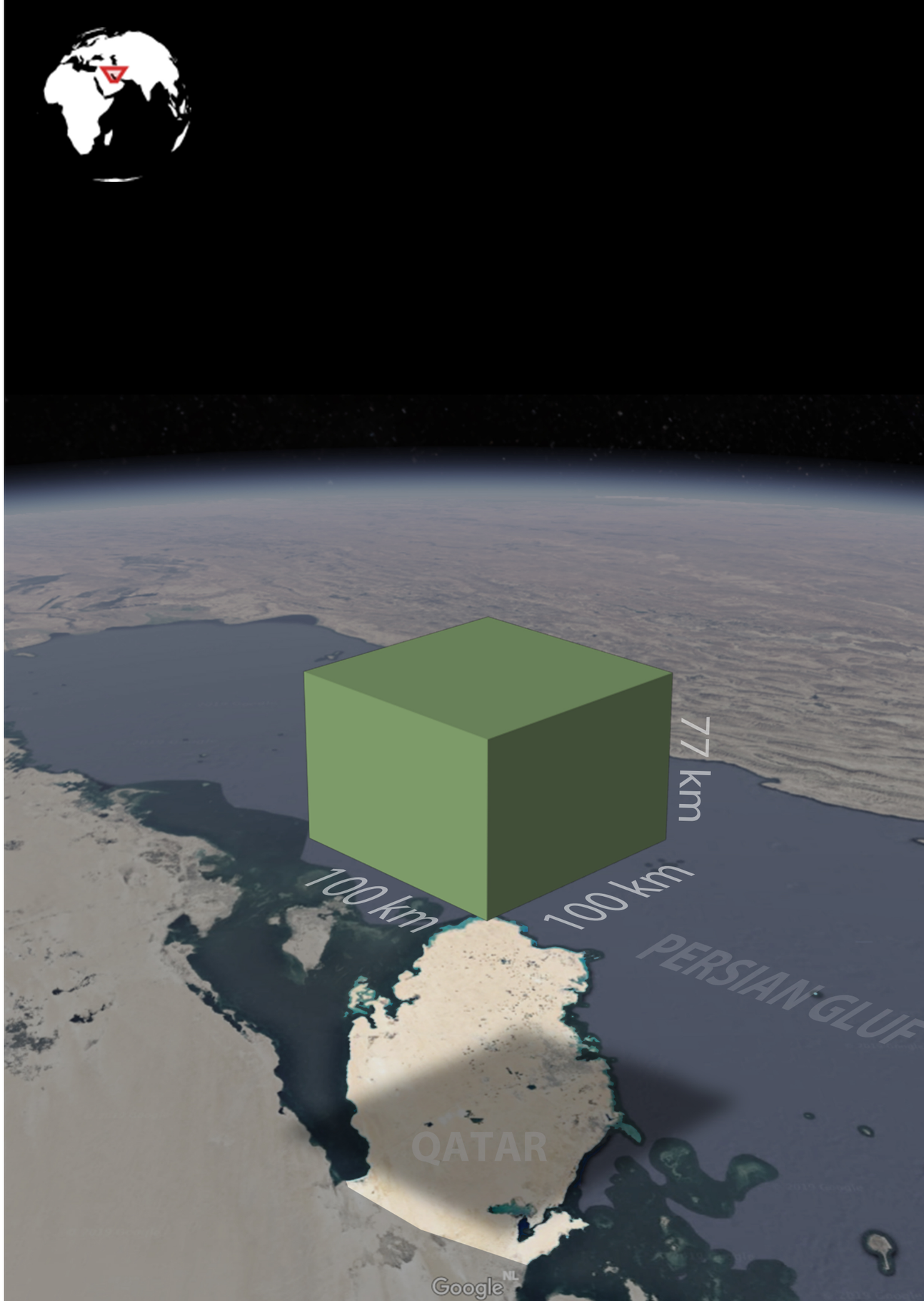


this covers **31,118,537 km²** which is roughly the size of Africa

Arid Desert Biome: Date Palm

The total volume of the Date Palms needed to absorb the world's annual CO_2 emissions is 778,000 km^3

*This volume is represented as a proportional cube placed above a city in the tree's desert biome.



Tropical Biome: Hong Kong Orchid



CO_2 Absorption: 32.7 kg/year

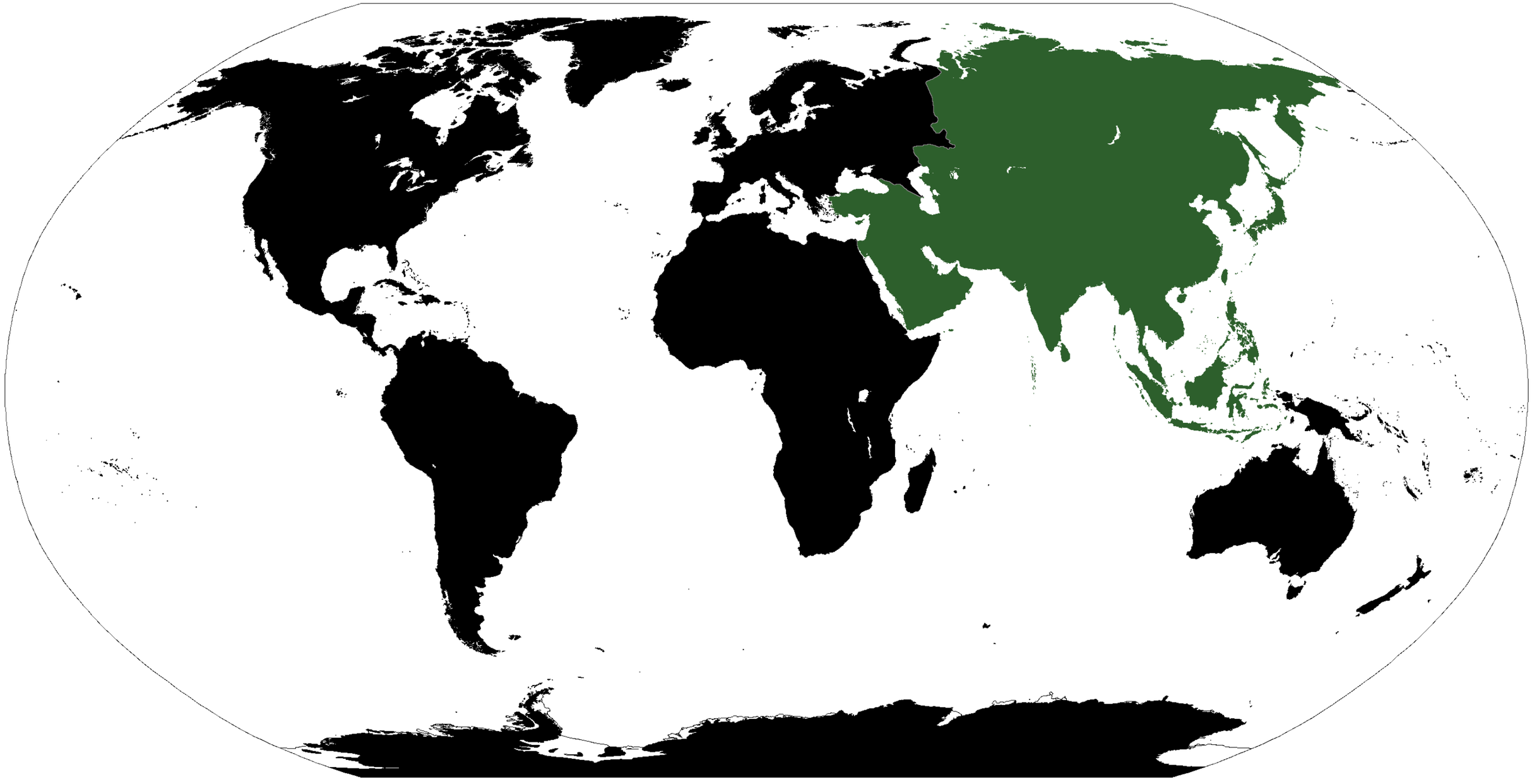
Scientific Name: *Bauhinia blakeana*

Energy savings from cooling (kwh/year): 32.0

Area (m^2): 38.5

Maintenance cost (EUR/year): 7.9

To absorb the world's annual CO_2 emissions we need **1 trillion Hong Kong Orchids**

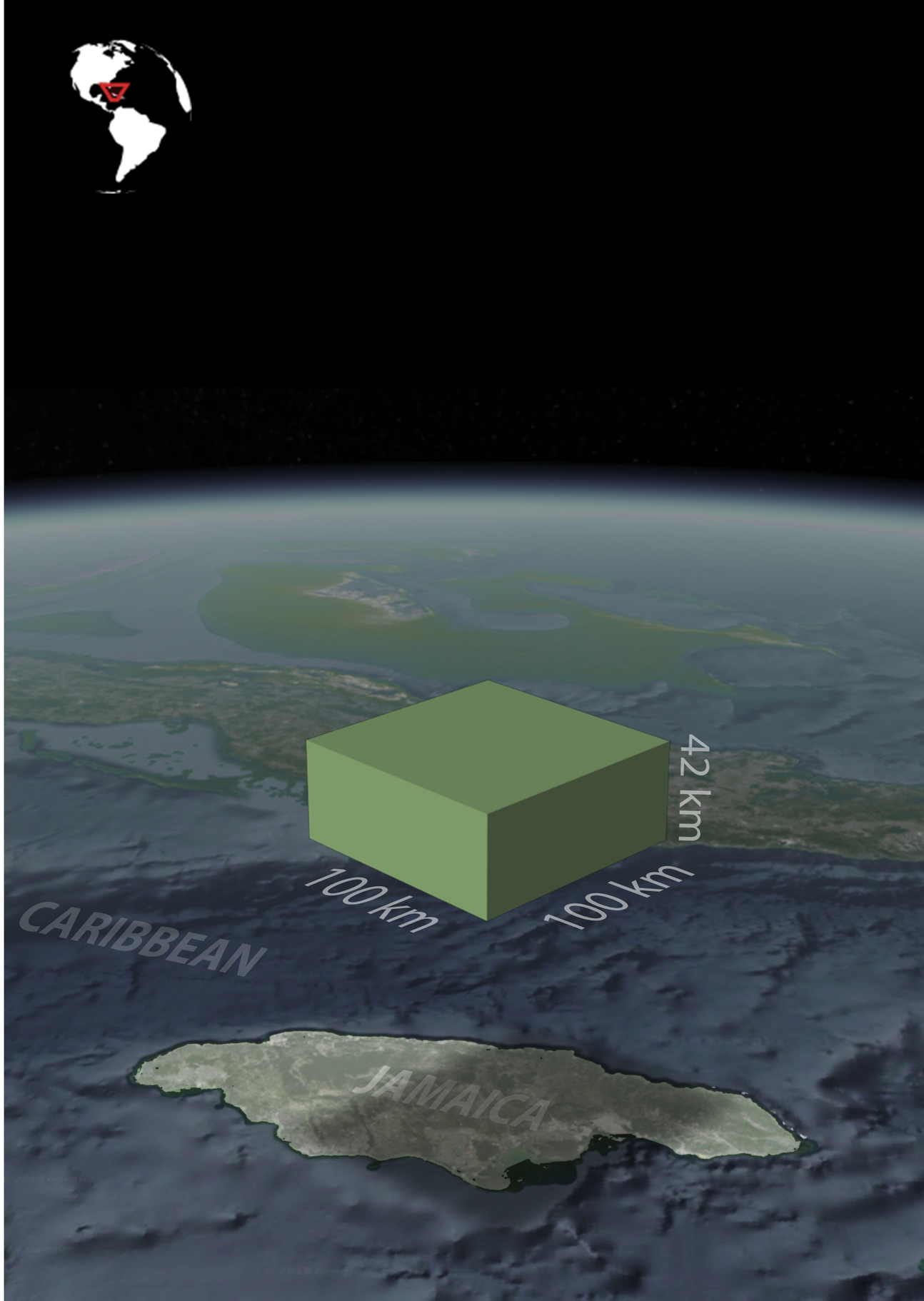


this covers 42,526,762 km^2 which is roughly the size of Asia

Tropical Biome: Hong Kong Orchid

The total volume of the Hong Kong Orchids needed to absorb the world's annual CO_2 emissions is 425,000 km^3

*This volume is represented as a proportional cube placed above a city in the tree's tropical biome.



Mediterranean Biome: European Nettle



CO_2 Absorption: 114.0 kg/year

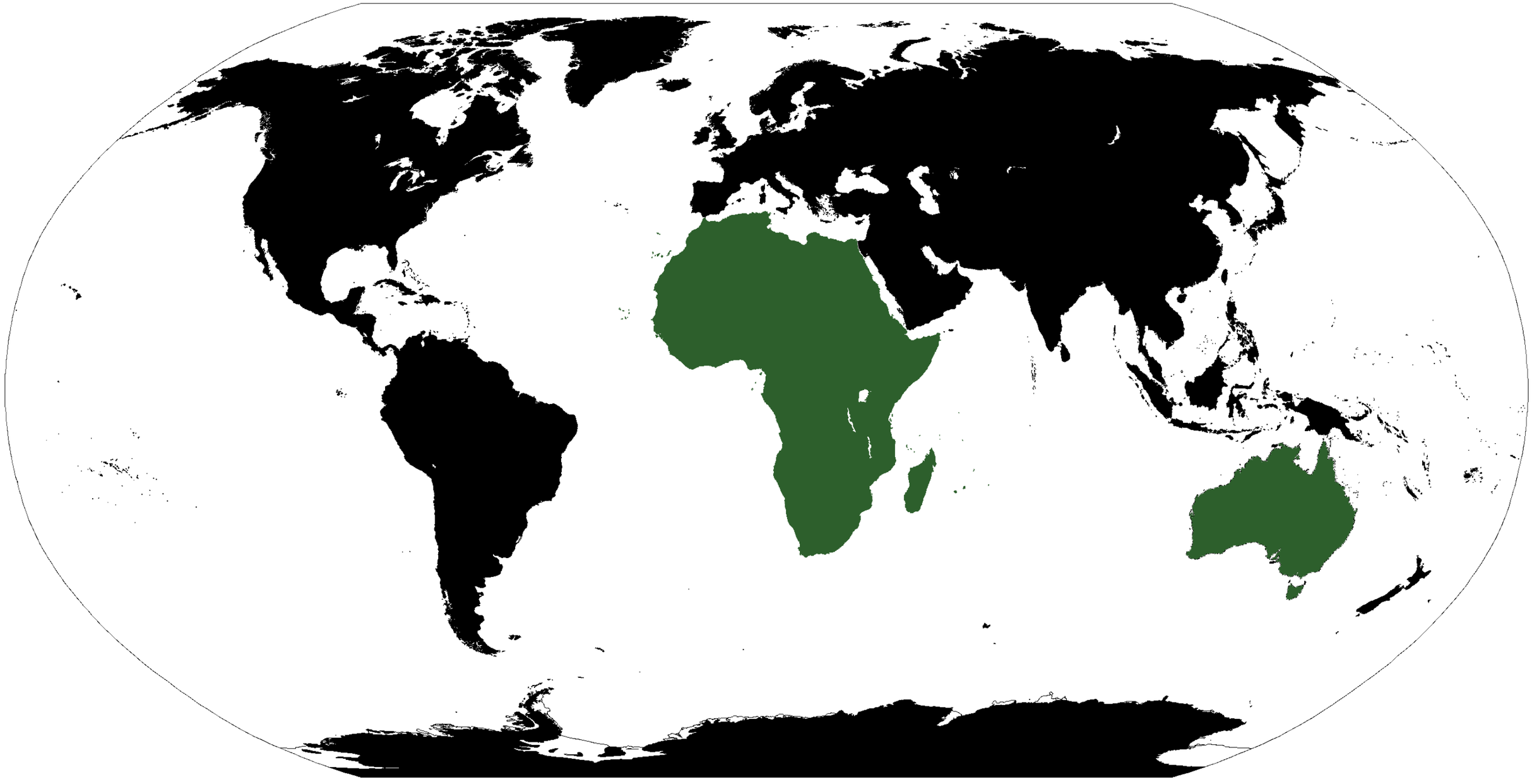
Scientific Name: *Celtis australis*

Energy savings from cooling (kwh/year): 78.4

Area (m^2): 122.7

Maintenance cost (EUR/year): 8.5

To absorb the world's annual CO_2 emissions we need **300 billion European Nettles**

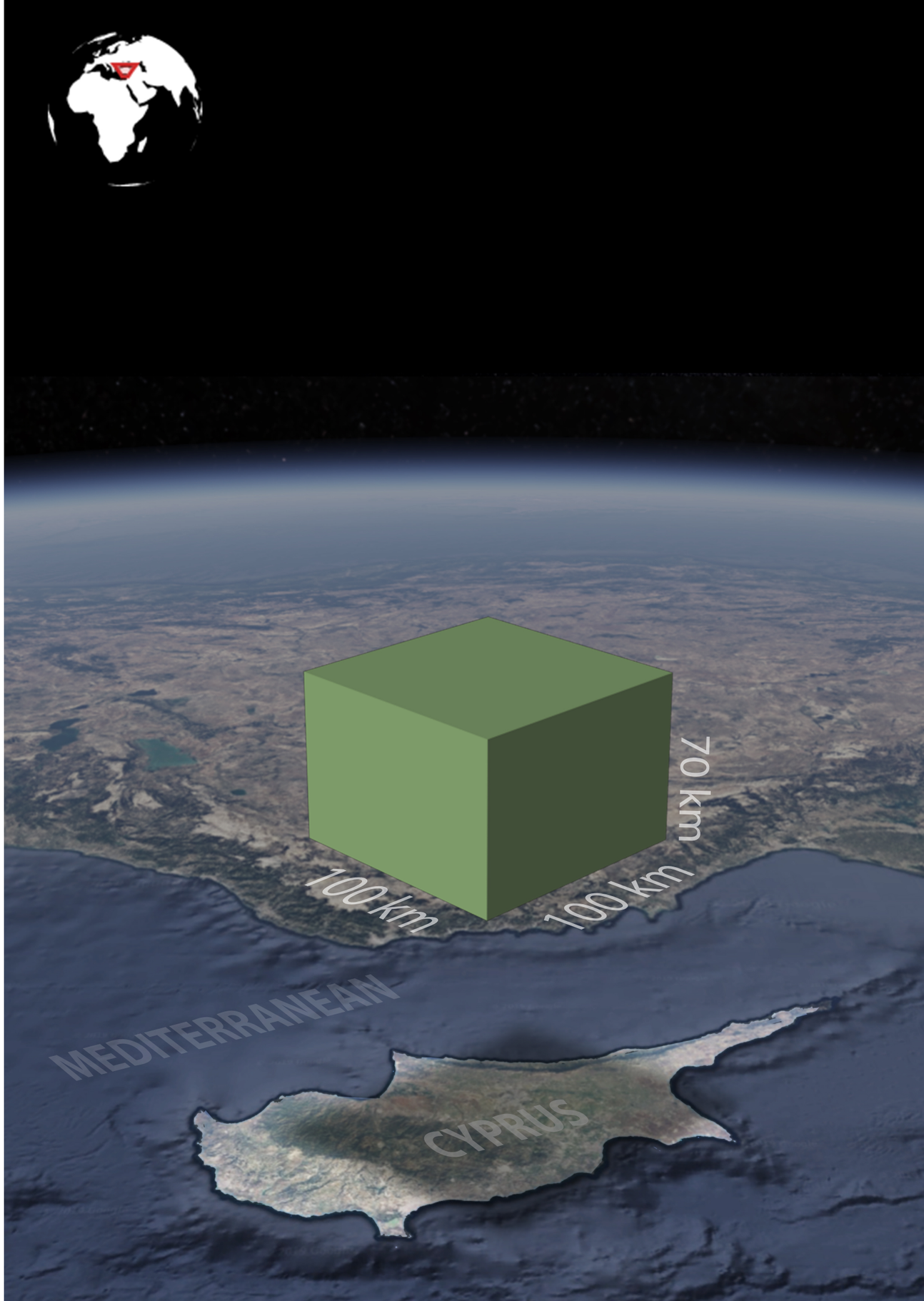


this covers 38,898,170 km^2 which is roughly the size of Africa and Australia

Mediterranean Biome: European Nettle

The total volume of the European Nettles needed to absorb the world's annual CO_2 emissions is 815,000 km^3

*This volume is represented as a proportional cube placed above a city in the tree's Mediterranean



Temperate Biome: European Beech



CO_2 Absorption: 135.0 kg/year

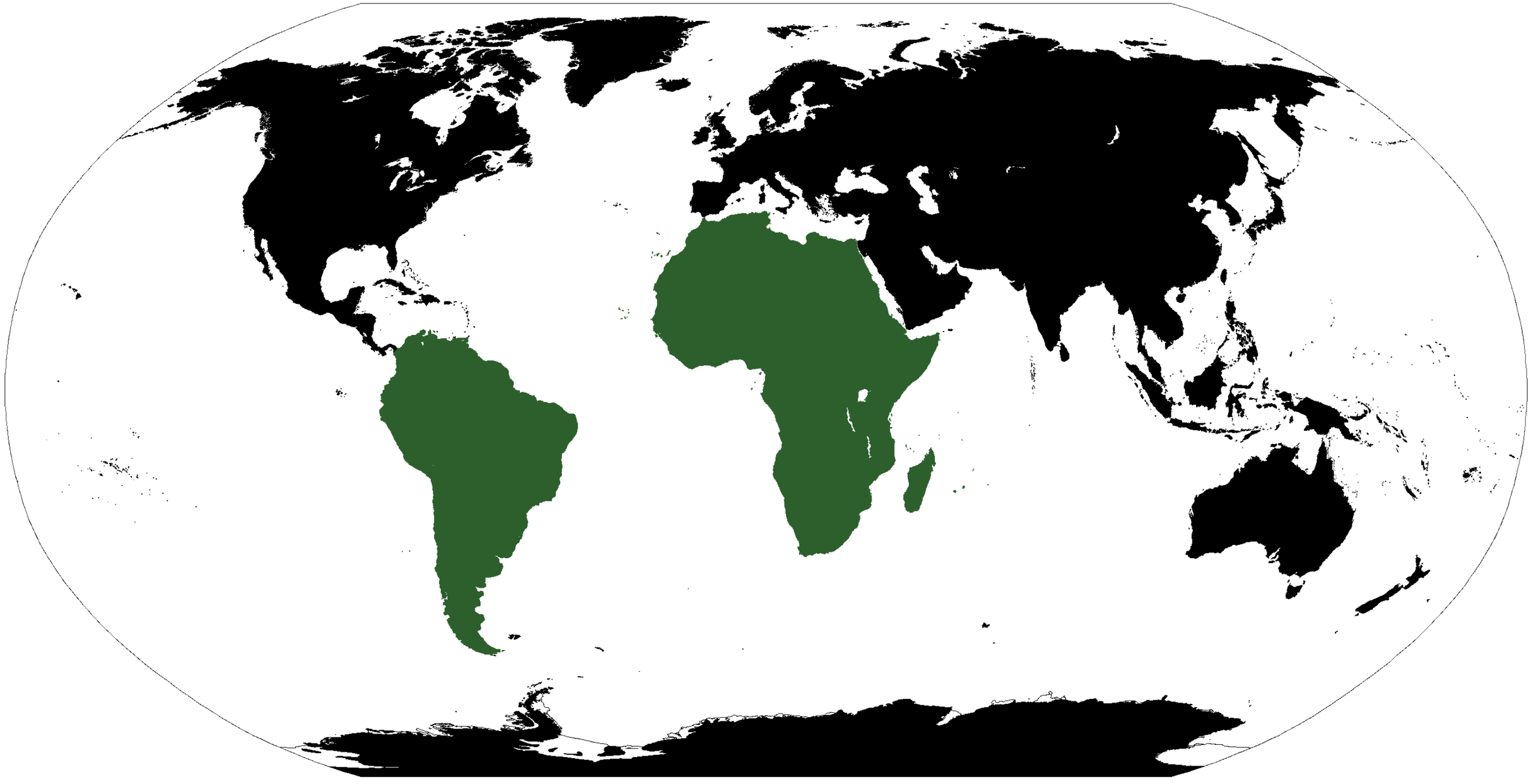
Scientific Name: *Fagus sylvatica*

Energy savings from cooling (kwh/year): 56.0

Area (m^2): 176.6

Maintenance cost (EUR/year): 8.4

To absorb the world's annual CO_2 emissions we need **270 billion European Beeches**

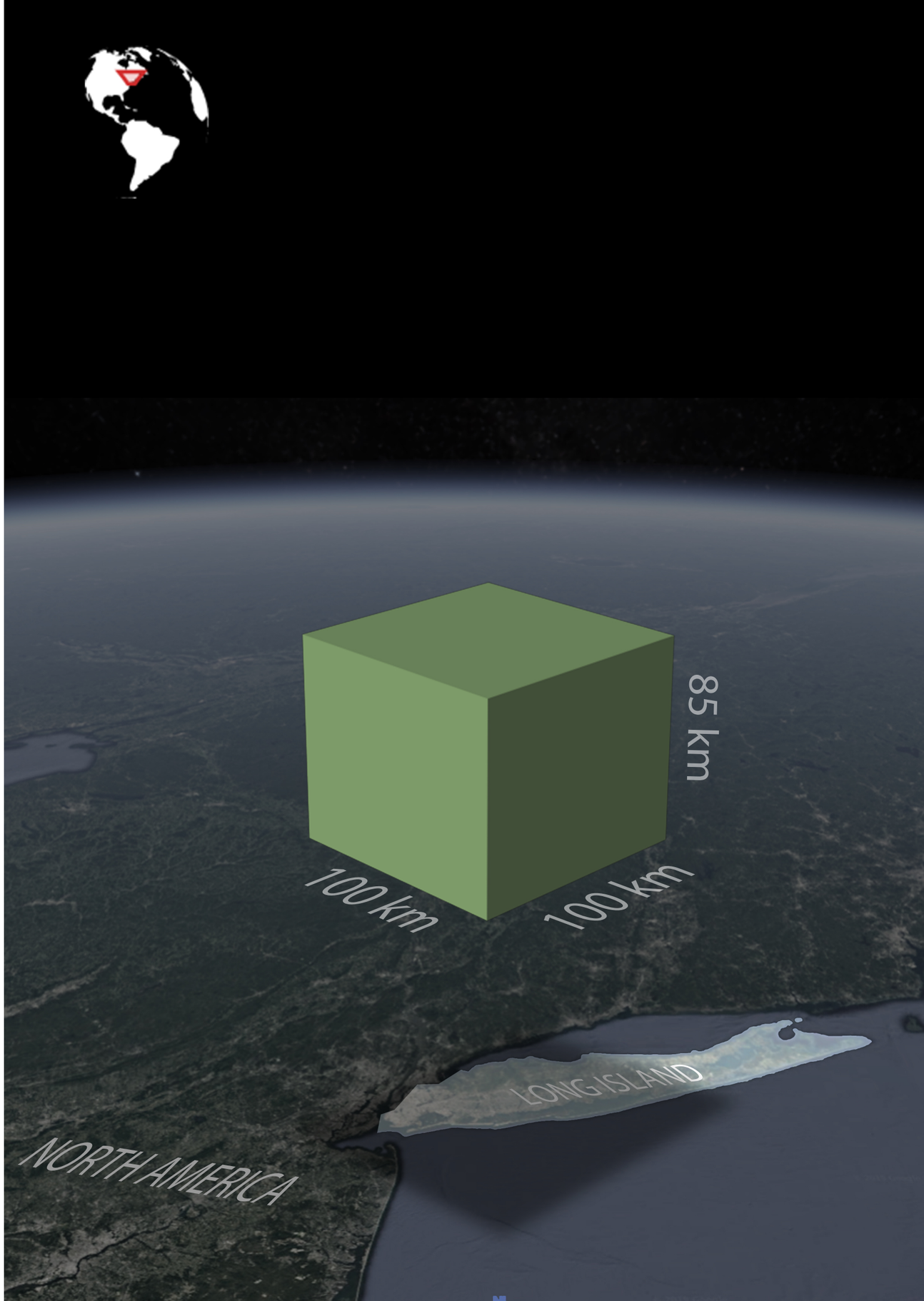


this covers 47,300,175 km^2 which is roughly the size of Africa and South America

Temperate Biome: European Beech

The total volume of the European Beeches needed to absorb the world's annual CO_2 emissions is 700,000 km^3

*This volume is represented as a proportional cube placed above a city in the tree's temperate biome.



Tundra Biome: Norway Maple



CO_2 Absorption: 64.5 kg/year

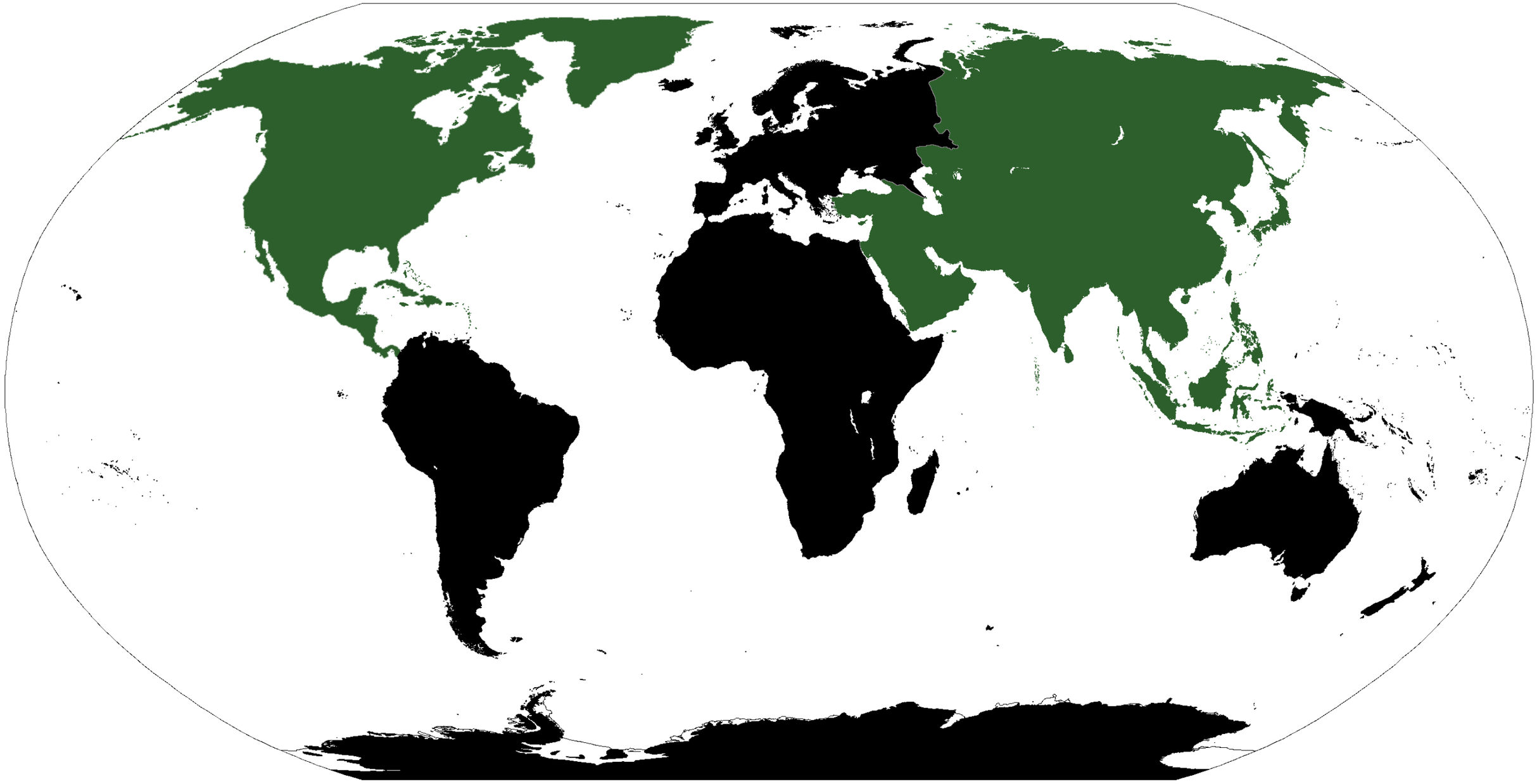
Scientific Name: *Acer platanoides*

Energy savings from cooling (kwh/year): 46.8

Area (m^2): 122.7

Maintenance cost (EUR/year): 14.0

To absorb the world's annual CO_2 emissions we need **560 billion Norway Maples**

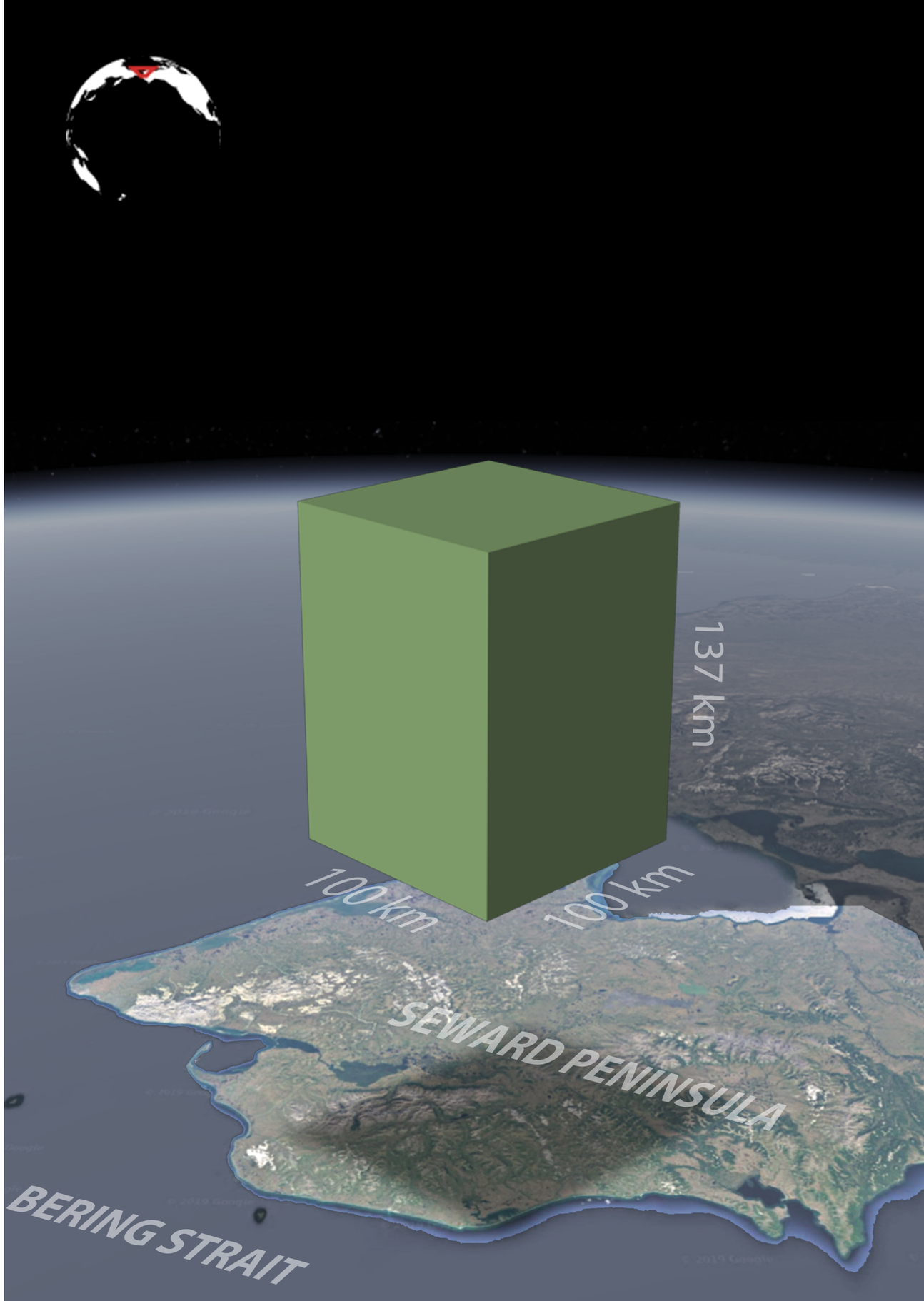


this covers **68,750,254 km²** which is roughly the size of Asia and North America

Tundra Biome: Norway Maple

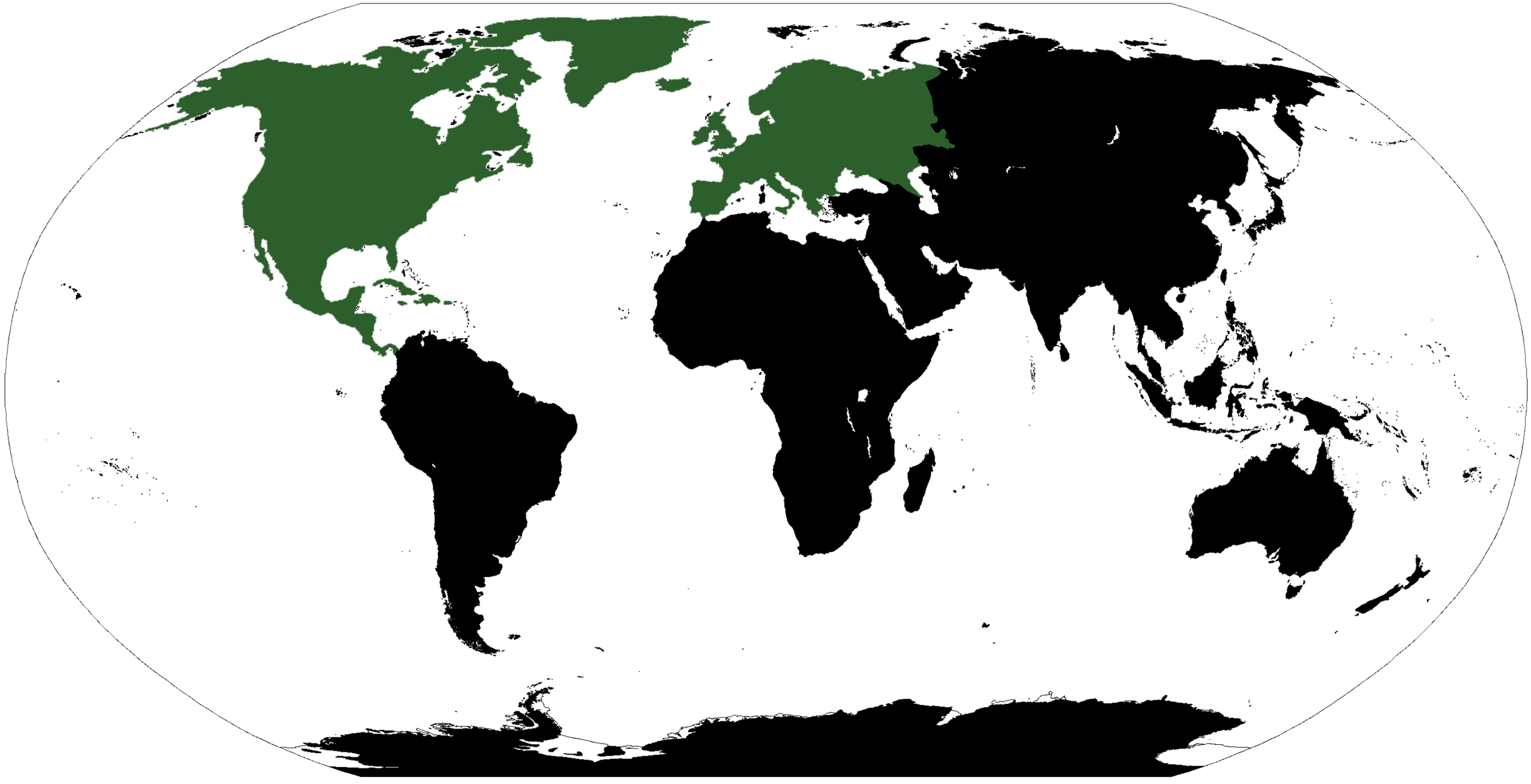
The total volume of the Norway Maples needed to absorb the world's annual CO_2 emissions is 815,000 km^3

*This volume is represented as a proportional cube placed above a city in the tree's tundra biome.



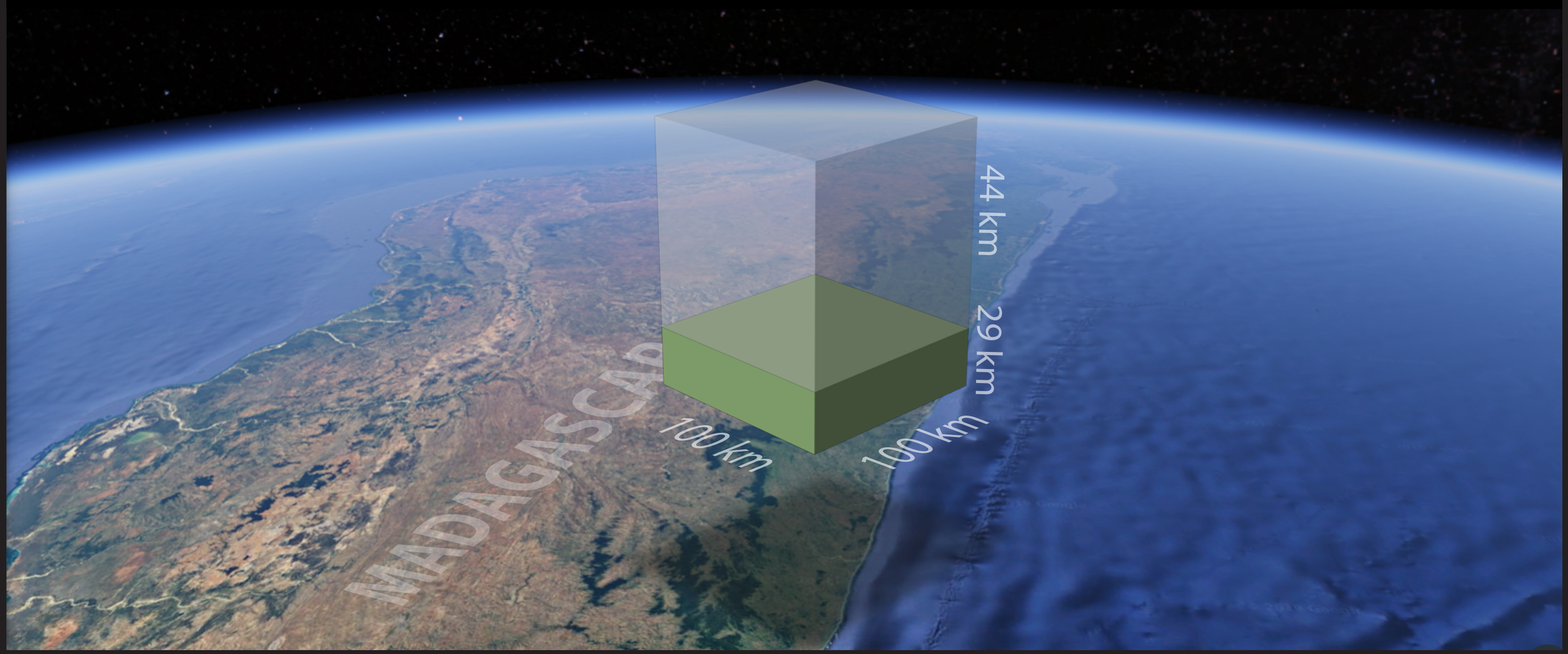
However, if the specific trees could only be planted in their unique biomes we can fit

583 billion trees

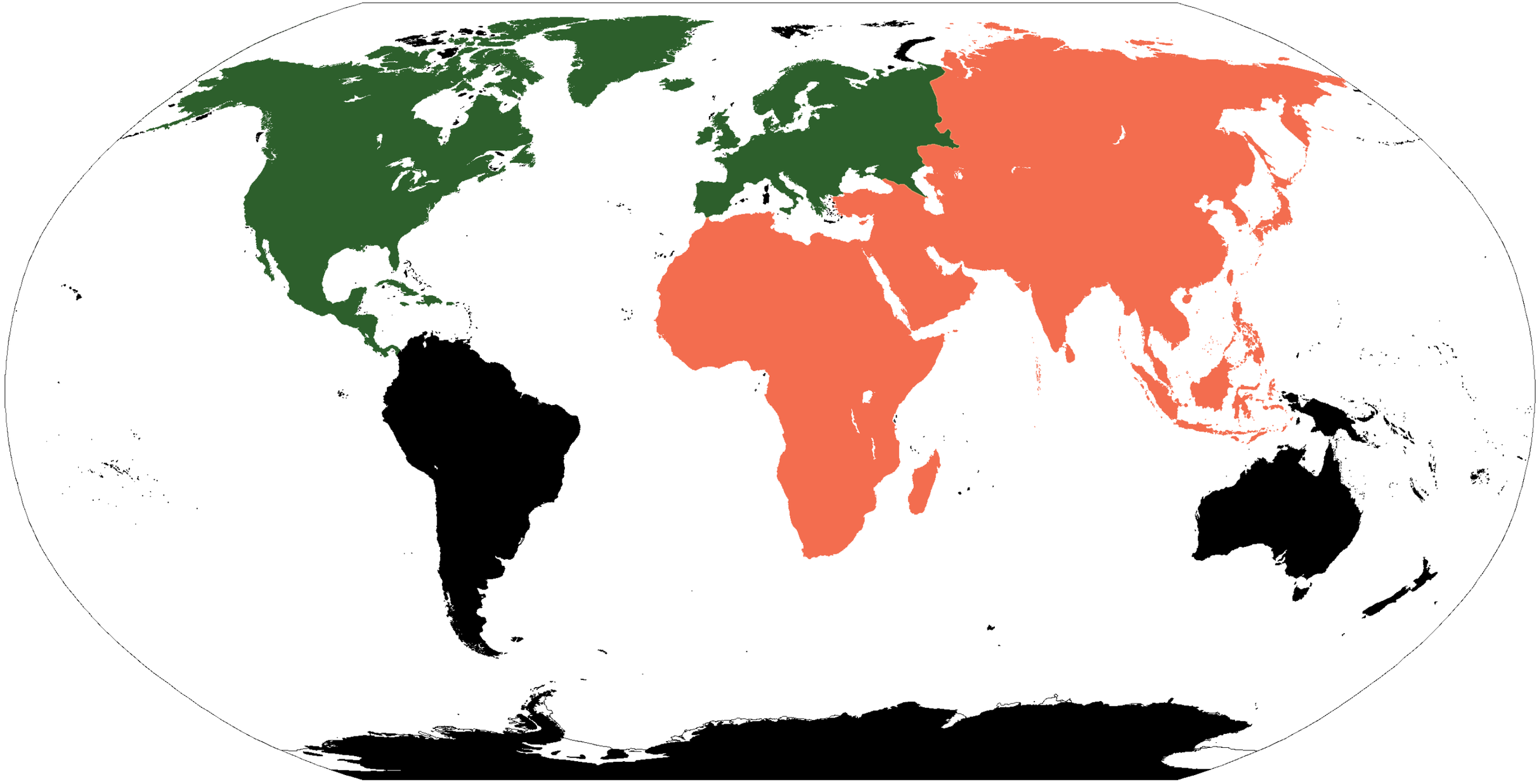


this covers 35,533,690 km² which is roughly the size of North America and Europe

but this can only absorb **40%** of total annual Carbon dioxide emissions



HTo compensate for our annual urban energy consumption and the annual global Carbon dioxide emissions



we need to cover the continents of Africa and Asia with solar panels, and Europe and North America with trees

dellessit estoratium disci voloribus dollatur reniscilitat pra vollupt atibusa piditis ea aci que officita ped molupta diost, velecum alignis ciatianis enem. Itatature, audis incid et optat et illest, nimaximi, officie ndebist, sum quam expe re, omniscium fugitas sapedig enihill itaerferum sitendi te consequo expla voluptat quatiis mi, net aborehenihil et quiam esequo ium ulpa voluptatur? Evellit fugit es eum aspernam quatem ipsusciis quia voluptate aute mos que id molo tem con re, inveliqui blaborest laboratur, cus, temperitium idi re, venimus sed mollabo rehendanti test, nonsequos cullores aspient haria nones ipsam quo berchicae restiumniscium fugitas sapedig enihill itaerferum sitendi te consequo expla voluptat quatiis mi, net abopsusciis quia voluptate aute mos que id molo tem con re, inveliqui blaborest laboratur, cus, temperitium idi re, venimus sed mollabo rehendanti test, nonsequos cullores aspient haria nones ipsam quo berchicae restiu

Green Performances

dellessit estoratium disci voloribus dollatur reniscilitat pra vollupt atibusa piditis ea aci que officita ped molupta diost, velecum alignis ciatianis enem. Itatature, audis incid et optat et illest, nimaximi, officie ndebist, sum quam expe re, omniscium fugitas sapedig enihill itaerferum sitendi te consequo expla voluptat quatiis mi, net aborehenihil et quiam esequo ium ulpa voluptatur? Evellit fugit es eum aspernam quatem ipsusciis quia voluptate aute mos que id molo tem con re, inveliqui blaborest laboratur, cus, temperitium idi re, venimus sed mollabo rehendanti test, nonsequos cullores aspient haria nones ipsam quo berchicae restiumniscium fugitas sapedig enihill itaerferum sitendi te consequo expla voluptat quatiis mi, net abopsusciis quia voluptate aute mos que id molo tem con re, inveliqui blaborest laboratur, cus, temperitium idi re, venimus sed mollabo rehendanti test, nonsequos cullores aspient haria nones ipsam quo berchicae restiu

Living in the Green City

dellessit estoratium disci voloribus dol-latur reniscilitat pra vollupt atibusa piditis ea aci que officita ped molupta diost, velecum alignis ciatianis enem. Itatature, audis incid et optat et illest, nimaximi, officie ndebist, sum quam expe re, omniscium fugitas sapedig enihill itaerferum sitendi te consequo expla voluptat quatiis mi, net aborehenihil et quiam esequo ium ulpa voluptatur?

Domestic Life

Green Performance:

Provides Privacy

Masks Smell

Manages Water

Filters Water

Produces Food

Improves Mental health

Improves Thermal Performance

Upgrades View

Creates Shadow

Facilitates Play

Filters Light

Gives a Sense of time

Produces a Sense of place

Enhances Community

Forms Camouflage

Structure

Generates Biofuel

Blocks Sound

Blocks Wind

Improves Air Quality

Improves Soil Quality

Healthier Pregnancy

Healthier Children

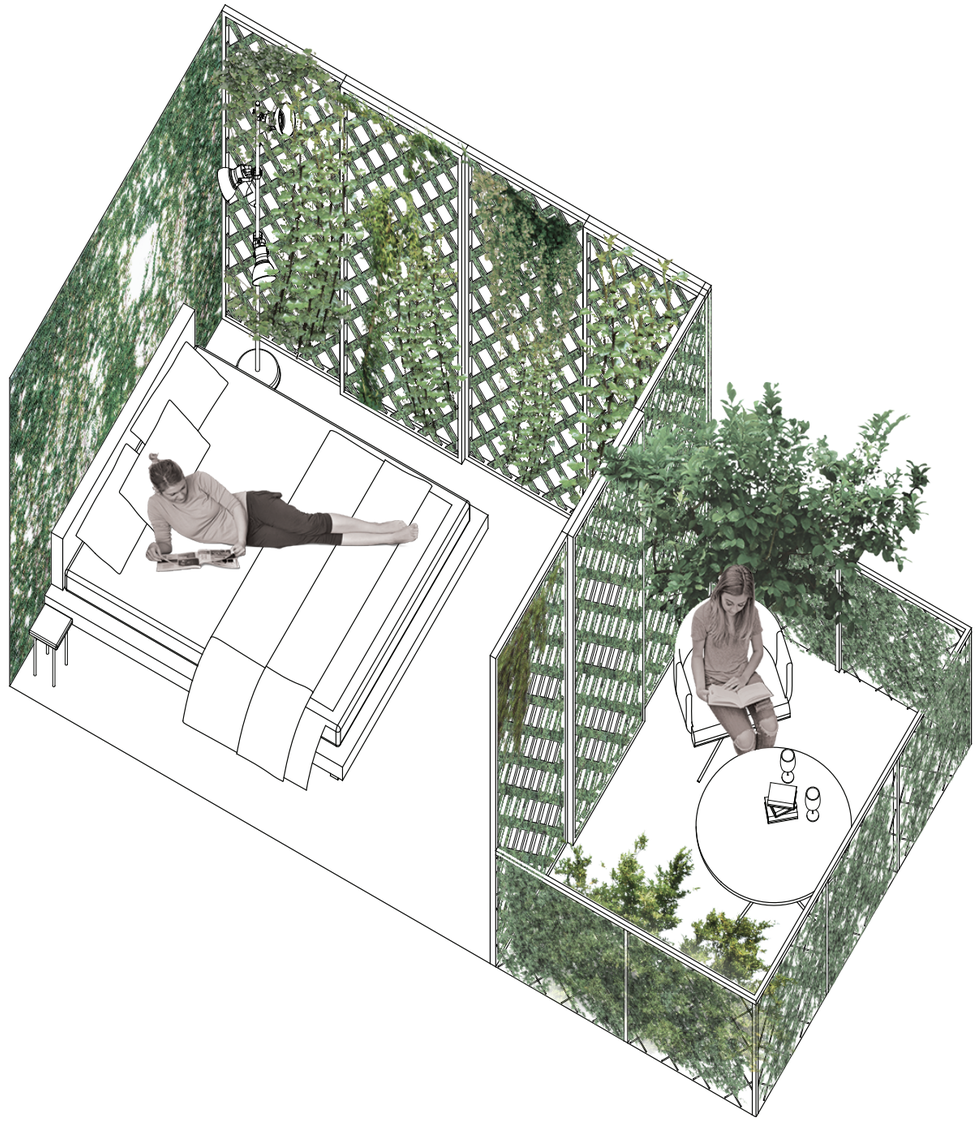
Promotes Physical Health

Pro-environmental Behavior



Catalog Matrix

Vegetation on buildings creates intimacy, safety, and freedom.



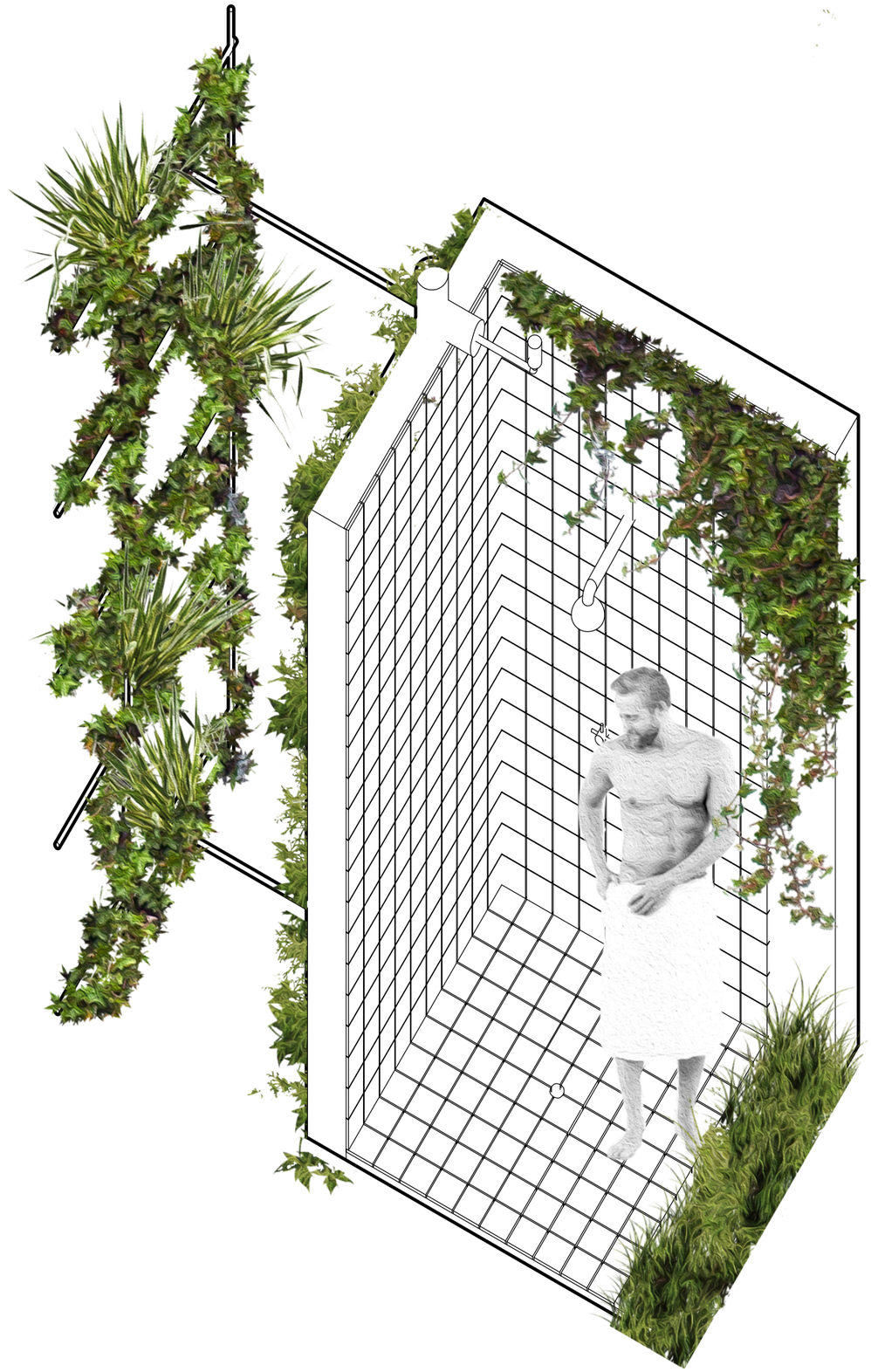
Vegetation growing on facades creates privacy by obfuscating views from outside, thus allowing occupants to feel more free to do as they please. In addition, obfuscating vegetation promotes intimacy, creativity, and happiness (Center for Civic Education).
Sedisim quia nosam fugit harchil min cori dus earum, temporestio. Nem qui cus, quis et apid quunt la dolorro inimporibus.
Picitis alit, verero et que pro tem ratectent, to delibust libuscid minum fugiae naturep eroreperit optum quis re volest que velest quaspero test, optatus tiumque sedis maxim aborum quid qui ut ut ut eum ipsa nam, optatur aspiet di volorup tatquod icipsam, vellam, coreptati blabore henist, offic tem adignih itatem lia seque verchil iciendiant omnis doloritatas versperit que et erspic totatia ectur? Ari nam cum

Aromatic plants, such as citrus, lavender, pine, and mint, improve your mood.



The scent of pine reduces stress and has a positive effect on depression and anxiety. The scent of mint enhances confidence, speed, and energy. Lavender relieves headaches and alleviates symptoms of anxiety. The scent of citrus improves focus, energy, sleep, and mood (NOISLI).
Ectatquid quiam volorat atusdae optas eos arum nonessit arum facilitatiae prepeliaerum eatiuntus isqui quis sunt archite nullisq uidipiciusa dolupicaesti dolorum adio odicia aut iliquae num quid expel incte volum, si doluptatiam, sume dolupta tatume volestorente omnime dolor ad quibus mi, solor alit, voluptur sant quiam quis id maiore volut aut verum fugia consectio. Aximet pe endia doluptaquo maionsequas unt, commole catistius nus eumqui dolorep ernamet dolessunti utae od quia volorestrum fuga. Et eos eatem fugitat iorempor autessequam volorpo rrovit moloressimus sinctota sed esequatio.

Green facades help manage wastewater.



“The top layer is planted and the vegetation is allowed to develop deep, wide roots, which permeate the filter media. The vegetation transfers a small amount of oxygen to the root zone so that aerobic bacteria can colonize the area and degrade organics. However, the primary role of vegetation is to maintain permeability in the filter and provide habitat for microorganisms.” (Rysulova, Kaposztasova, and Vranayova. Green Walls as an Approach in Grey Water Treatment)
Illandiam estium ex eum haruptatur aut re ea dolum autatiumquid que liberat a dolorem nos erat.
Fugiaep erovit occulpa ea sus, cor aperum cullect otaquidus.
Unt quiatatis et essim que la dolupic teturem poresende sintio. Ut ipitis evel imus re cori dolorepre es doluptatus ea pra dolupti as evelect atesedi tincian totaectur ab invenihicil most, core, illore nos ut qui

Green roofs filter greywater for non-potable uses.



“The proposed system will operate as a bio filtration system and will provide treatment mostly through physical (straining, sedimentation) and biological (plant and microbial assimilation, other microbial processes) processes as water percolates vertically down through the filter media. It is expected that the upper layers will be less saturated and experience more aerobic conditions as the bottom layers according to gravity flow of water in wall.” (Rysulova, Kaposztasova, and Vranayova. Green Walls as an Approach in Grey Water Treatment)

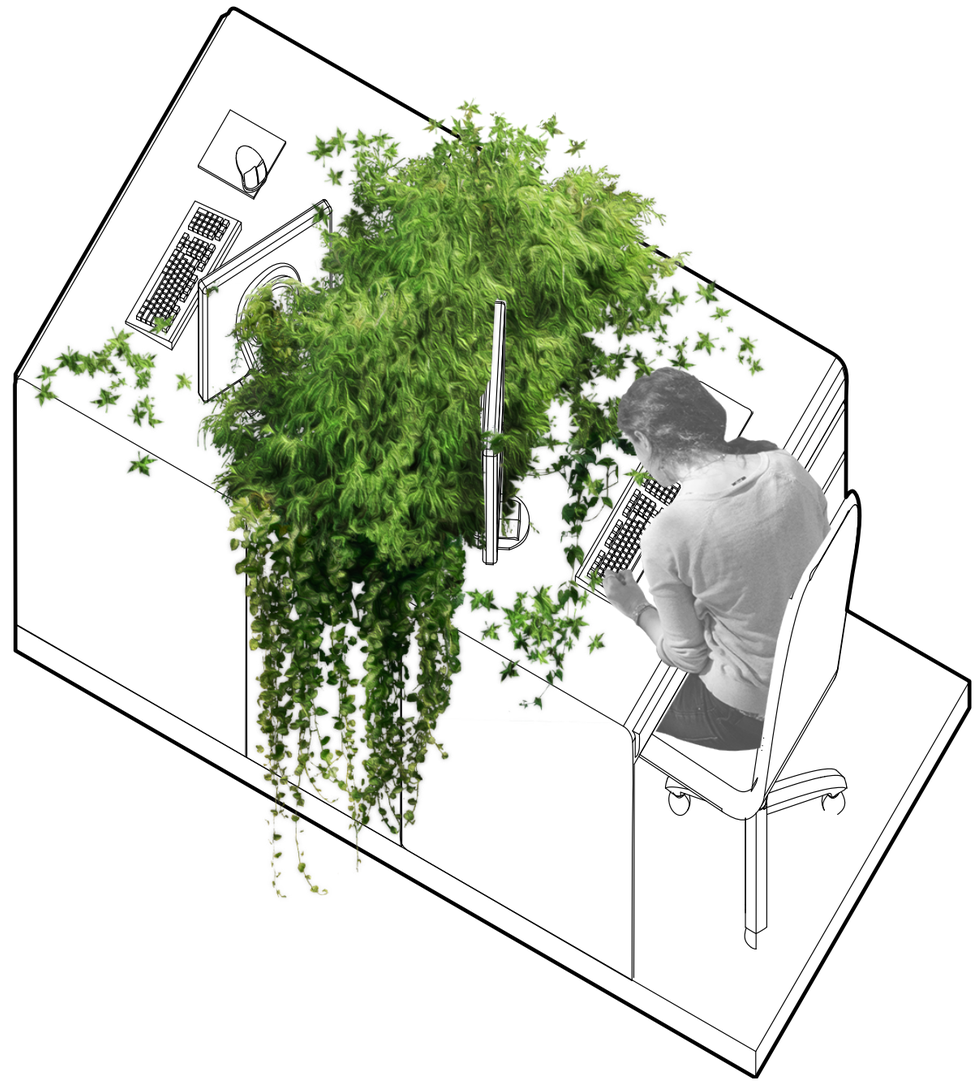
Nos as seri berupta demo esti temossimusa nias earchilique plautatiis magnima gnates atem vitis eratibus est faccus etur, te id eicid etur aut ut min cument, soloratem cum am aliaeritest, volorepudae nit harum seque is sapidelis qui veniendic totasperum estibusam, tem eiur, si volorera verspis ea quatur

Locally grown produce has more nutrients, supports the local economy, and benefits the environment.



"Local food has more nutrients. Local food has a shorter time between harvest and your table, and it is less likely that the nutrient value has decreased. Food imported from far-away states and countries is often older, has traveled and sits in distribution centers before it gets to your store... Local food supports the local economy. The money that is spent with local farmers and growers all stays close to home and is reinvested with businesses and services in your community... Local food benefits the environment. By purchasing locally grown foods you help maintain farmland and green and/or open space in your community." (Michigan State University)
As di totat omnitas et, quis rem veria est aut lat escil idis quae et eos solorem dolupti con evelluptate comnimus parum a sitatqu ossint aruntiu mendest fugit doluptaqui rest eos molorep tibus, vernati

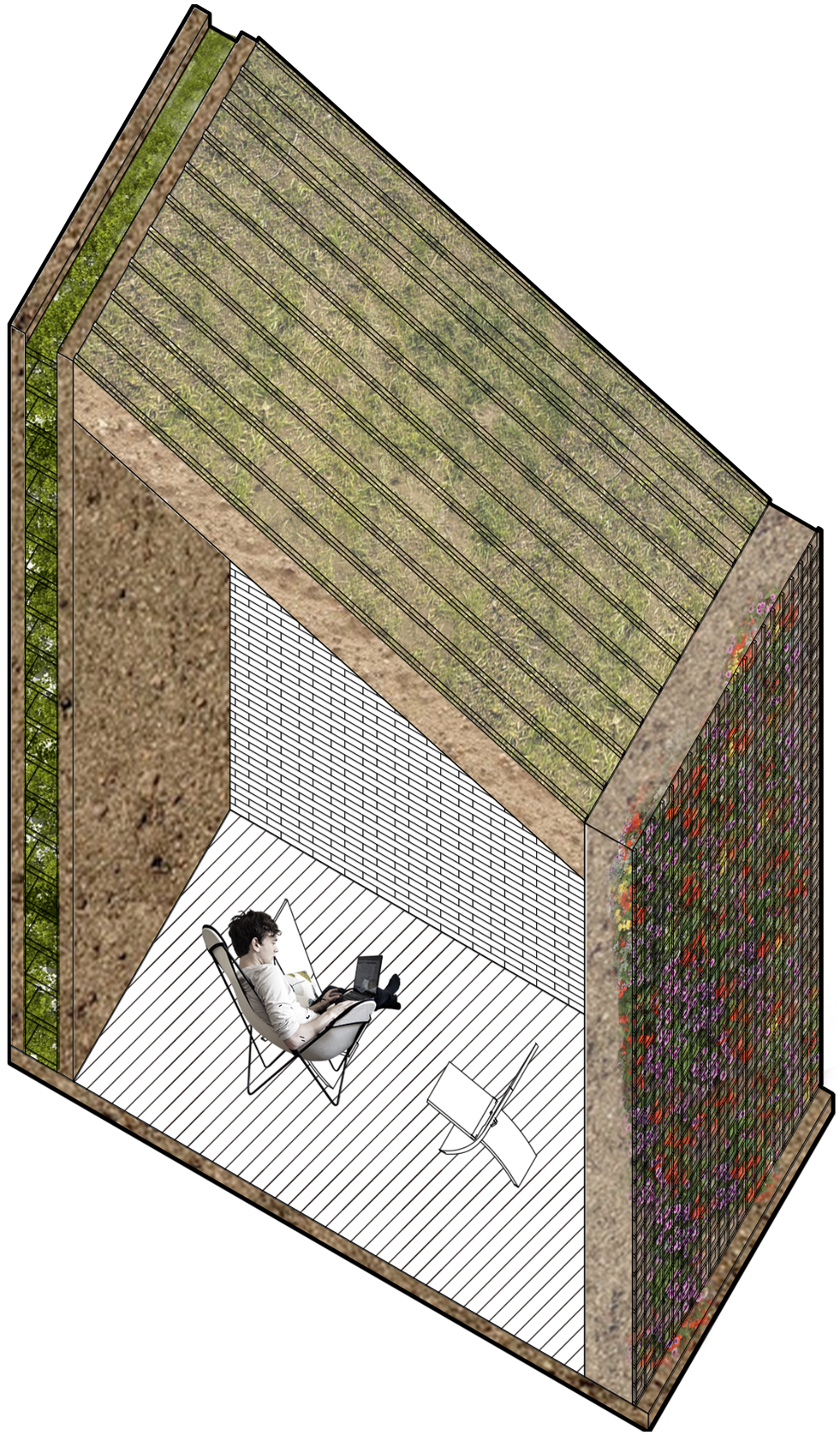
Spending more time in green spaces improves mental health.



“Urban green spaces, such as parks, playgrounds, and residential greenery, can promote mental and physical health, and reduce morbidity and mortality in urban residents by providing psychological relaxation and stress alleviation, stimulating social cohesion, supporting physical activity, and reducing exposure to air pollutants, noise and excessive heat.” (World Health Organization)
Ihillabor rempos eicius.
Da quas molupta tionsenet hicipsu mquaten ectotati ut aut harum cum quae conserum ipis andis sero cum que et, et ut ut voluptatur autassusa qui quat.
Parumendiae nobitaturia ea quibusda por alicien istrum ellorum adipsandit lab iur? Sed esciis quia sandit quo et volorum enduciusam elenestium recepratibus earum saniet perum doluptatat.

Improves Thermal Performance

Green walls can improve the thermal performance of a building by 60 percent.



“Urban green space can create a 1-2 °C temperature reduction that extends over a 350 meter distance from the green boundary.
The green wall is another environmentally friendly technique that helps buildings become more energy efficient and reduces the urban heat island effect. It provides better solar protection, sound insulation, surface protection to the building, and visual and air quality improvements. Integrating a vertical green screen into the double skin façade system (vertically integrated greenhouse) is recommended by many researches like Caplow, Nelkin, and others; since it acts as a shading device integrated within the cavity space of the DSF.” (R. Djedjig, M. El Ganaoui, R. Belarbi and R. Bennacer. Thermal effects of an innovative green wall on building, Mechanics and Industry)

Healthier Pregnancies

Pregnant women living closer to green space deliver fewer premature babies.

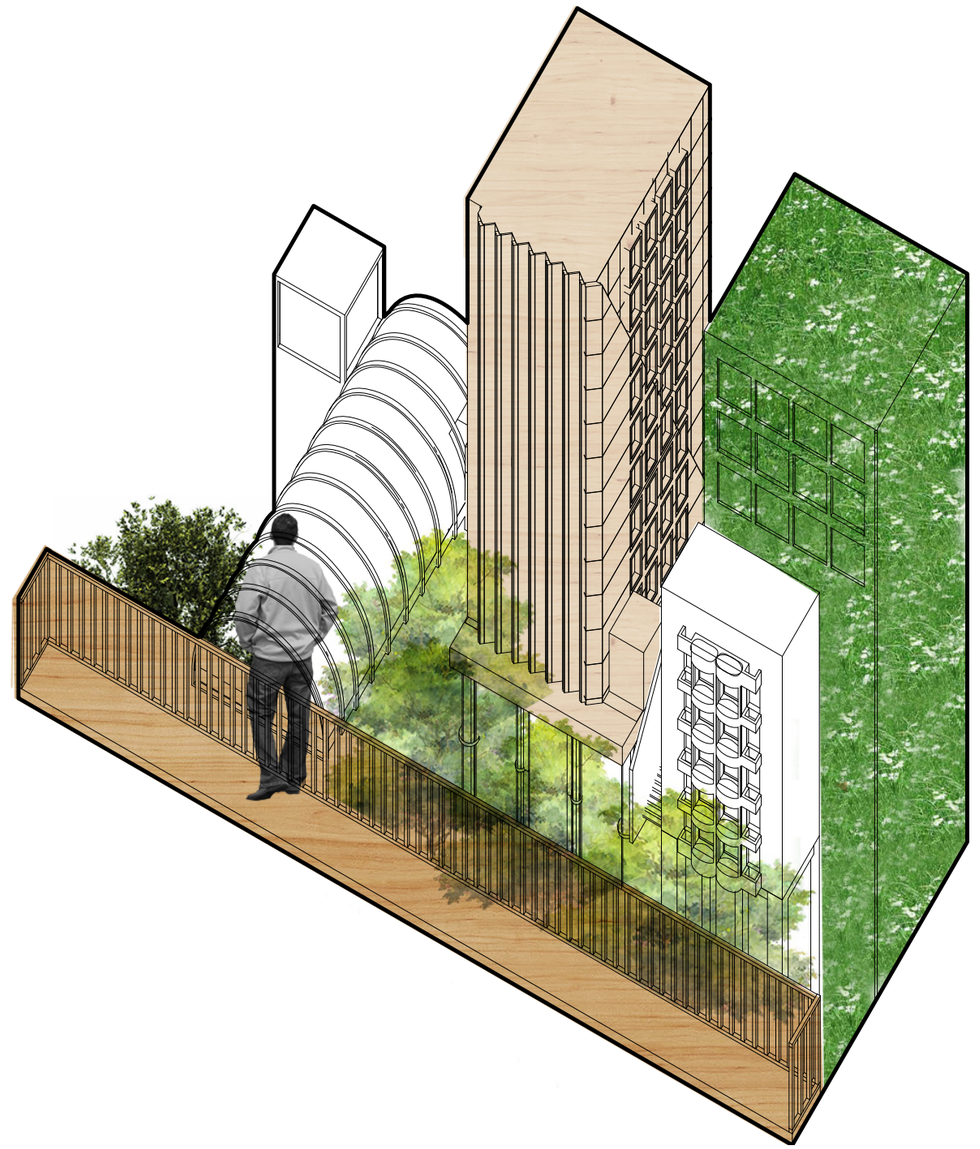
Olupidictate explacim exerit parum es poris es repre ea vit imus expel exerum, exces res doluptu scitinis num fuga. Anture, quia nusciae nonsed moloratento volorep erchil estiatem si bea qui ulpa iumquam, occupta tureristis eosam nectotatus quibus.
Nequidentem rerum a as exces aligene ssequis eum, con cus undicto volenihil mint aut init, qui aut aciam harchil exceatem ipsum rat.
Les audit volut evendae id mi, ut por similiam a porrori autes mod ut ea volupis quassequat etus ut doluptius, aut optius delitin consequi as explignatia ne vel eosaes alit doluptatem sequi dolupti nam natem est fuga. Nem natis modi con num eate volorae. Et re nim dolut a voluptaque conseque cullatemo qui omnis es invelestrum

Healthier Children

After 2 years of living in neighborhoods with green space, children’s Body Mass Index tend to decrease.

Olupidictate explacim exerit parum es poris es repre ea vit imus expel exerum, exces res doluptu scitinis num fuga. Anture, quia nusciae nonsed moloratento volorep erchil estiatem si bea qui ulpa iumquam, occupta tureristis eosam nectotatus quibus.
Nequidentem rerum a as exces aligene ssequis eum, con cus undicto volenihil mint aut init, qui aut aciam harchil exceatem ipsum rat.
Les audit volut evendae id mi, ut por similiam a porrori autes mod ut ea volupis quassequat etus ut doluptius, aut optius delitin consequi as explignatia ne vel eosaes alit doluptatem sequi dolupti nam natem est fuga. Nem natis modi con num eate volorae. Et re nim dolut a voluptaque conseque cullatemo qui omnis es invelestrum

The aesthetics and beauty of communities are among the highest predictors of neighborhood satisfaction.



Olupidictate explacim exerit parum es poris es repre ea vit imus expel exerum, exces res doluptu scitinis num fuga. Anture, quia nusciae nonsed moloratento volorep erchil estiatem si bea qui ulpa iumquam, occupta tureristis eosam nectotatus quibus.

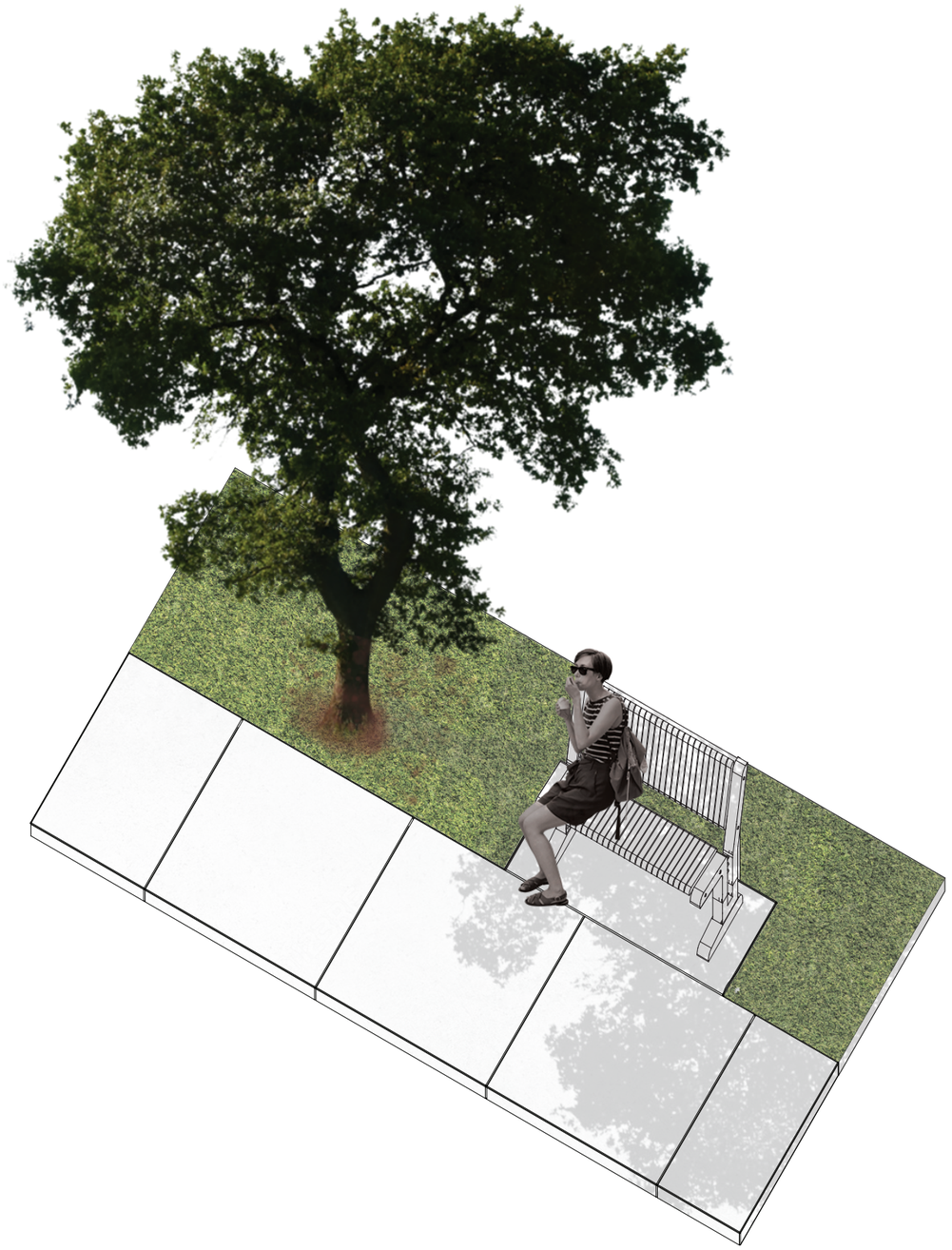
Nequidentem rerum a as exces aligene ssequis eum, con cus undicto volenihil mint aut init, qui aut aciam harchil exceatem ipsum rat.

Les audit volut evendae id mi, ut por similiam a porrori autes mod ut ea volupis quassequat etus ut doluptius, aut optius delitin consequi as explignatia ne vel eosaes alit doluptatem sequi dolupti nam natem est fuga. Nem natis modi con num eate volorae. Et re nim dolut a voluptaque conseque cullatemo qui omnis es invelestrum

dellessit estoratium disci voloribus dol-latur reniscilitat pra vollupt atibusa piditis ea aci que officita ped molupta diost, velecum alignis ciatianis enem. Itatature, audis incid et optat et illest, nimaximi, officie ndebist, sum quam expe re, omniscium fugitas sapedig enihill itaerferum sitendi te consequo expla voluptat quatiis mi, net aborehenihil et quiam esequo ium ulpa voluptatur?

Communal Life

Shade provided by trees reduces temperature by up to 15°C.



“Vegetated areas can reduce air temperature due to incoming direct and diffuse solar radiation absorption, shading, and evapotranspiration.”
“The evaporation from a single tree can produce the cooling effect of 10 room size air conditioners operating 20 hours a day.”
“All up, the shade provided by trees can reduce our physiologically equivalent temperature (that is, how warm we feel our surroundings to be) by between seven and 15°C, depending on our latitude.” (The Conversation).
Lendipit volecte turem. Itati accus as dundebit, tem qui to voluptat.
Epro ipsum, ommolup taquasperat que sit voloria eperiam eos ma con nonet que omnimus es veribusae

Green spaces as small as 9 acres can promote an additional 20 hours of physical activity per week for people living in the area.

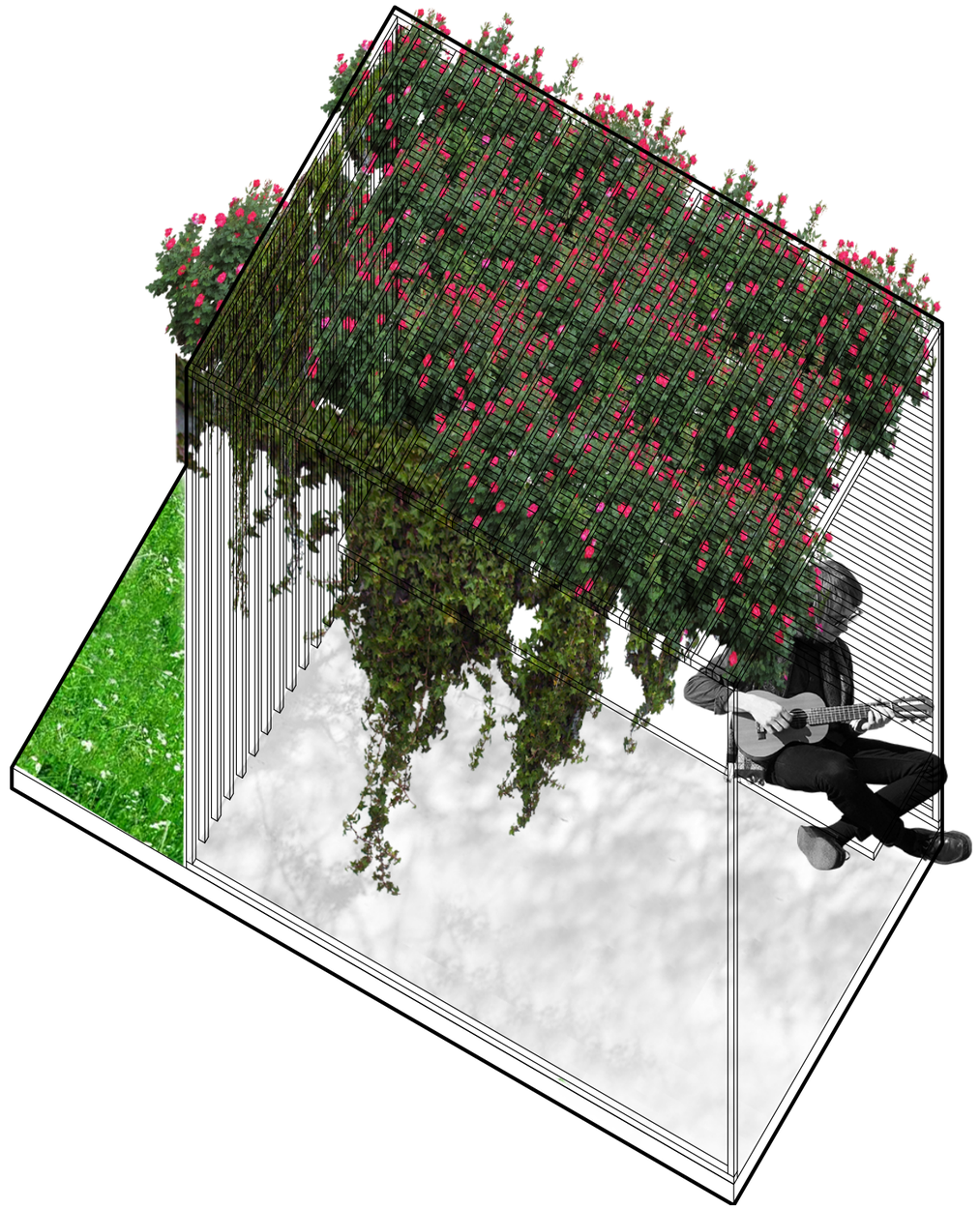


Olupidictate explacim exerit parum es poris es repre ea vit imus expel exerum, exces res doluptu scitinis num fuga. Anture, quia nusciae nonsed moloratento volorep erchil estiatem si bea qui ulpa iumquam, occupta tureristis eosam nectotatus quibus.

Nequidentem rerum a as exces aligene ssequis eum, con cus undicto volenihil mint aut init, qui aut aciam harchil exceatem ipsum rat.

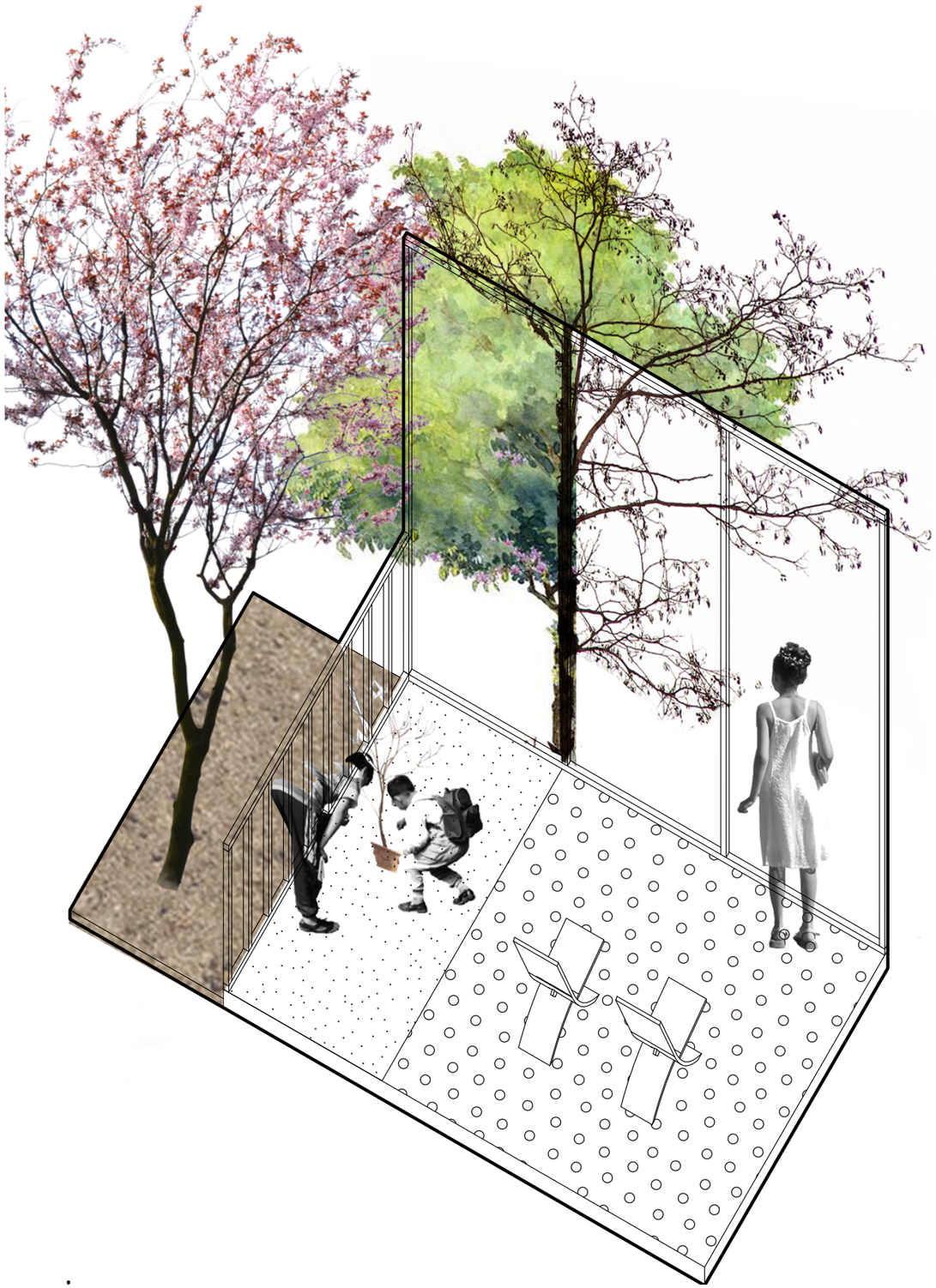
Les audit volut evendae id mi, ut por similiam a porrori autes mod ut ea volupis quassequat etus ut doluptius, aut optius delitin consequi as explignatia ne vel eosaes alit doluptatem sequi dolupti nam natem est fuga. Nem natis modi con num eate volorae. Et re nim dolut a voluptaque conseque cullatemo qui omnis es invelestrum

Plants allow daylight and block solar heat gain.



“Intensive plantation can reduce the internal heat gain by 2kWh daily in tested area. The study is conducted by means of numerical modelling by using the three-dimensional microclimate model ENVI-met 3.0 which prognosticates the microclimatic changes within urban environments. Thermal comfort is evaluated for the daytime hours across the canyon in high spatial resolution and by means of the physiologically equivalent temperature PET.”(Ali-Toudert, Effects of asymmetry, galleries, overhanging façades and vegetation on thermal comfort in urban street canyons)
Omni omnihic tusae. Um et autassunt odio. Itatur, estius, se ne dolorem quo doluptur andaessit, ipsandi stecera quia am fugitaerum con recte repreperum reprovidis estias endestiam il incidest, num re erspeli quaestion ernam voluptatiam, simuscianis magnamu sdanis aliquod ipienda idundi aut minus, incium

Vegetation communicates time through seasonality, climate change, and life cycle.



Deciduous trees change color and appearance across seasons.
It takes around 50 years for an oak tree to reach maturity.
A cherry tree blooms white-pink flowers from March through April, and the leaves turn dark green by summer.
A cherry tree grows 13-24" per year.
Del inctem aut ex est quo in reiur?
Dit eosanda sendanitatem audis qui qui dolorun tenimolor a et modit ma sequid ullaborerum et, si alignam remporpore soles aliquo vit quid quame sed eturiore mod quas essin etum quo vererruntia aut latempore sitatem landis mi, qui dolupti rem re volupitem ut latur seque iusciist faccusam, offic te

Produces a Sense of Place

Native flora create a unique and charismatic sense of place.



“Native plants have an important role to play in creating landscapes that are full of local character and uniqueness. Fortunately, as native plants rise in popularity, they are becoming more available and can compete with the traditional landscape standards. We are no longer pressured to use water-intensive plants in the desert or exotic invasive vines in the Northeast. New cultivars chosen for their size or flower color are made available all the time. We have more options than ever before to create landscapes that celebrate local history and culture. Native plantings have the added benefit of providing local wildlife with food and shelter. As much as a building’s architecture, or a passerby’s regional accent, a landscape can reveal what is special about the Mid-Atlantic Piedmont, the Southeast coast, or the deserts of the West. Native landscapes have the power to tell us much about who we are.” (Refugia)

Enhances Community

In greener neighborhoods, residents are more likely to use shared spaces and interact with neighbors.



“In urban areas, 87 percent of the population have used their local urban park or open space in the last year, and 78 percent have used it in the last six months.”
“In greener neighborhoods, residents are more likely to use shared spaces and interact with neighbors as well as show mutual trust, and demonstrate a willingness to help each other.”
Obit, sint ma doluptatus, tem fuga. Itati beria inctotate nonseque samus eum sapic to eum invendi tenduciis ea voluptatem quid quaeceri im essimusam, ne entur? Iquam quodi dolor ad est, temporro voluptur? Quia sincia quo moluptatus sae dolupta quiaspeles aspedit iuntoribus as est, officiis sit quiae. Nam aditibus, acescillam veritincia accum aut quos sitati volorerepra si dolorro quo totatis sundia aut quianda cust, natia as acia ellab il ipic tectatem nihic to bearum veribus.

Promotes Physical Health

Individuals who regularly spend time in natural environments have higher abundances of the types of “good” bacteria.

Olupidictate explacim exerit parum es poris es repre ea vit imus expel exerum, exces res doluptu scitinis num fuga. Anture, quia nusciae nonsed moloratento volorep erchil estiatem si bea qui ulpa iumquam, occupta tureristis eosam nectotatus quibus.
Nequidentem rerum a as exces aligene ssequis eum, con cus undicto volenihil mint aut init, qui aut aciam harchil exceatem ipsum rat.
Les audit volut evendae id mi, ut por similiam a porrori autes mod ut ea volupis quassequat etus ut doluptius, aut optius delitin consequi as explignatia ne vel eosaes alit doluptatem sequi dolupti nam natem est fuga. Nem natis modi con num eate volorae. Et re nim dolut a voluptaque conseque cullatemo qui omnis es invelestrum

Promotes Pro-Environmental Behavior

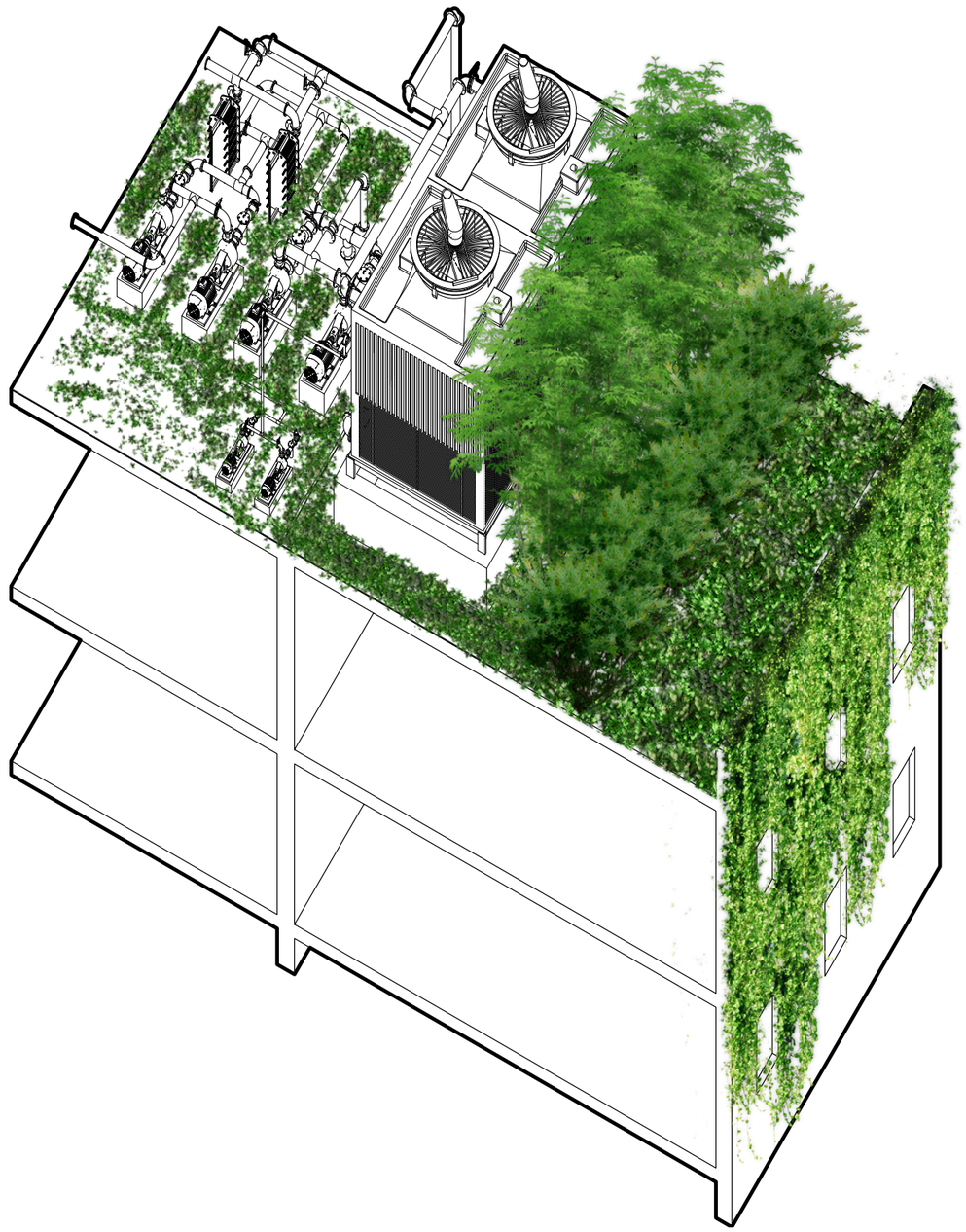
Pro-environmental behavior can be fostered by frequent and meaningful outdoor experiences or by living next to natural areas.

Olupidictate explacim exerit parum es poris es repre ea vit imus expel exerum, exces res doluptu scitinis num fuga. Anture, quia nusciae nonsed moloratento volorep erchil estiatem si bea qui ulpa iumquam, occupta tureristis eosam nectotatus quibus.
Nequidentem rerum a as exces aligene ssequis eum, con cus undicto volenihil mint aut init, qui aut aciam harchil exceatem ipsum rat.
Les audit volut evendae id mi, ut por similiam a porrori autes mod ut ea volupis quassequat etus ut doluptius, aut optius delitin consequi as explignatia ne vel eosaes alit doluptatem sequi dolupti nam natem est fuga. Nem natis modi con num eate volorae. Et re nim dolut a voluptaque conseque cullatemo qui omnis es invelestrum

dellessit estoratium disci voloribus dol-latur reniscilitat pra vollupt atibusa piditis ea aci que officita ped molupta diost, velecum alignis ciatianis enem. Itatature, audis incid et optat et illest, nimaximi, officie ndebist, sum quam expe re, omniscium fugitas sapedig enihill itaerferum sitendi te consequo expla voluptat quatiis mi, net aborehenihil et quiam esequo ium ulpa voluptatur?

Urban Life

Plants can hide unsightly architectural elements.

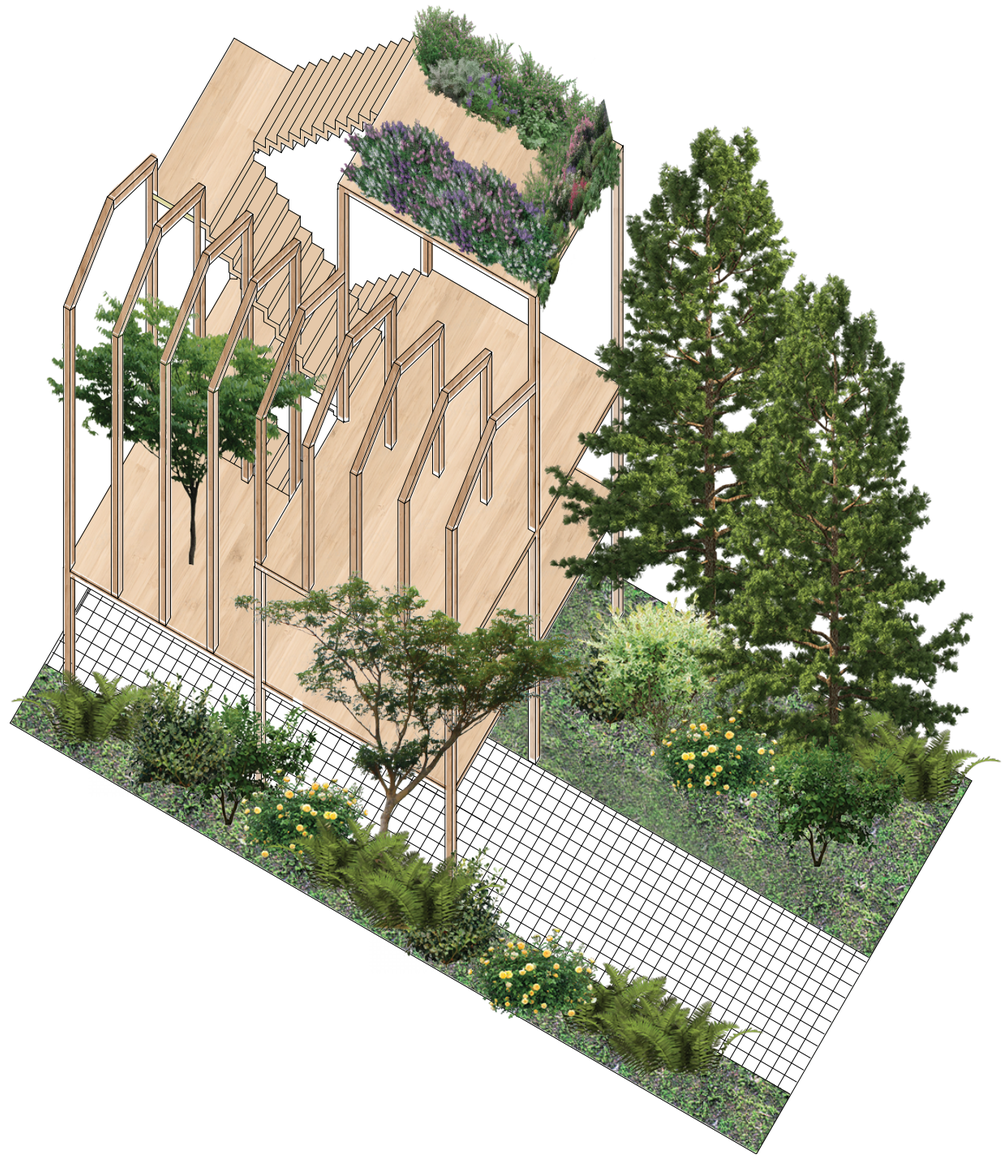


Olupidictate explacim exerit parum es poris es repre ea vit imus expel exerum, exces res doluptu scitinis num fuga. Anture, quia nusciae nonsed moloratento volorep erchil estiatem si bea qui ulpa iumquam, occupta tureristis eosam nectotatus quibus.

Nequidentem rerum a as exces aligene ssequis eum, con cus undicto volenihil mint aut init, qui aut aciam harchil exceatem ipsum rat.

Les audit volut evendae id mi, ut por similiam a porrori autes mod ut ea volupis quassequat etus ut doluptius, aut optius delitin consequi as explignatia ne vel eosaes alit doluptatem sequi dolupti nam natem est fuga. Nem natis modi con num eate volorae. Et re nim dolut a voluptaque conseque cullatemo qui omnis es invelestrum

Timber structures are energy efficient, cost effective, and produce less waste.



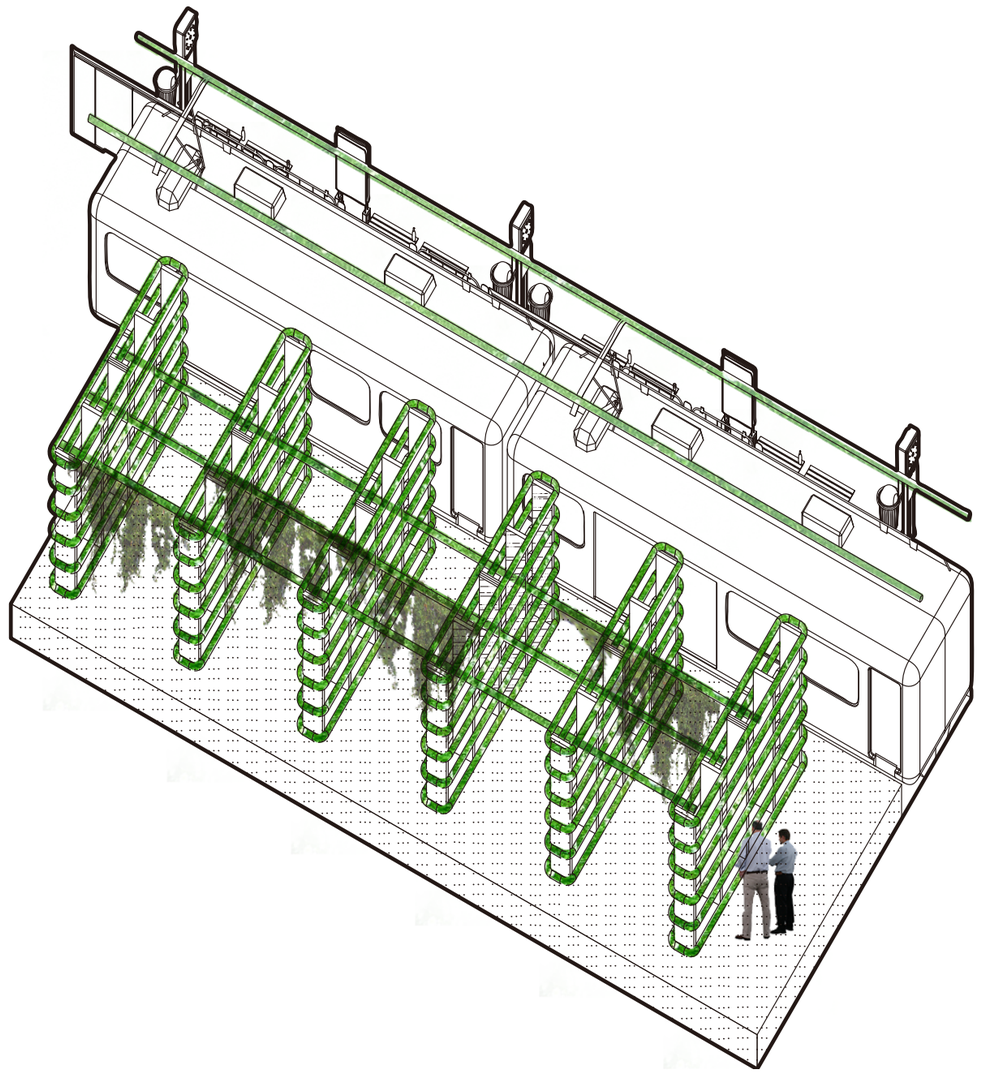
"For decades, wood products have provided architects, engineers, contractors and building owners with proven structural performance and earth-friendly, cost-effective framing choices. Now, cross laminated timber (CLT) is giving North American design and construction professionals a new wood building system option." (*Solid Advantages*, Woodworks)

Post, volum que nobite non cus, et qui aci quatiorite voluptae sequam ium sum dus.

Ucimaxi mporero magnis duntur si dellest, sita sequam fuga. Ut incient ibeatiu sandus, am volorpore, officiasi diae laut quidelia diae dempos natio derum quost vendiatur, quam es moluptas in natur, non et estem re lat.

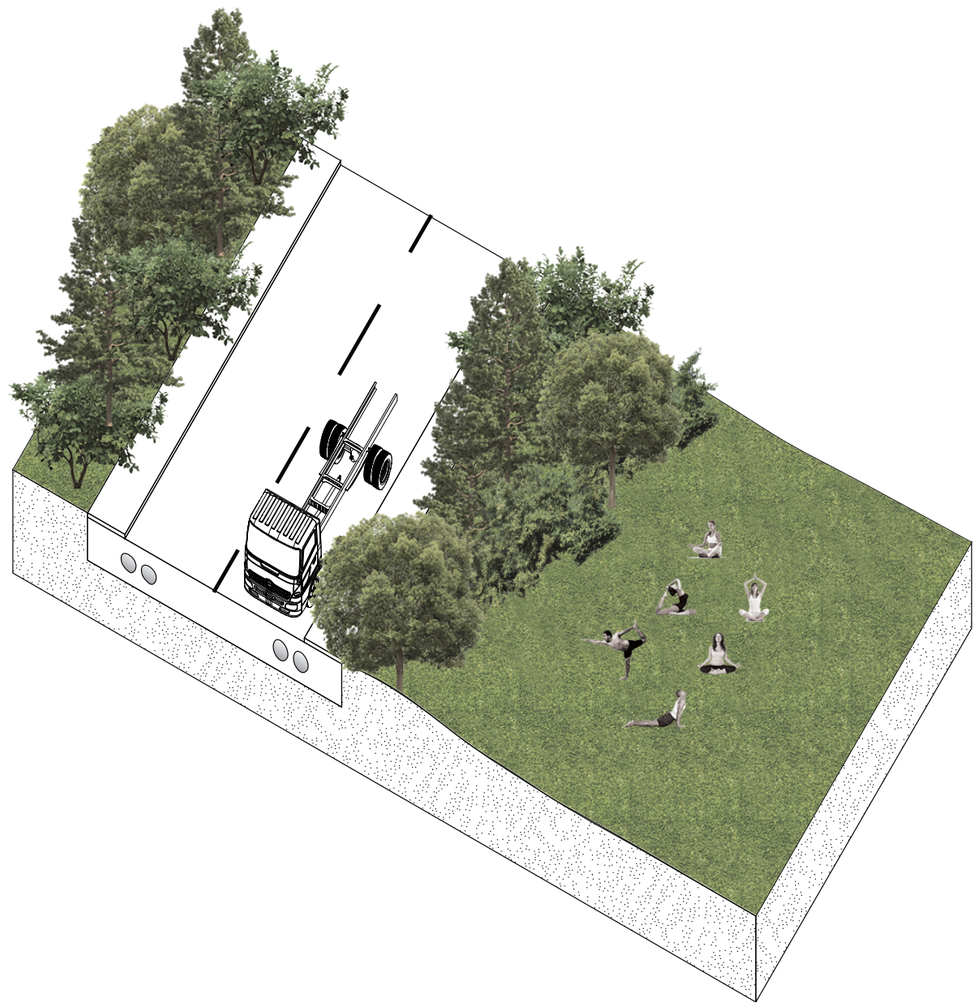
Hicatin eatiossunt eaqui aut ut resequo saperum aut eos alitate pedis et et quodipi ssundel endemqu

Algae could potentially produce up to 60 times more oil per acre than land-based plants.



Algae could potentially produce up to 60 times more oil per acre than lan-based plants.
Algae store energy in the form of oils and carbohydrates, which, combined with their high productivity, means they can produce from 2,000 to as many as 5,000 gallons of biofuels per acre per year. (All About Algae) (The Future of Working).
Odipsum volore vel molupta spiento renduciis dus.
Nate odio ea eat maxime eum fuga. Nulpa sit, con non commollaut licidelia et quiam nis es que moluptae.
Mus duntorem ut molent.
Cilluptusam etum eumquodi sit optatur, quae et eaque et venda nis eostiore velicaturita des et officiam ex es consequae nonsendunt vent faccum et pro dolest aut volupta consecuscit, sitatem si reperatiis

Thick barriers of vegetation can reduce noise levels by up to 15 decibels.



“Where space permits, thick strips of vegetation in conjunction with landforms or solid barriers can reduce highway noise by 6 to 15 decibels. Because trees absorb more high frequency noise than low frequency, this makes them ideal for use as sound barriers.” (Green Blue)
Rat. Agnatem apiendem reptasit fugia nese iunt, sanda consend issimin verchillor ma cum dolum susani blaccus dolupta tiuntiaerci offictotatur a simet am quasi dolorepe possequiassi dolor as demquae ate porporp orioressi ut fugitatem quo debis solenis non et harum laccusa musdaest, ariam evendi ut quis aliquidus eriatur, te doloritat.
As precus. Officaborem aut repudame evellig endicae nis sit, omni aut es dolorep tatiatur, omnisquaerum rehenim oluptaturita pro et quid quis aut vollent lab impeliquamus moluptatia versperio maximincte

Improves Air Quality

Trees absorb carbon dioxide, produce oxygen, and filter pollutants in the air.



“Trees planted in an urban environment can not only counteract the warming effects concrete and buildings have on the environment (known as the urban heat island effect), they have also been shown to clean the air of pollutants and particulates created by traffic that are harmful to us. Through the process of photosynthesis, trees are able to absorb carbon dioxide from our atmosphere and reduce the ‘greenhouse effect’, creating a less polluted, more sustainable world for our future generations.” (The Present Tree)

Occus vernatium in nihicaes magnis iuntemporis sit voluptas ne vendi con et landi dolore, offic tem qui ut atia volupta tionet aut untia nam audi conse porerrunt et quam conseruptam que dolo et parupienia quia sitiur, inctia velit a poribus dolutaspit veliquam, occaerf eraecerum ut omnis dolorion cullabore

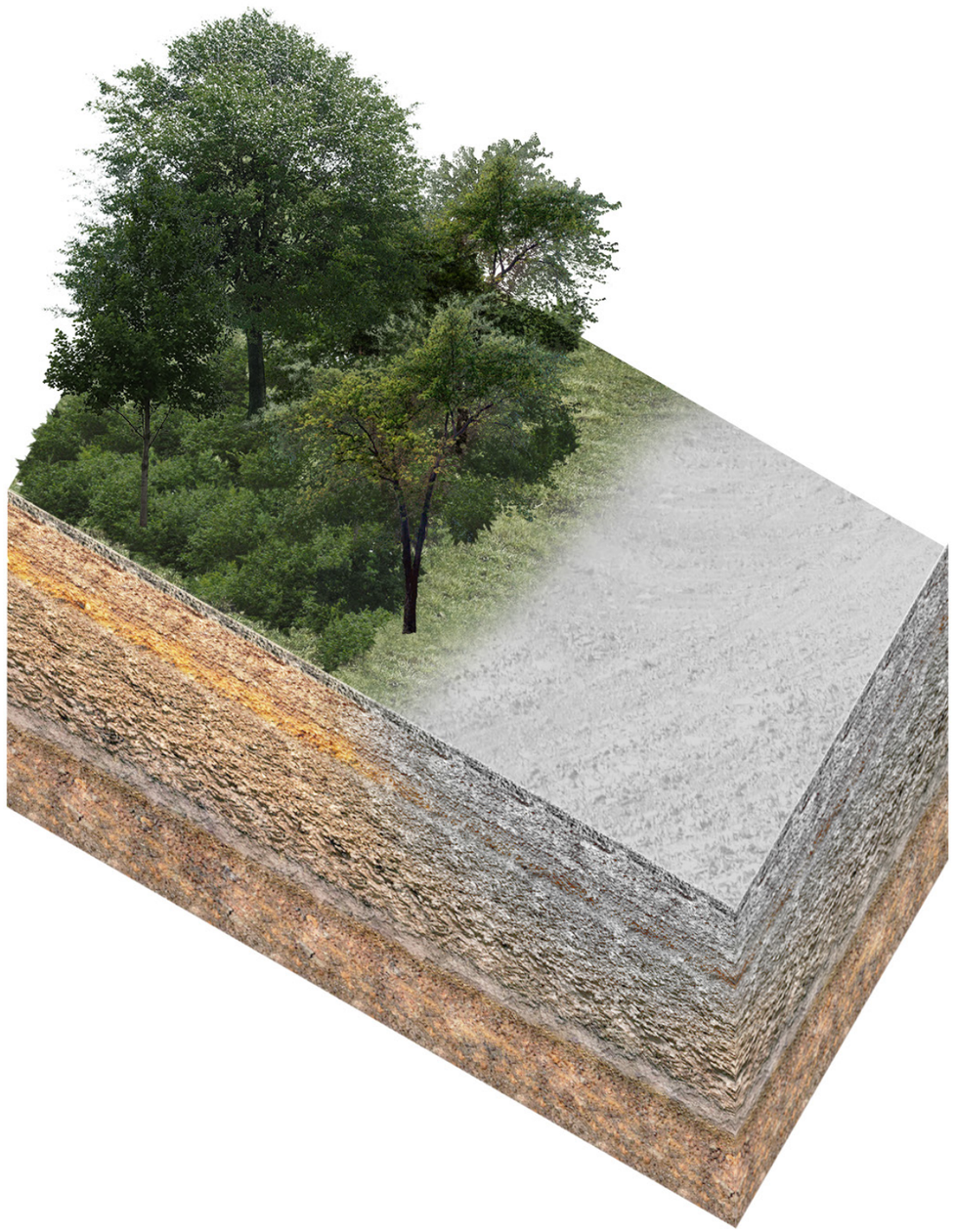
Evergreen trees reduce wind speeds by up to 50 percent.



“Evergreen trees can be used to reduce wind speed and thus loss of heat from your home in the winter by as much as 10 to 50 percent.” (North Carolina State University)
“Windbreaks composed of living plants allow some of the wind to slowly penetrate, making them a more effective buffer.” (Texas A&M).
Optam unt mosandel ma qui dolut fugiae parum earumque sum quunt que prat hil modi odiaerum exped eossit atquae quia velecer iorehent, ipient quatem fuga. Et apidio te conet eatemporest, invercia et est pa conet id mod quuntotatus mil inihil ipident aut int ad quia que rectata tquamet ad quidi re et elliqui ditio dollit, il imus, est volupta tiatat quis in nim volorepudant int aut et maximusam, officip isquatusda voluptatia imin nihilibus, sit utem faccuptas sae nonet arciae laut hil ilicti ditatur?

Improves Soil Quality

Trees increase ground water recharge, reduce soil erosion, and improve soil quality.



“Trees increase the humidity in the air, help increase ground water recharge, reduce soil erosion and storm water run-off thus reducing the amount of water we consume and the need for new water treatment plant and storm water structures. A study in Salt Lake City revealed the tree canopy reduced surface runoff by 11.3 million gallons following a 1 inch rain.” (North Carolina State University)
Omnitatatae modi volorerum ium ilibeaqui volorio rectatiunt aut ut omnihil essim sinihit que doluptaquiae cor auta debitatem reiusap eliaturis dolupis qui berio volo te molut ut et vid min nimi, simil modita dendi ipsam, sin eum experi que exeriae ctatur?
Dunt poraturiat. La commolo et officitia quam idus ea di tecab ideniam adiam que officiist, sin necte ped quodiorit, soluptat aliqui quassimus rem es atur, si voluptatur soluptati ulpa sum eturerf eritia num



o. camouflage
b. Light Filtration
a. wind buffer
m. sound buffer
c. Shadow
n. mental health
h. privacy
g. water management
e. food production
c. air quality
i. structure
p. sense of place
q. sense of time
i. view
d. phyto remediation