STEFANO BOERI ARCHITETTI

WORLD GREEN INFRASTRUCTURE

BERLIN
28.06.23

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Milan (Italy)

Shanghai (China)

Tirana (Albania)

Stefano Boeri Architetti

Stefano Boeri
Founding Partner

Francesca Cesa Bianchi
Partner / Director

Marco Giorgio
Partner / Director

Stefano Boeri Architetti China

Xu Yibo
Founder and Partner

Stefano Boeri Interiors

Giorgio Donà
Founder And Partner

Stefano Boeri Architetti
Directors

Pietro Chiodi
Director

Hana Narvaez
Director

Maria Chiara Pastore
Director- Research Department

Corrado Longa
Director - Urban Planning Department

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URBAN PANGEA

Source: UN SDGs

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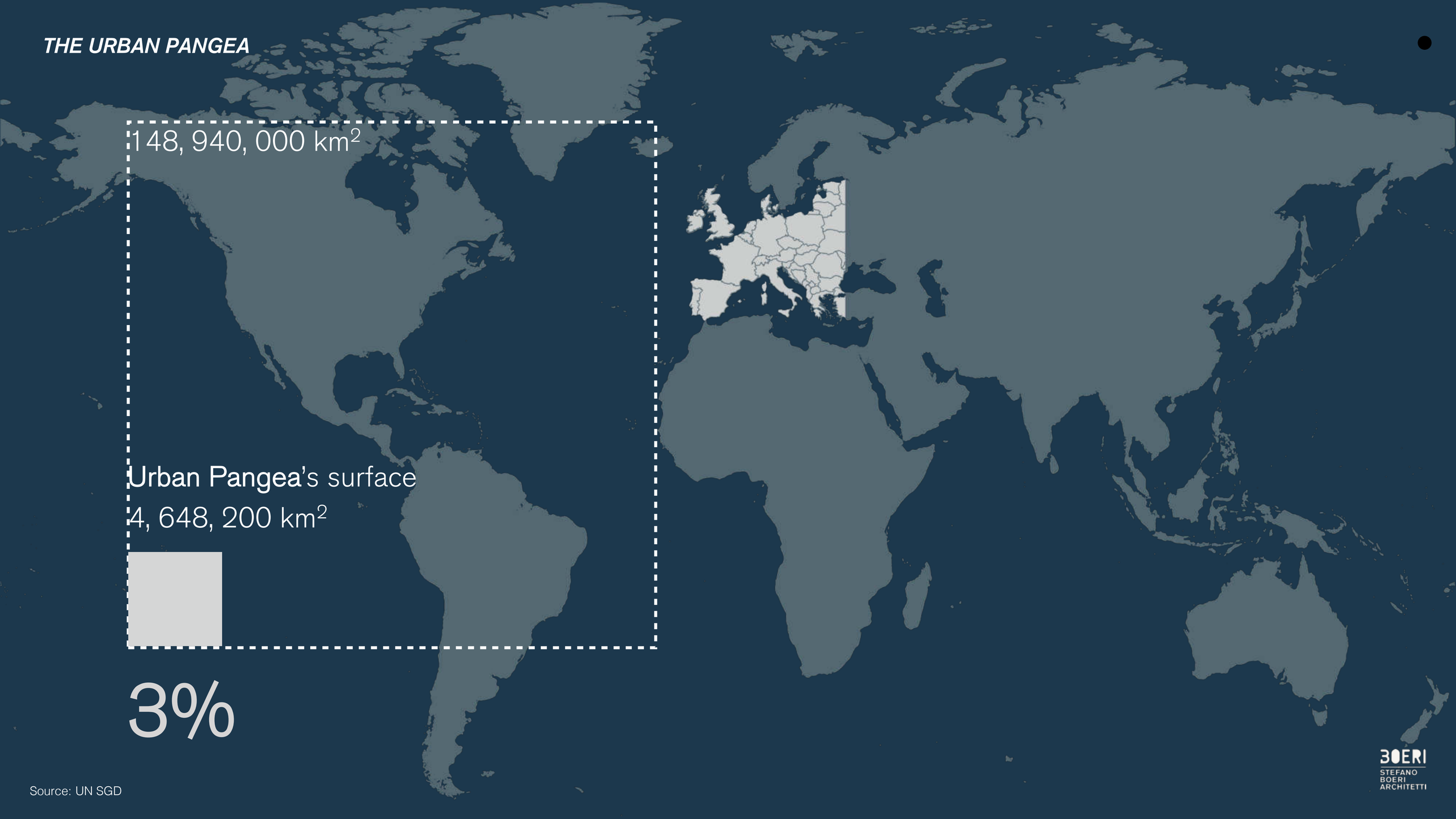
THE URBAN PANGEA



Source: UN SGD

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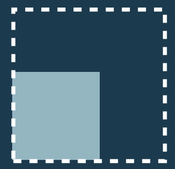
1950

Urban Pangea's
inhabitants
751,000,000

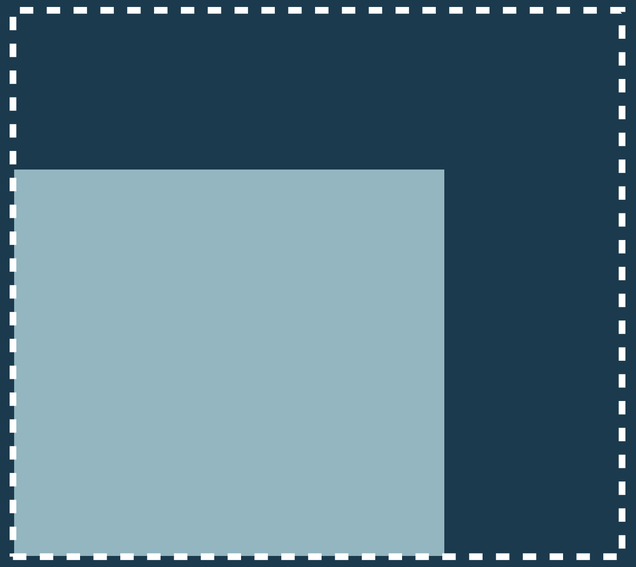


29%

of Earth's population

2018

Urban Pangea's
current inhabitants
4,200,000,000



55%

Of Earth's population

2050

Urban Pangea's
expected inhabitants
6,000,000,000

78%

Of Earth's population

Source: UN SGD

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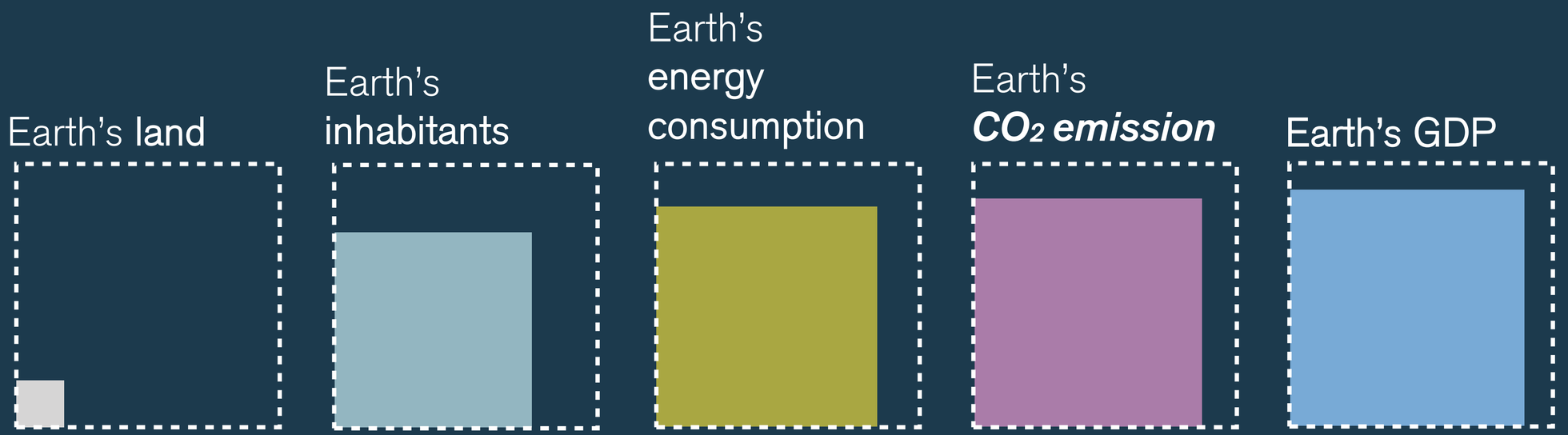


3%
Urban Pangea's surface

55%
Urban Pangea's inhabitants

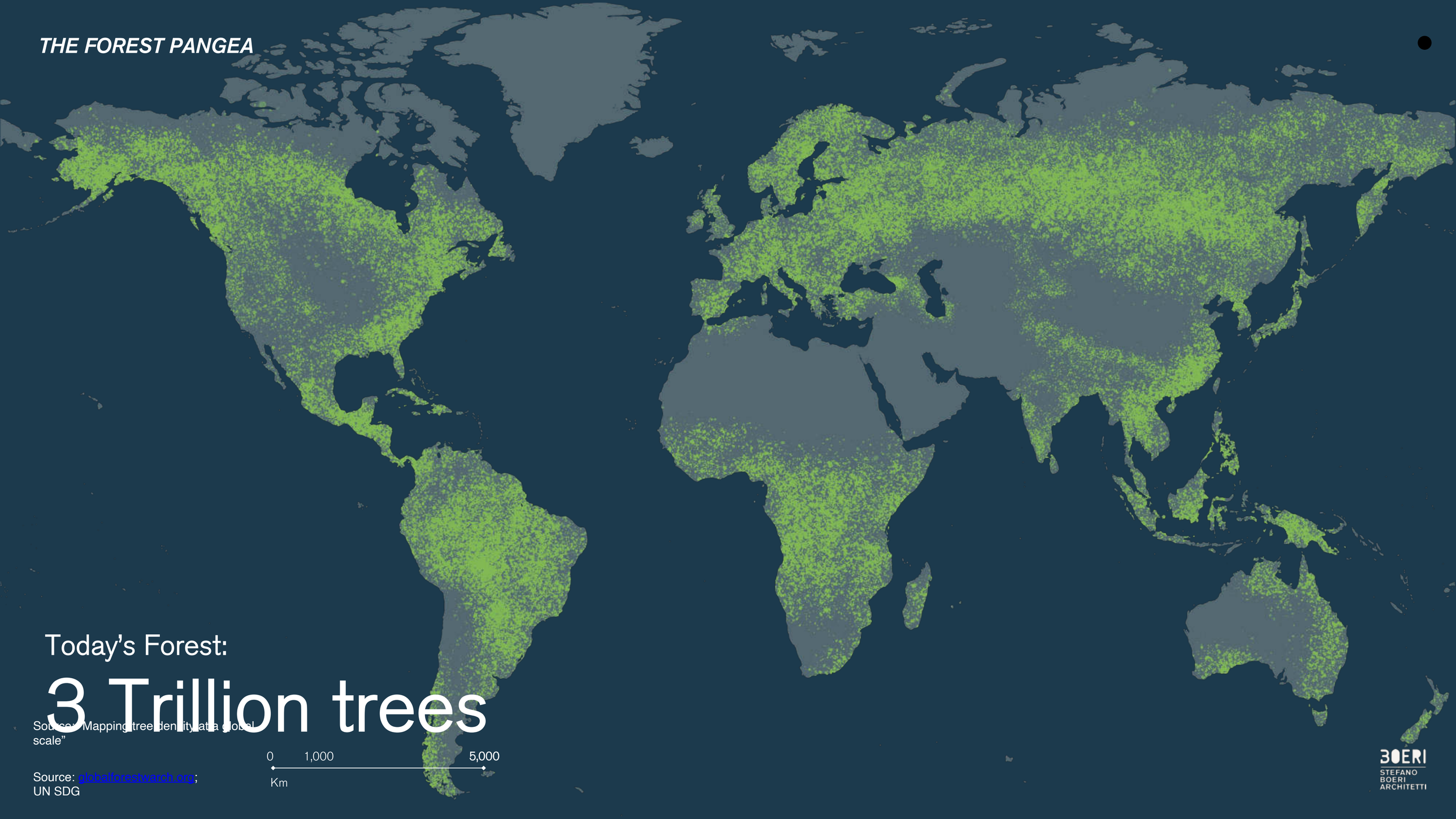
70%
Urban Pangea's energy consumption

75%
Urban Pangea's CO_2 emission

80%
Urban Pangea's GDP

Source: UN SGD

THE FOREST PANGEA



Today's Forest:

3 Trillion trees

Source: "Mapping tree density at a global scale"

Source: globalforestwarch.org;
UN SDG

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THE FOREST PANGEA

Today's Forest:

3 Trillion trees

0 1,000 5,000

Km

Source: UN SGD

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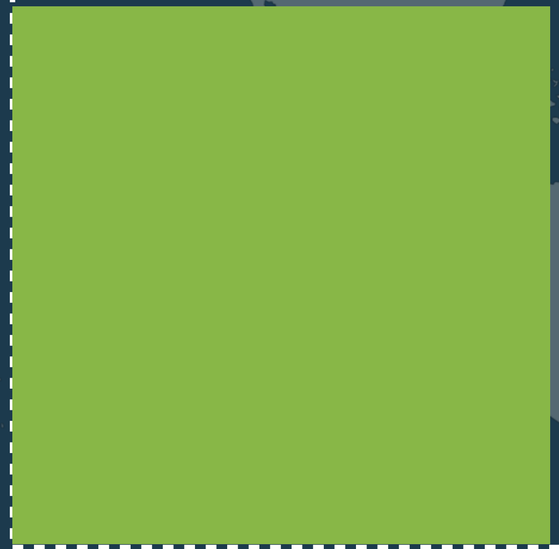
THE FOREST PANGEA

Earth's land

148, 940, 000 km^2

Forest Pangea's surface

45,724,580 km^2



30.7%

Source: UN SGD

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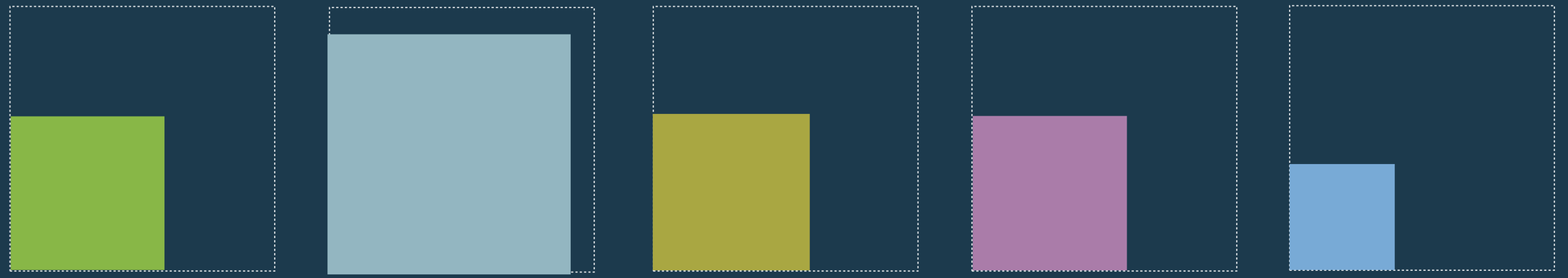
THE FOREST PANGEA



Earth's land

30.7%

Forest Pangea's surface

Earth's biodiversity

80%

Forest Pangea's biodiversity

Earth's renewable energy

40%

Forest Pangea's renewable energy

Earth's ***CO_2 emission***

30%

Forest Pangea's CO_2 absorption

Earth's global tourism market

20%

Forest Pangea's tourism market

Source: NASA;
FAO SOFO 2018

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THE URBAN PANGEA

source video background:
WelcomeAnthropocene

Cities are the first
cause of climate change

Accounting for 75% of global CO_2

Cities are the first
victims of climate change

70% of cities suffer its effects

Cities can be the first
resource for reversing climate change

Through urban forestry and sustainable policies

FROM MINERAL TO NATURAL CITY

NATURE-BASED SOLUTIONS

European Commission, 2015:

“Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions.”

Nature-based solutions must therefore benefit biodiversity and support the delivery of a range of ecosystem services.

Ecosystem Services (ESS)

Architecture

Urban Planning

Research

Interior Design

World Forum on Urban Forests

Mantova
27/11 — 01/12/2018

Greener, healthier, happier cities for all

Promosso da FAO

Food and Agriculture Organization of the United Nations

Organizzato con il supporto di

COMUNE DI MANTOVA

POLITECNICO MILANO 1863

SISEF

Main Partner

20 anni gruppo Tea acqua energia ambiente

Patrocini

Ministero dell'Ambiente

mipaaf Ministero delle politiche agricole alimentari e forestali

ERSAF Ente Regionale per i Servizi all'Agricoltura e alle Foreste

Editorial Partner

LIFEGATE

World Forum on Urban Forests Milano Calling 2019

21 – 23 November

WFUF
permanent committee

FAO
Food and Agriculture Organization of the United Nations

SISEF
Società Italiana di Selvicoltura ed Ecologia Forestale

Politecnico di Milano

World Forum on Urban Forests
Milano Calling 2019

Triennale Milano

Comune di Milano

World Forum on Urban Forests

2nd World Forum on Urban Forests

16-20 OCTOBER 2023 | Washington, D.C.

CO-ORGANIZERS

Arbor Day Foundation

District Department of Transportation

Food and Agriculture Organization of the United Nations

International Society of Arboriculture

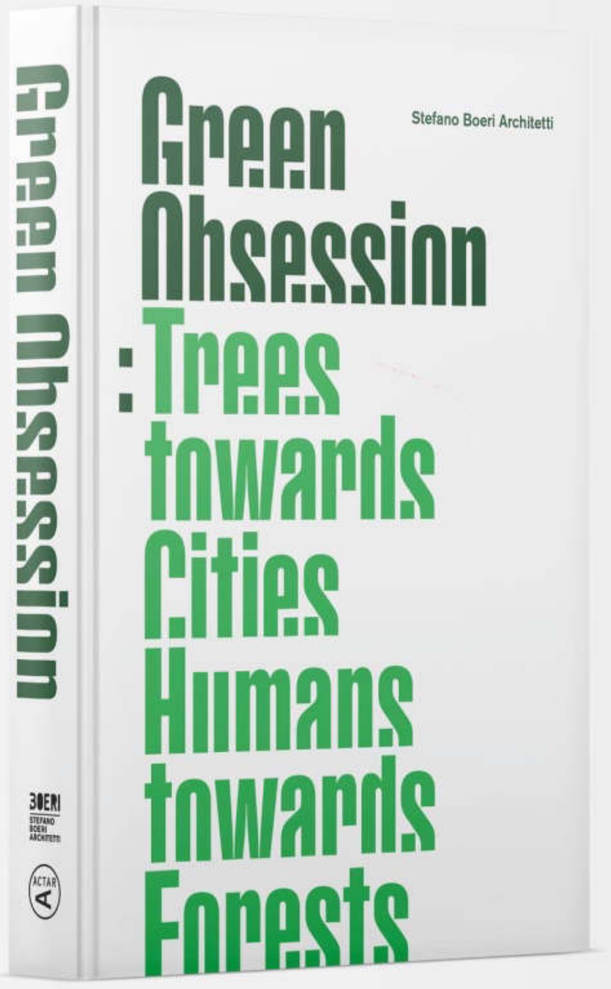
POLITECNICO MILANO 1863

SIGEF

Smithsonian Gardens

Forest Service U.S. Department of Agriculture


Green
Obsession


Green Obsession
Stefano Boeri Architetti
Green
Obsession
: Trees
towards
Cities
Humans
towards
Forests
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ACTAR

2018 – 2019

SMART FOREST CITY
CANCUN

BOERI
STEFANO
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ARCHITETTI

FIUME VERDE
MILANO

Linear forest

45 km

+ 225,000 new trees

CO_2 absorption

- 59,000 tons/year

Pollutants absorption

- 300 tons/year

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PHASE 1

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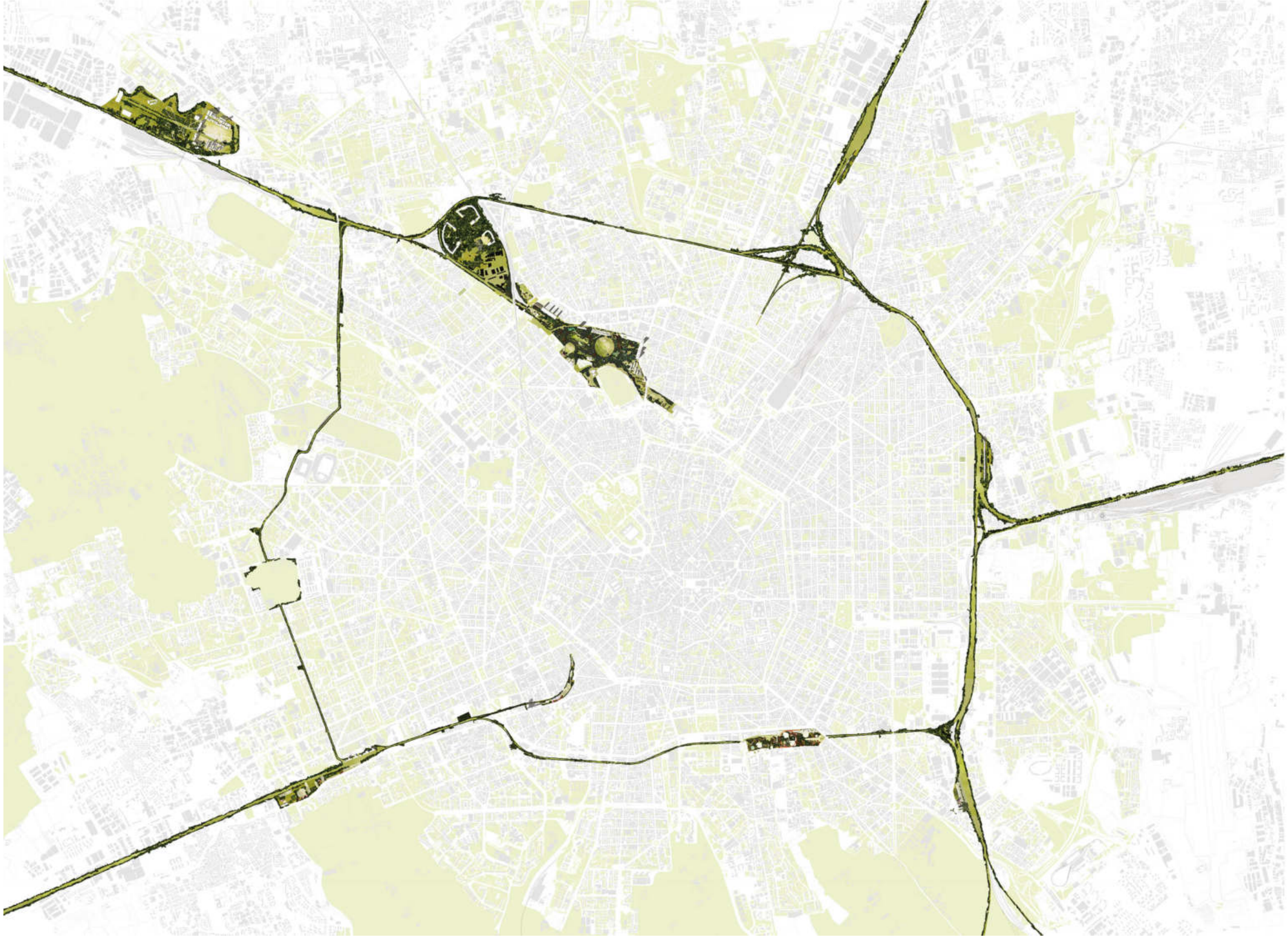
PHASE 2



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PHASE 3

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EXPO
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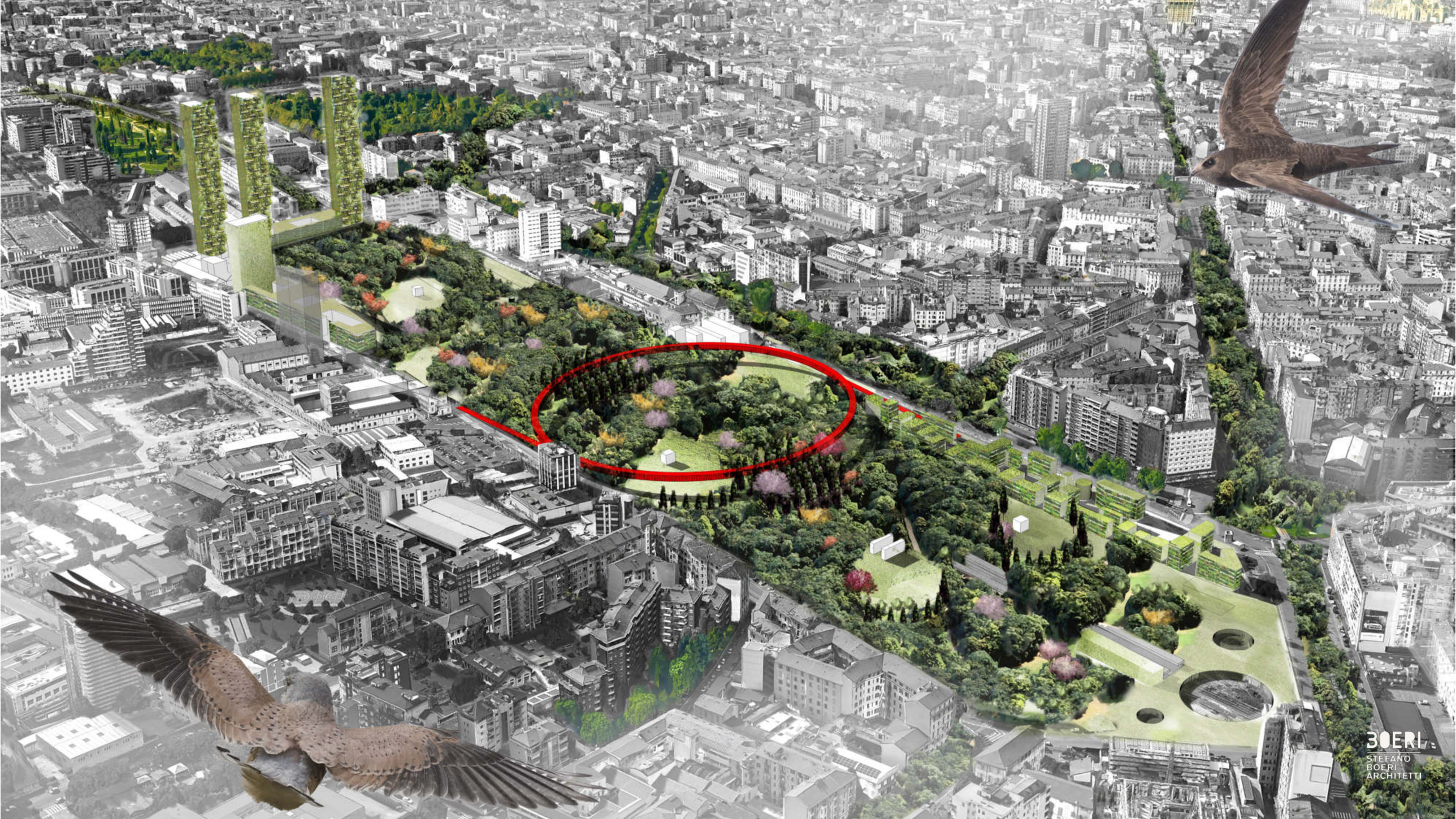
ARCHITETTI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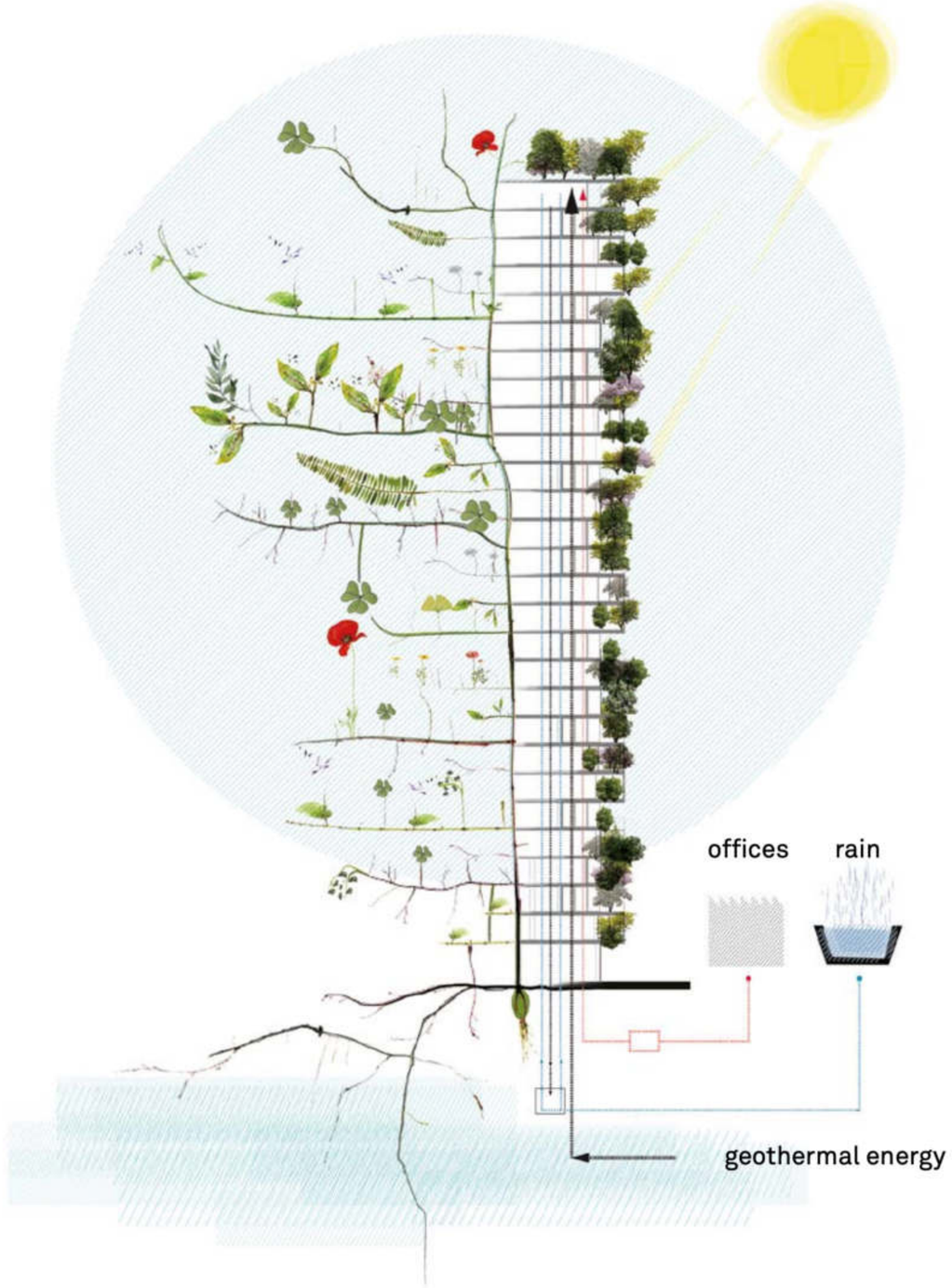
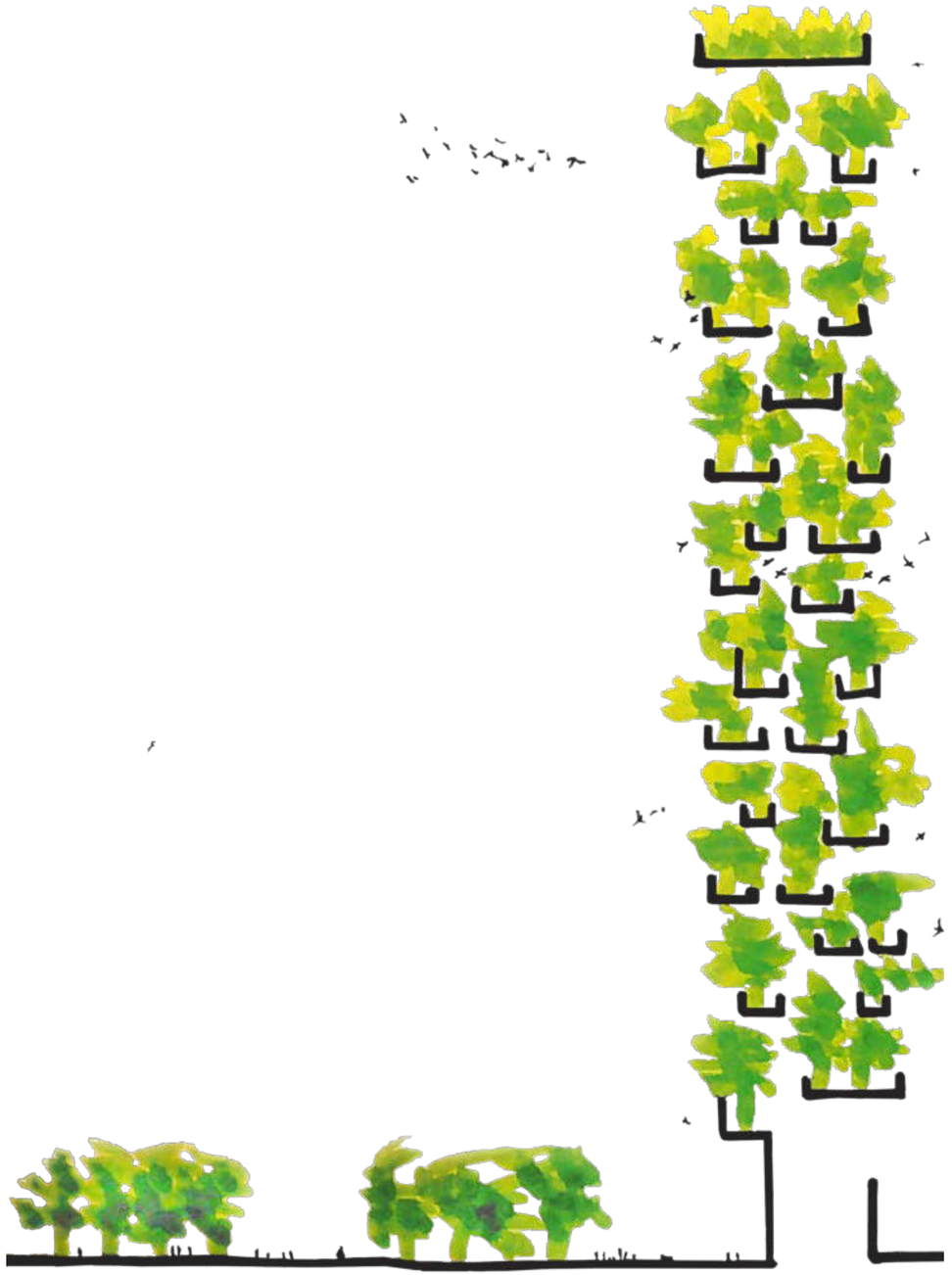
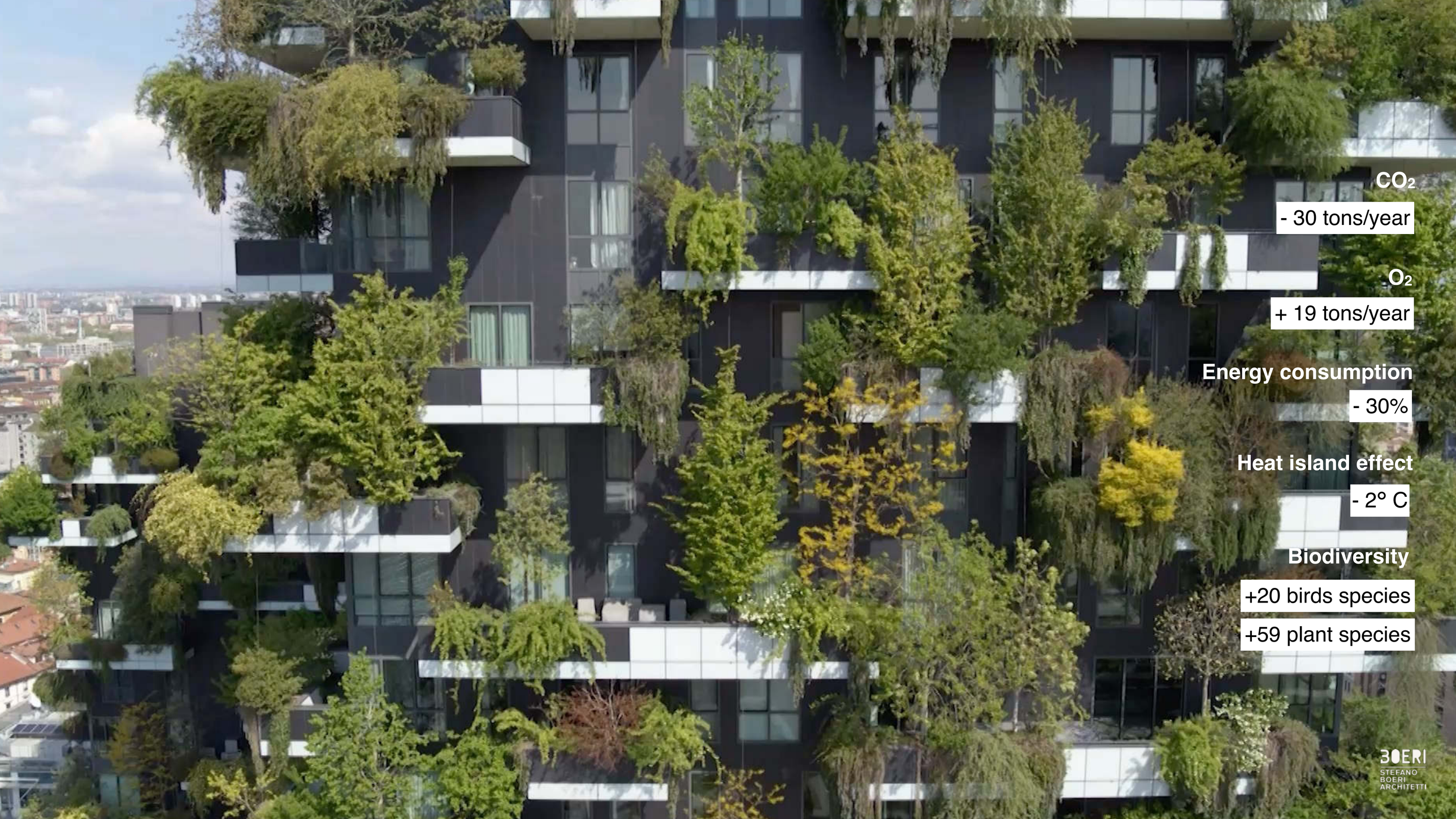
2007 – 2014

BOSCO VERTICALE

MILAN


offices
rain
geothermal energy




CO_2
- 30 tons/year
O_2
+ 19 tons/year
Energy consumption
- 30%
Heat island effect
- 2° C
Biodiversity
+20 birds species
+59 plant species
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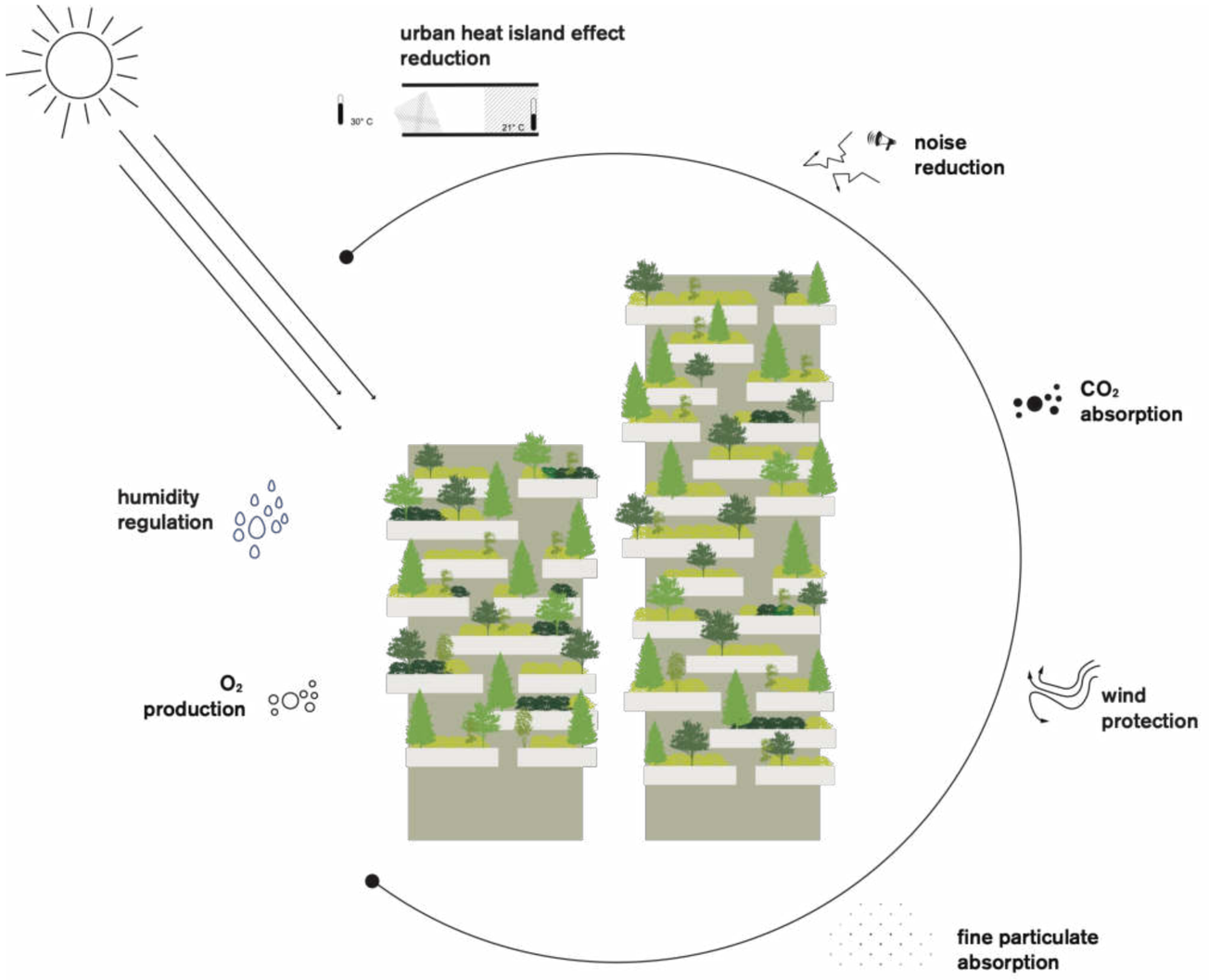
BOSCO VERTICALE I MILANO I 2014



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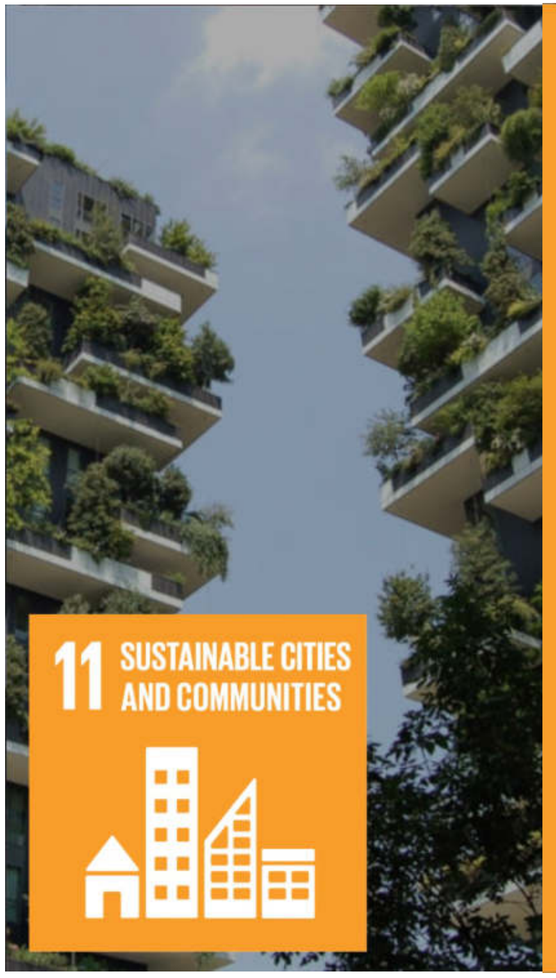
United Nations

SUSTAINABLE DEVELOPMENT GOALS



11

Goal 11

Make cities and human settlements inclusive, safe, resilient and sustainable.

10 Targets

37 Events

16 Publications

936 Actions

More info

Ref. Ares(2019)5493859 - 30/08/2019

thinknature

NATURE-BASED SOLUTIONS HANDBOOK

Edited by
Giorgos Somarakis
Stavros Stagakis
Nektarios Chrysoulakis

This handbook has been developed in the framework of ThinkNature project that has received funding from the European Union's Horizon 2020 research and innovation programme, Call H2020-SC5-2016-2017 Greening the economy, under grant agreement No 730338.

Figure ES.1. Vertical Forest realized in the centre of Milan, credited to the architect Stefano Boeri (https://oppla.eu/casestudy/17625)

ThinkNature case studies portfolio

Several FP7 (2007-2013) projects have already demonstrated the positive outcomes of NBS in practice. The dedicated focus area on 'Smart and Sustainable Cities with NBS' of Horizon 2020 invested in large-scale demonstration projects to explore innovative solutions to the challenges faced by European cities. These projects have provided and will provide the case studies necessary for the EU evidence base. The ThinkNature case studies portfolio currently contains more than 120 case studies. The case study portfolio analysis is primarily based on a multilevel classification approach to achieve a uniform and robust interpretation of the attributes, types, and innovative elements of the implementation of each case study. A newly developed and detailed NBS Classification Scheme is provided in Annex 1.

NBS are classified according to the degree of intervention/level and type of engineering into three types as follows: TYPE 1: no or minimal intervention in ecosystems, TYPE 2: NBS for sustainability and multi-functionality of managed ecosystems, TYPE 3: Design and management of new ecosystems. Most of the NBS applications in the ThinkNature case study portfolio (95%) are TYPE 2 or TYPE 3: 64%, and TYPE 2: 31% - and only a few (5%) are categorised as TYPE 1. Most of the applications in Type 2 (62%) are extensive urban green space management, followed by agricultural landscape management (22%), monitoring applications (14%), and coastal landscape management (2%). Similarly, 46% of the applications of Type 3 are intensive urban green space management, 27% urban planning strategies, and 14% urban water management, which suggests that 87% of Type 3 applications deal with urban areas.

The most prevalent NBS approaches in the portfolio are the ecosystem-based management, climate adaptation approaches, infrastructure related approaches, and community-based adaptation. The most prevalent NBS challenges to be addressed are green space management, public health and wellbeing, water management, and urban regeneration. More than half of the NBS cases do not provide any provisioning services, while very few provide raw materials for energy, fisheries and aquaculture, and water for drinking. As to regulation and maintenance services; local climate regulation, flood protection, maintaining populations and habitats, flood protection, and carbon sequestration are the most frequently provided services. Finally, most of the case studies provide cultural services with recreation and intellectual and aesthetic values the most prominent services. The case studies portfolio contains examples for approximately half of the NBS types presented in the NBS Classification Scheme.

The multiple and multi-scale benefits of NBS

NBS aim at multi-functionality, i.e. at producing several benefits simultaneously. This is the most important characteristic of NBS as compared to the so-called hard or grey infrastructure. The benefits are often interrelated. For instance, NBS can improve air quality (environmental benefit), which allows a decrease of diseases related to air pollution (health benefit), which in turn allows savings in healthcare (economic benefit). NBS also provide local benefits for disaster risk reduction and increasing resilience. Healthy ecosystems are important for hazard prevention and post-disaster recovery. Moreover, they provide local benefits for climate change adaptation and regional-global benefits for climate change mitigation.

Natural ecosystems, especially forests, peat bogs, and oceans, act as carbon sinks, but for man-made NBS the net CO^2 balance

RIBA

RIBA INTERNATIONAL PRIZE 2018


WIND TEST
EXIT
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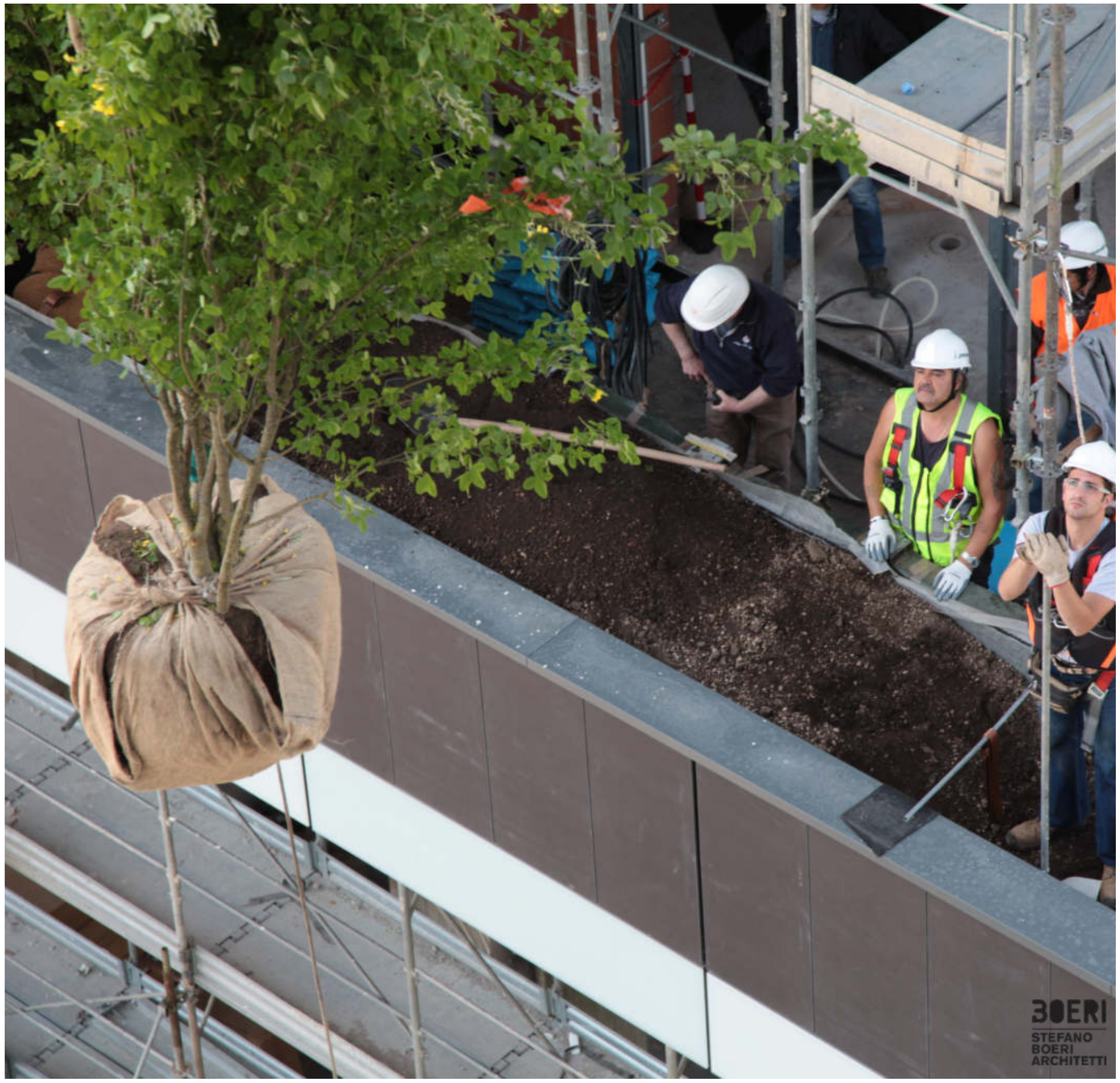
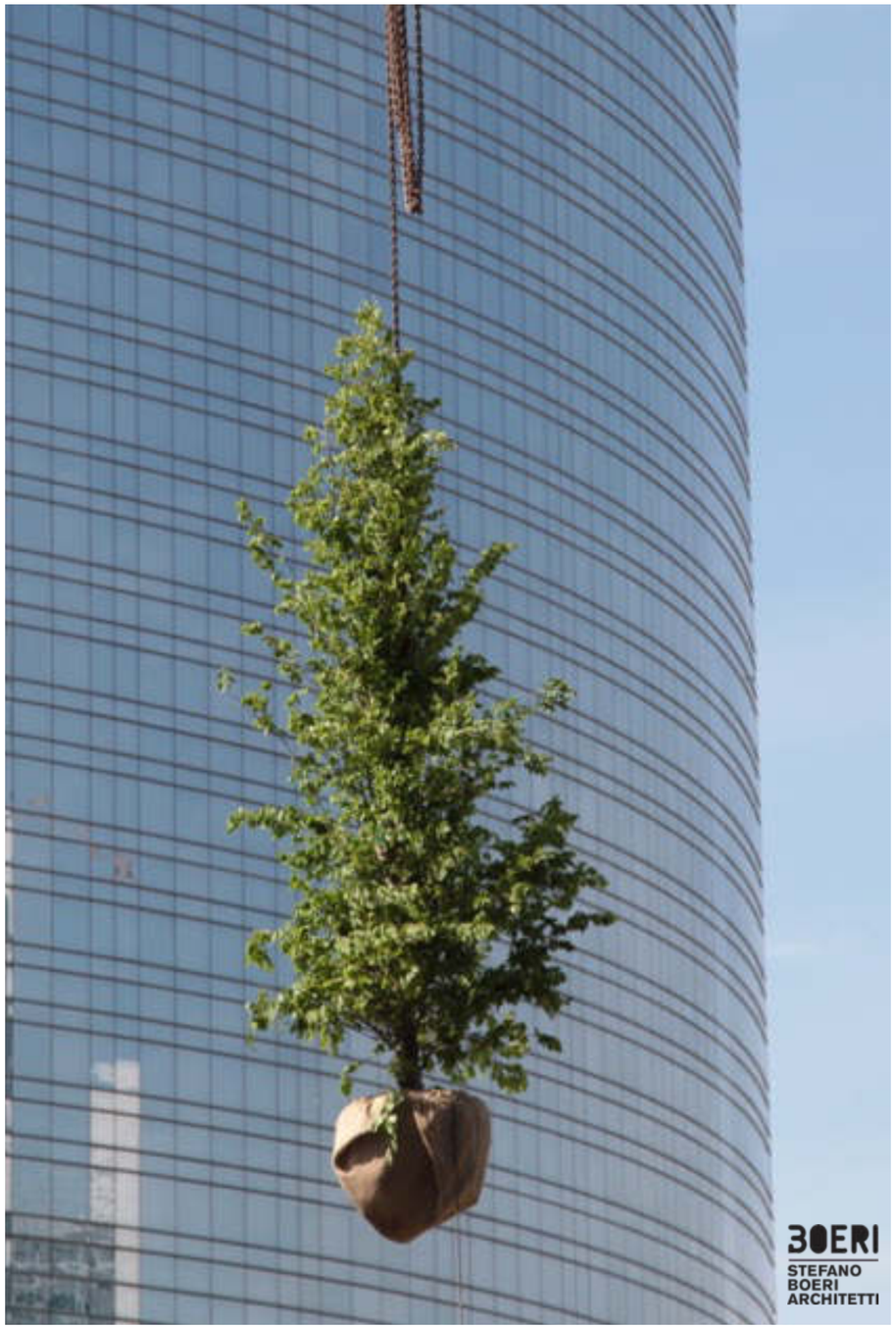
BOSCO VERTICALE | MILANO | 2014



BOSCO VERTICALE | MILANO | 2014



2017 – 2021

TRUDO VERTICAL FOREST

EINDHOVEN

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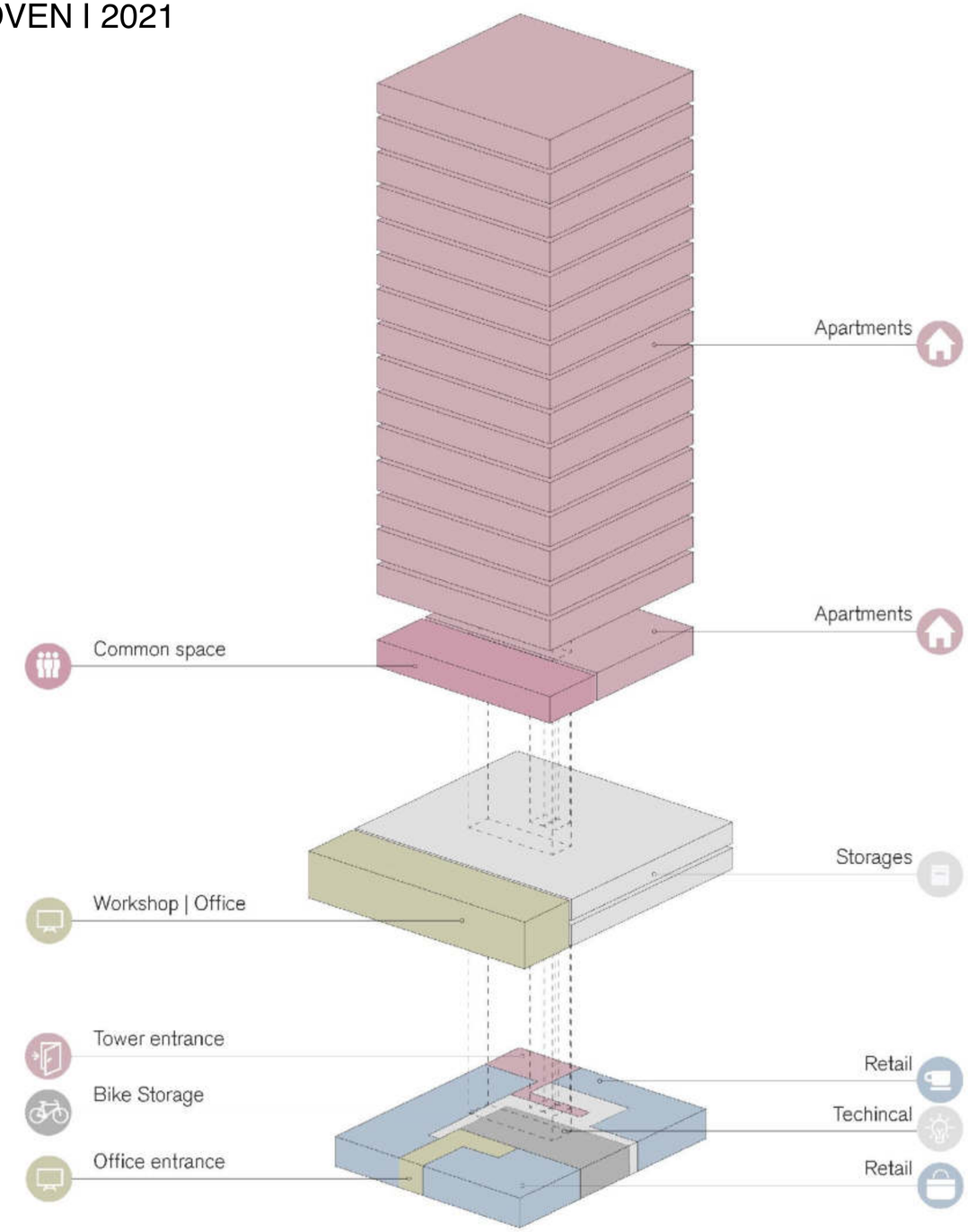
KLOKGEBOUW
TOREN K
LEIDINGSTRAAT
APPARATENFABRIEK
SINTLUCAS
EVOLUON
PHILIPS STADION

TRUDO VERTICAL FOREST I EINDHOVEN I 2021



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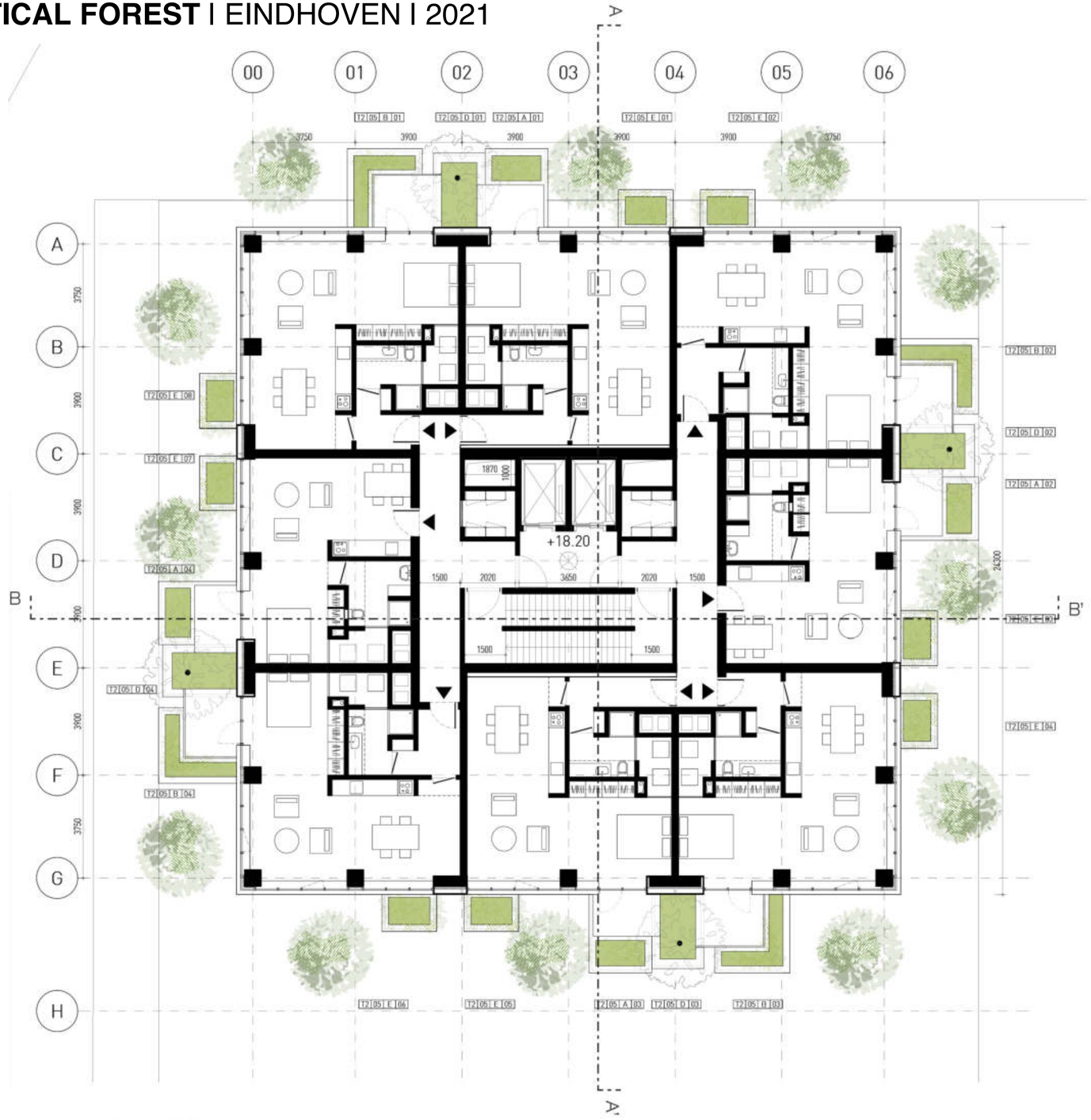
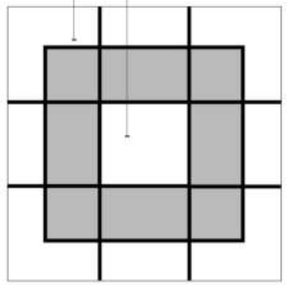
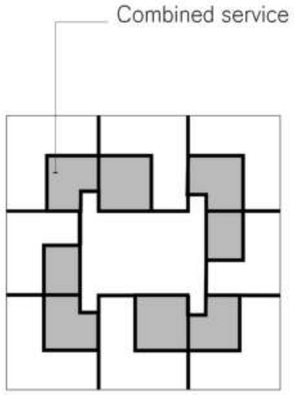
TRUDO VERTICAL FOREST I EINDHOVEN I 2021







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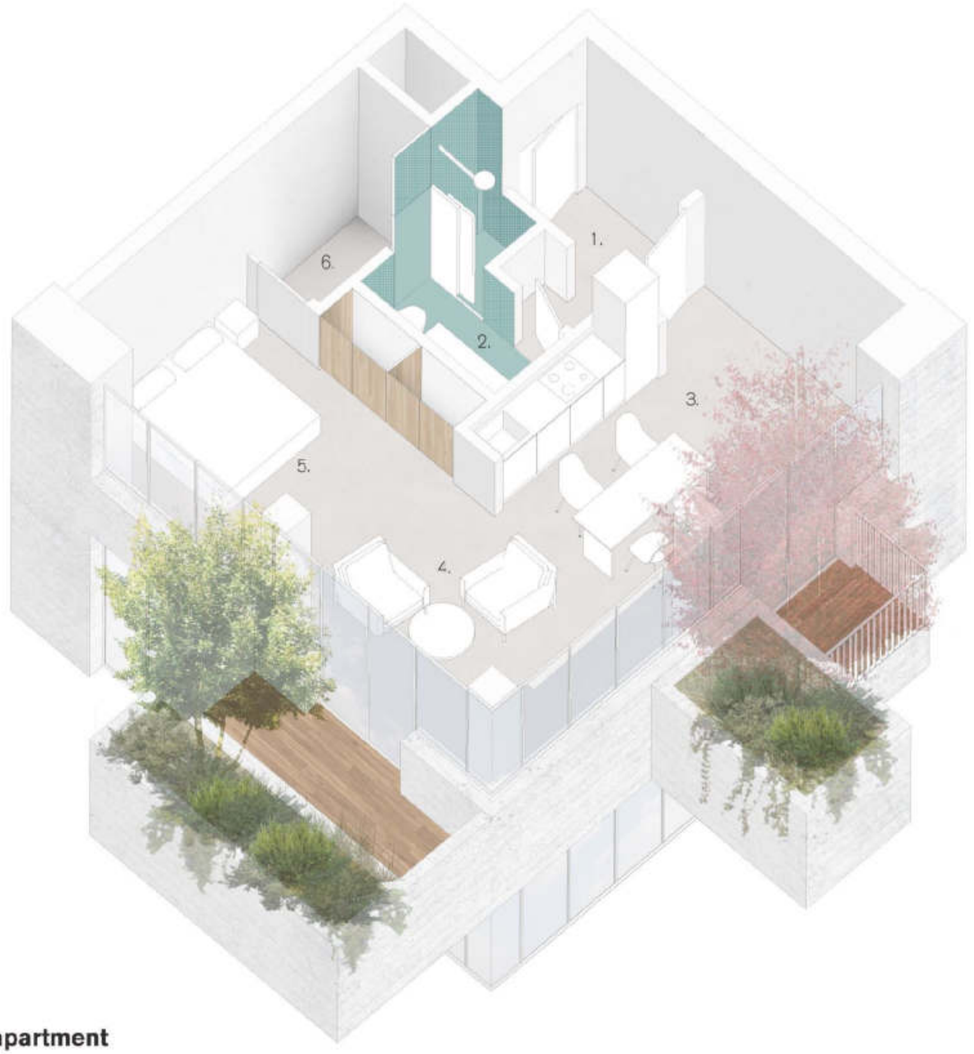
TRUDO VERTICAL FOREST I EINDHOVEN I 2021



Pot codification

TX 04 A 01

Tx Typical floor plan
04 Floor level
A Pot typology
01 Pot progressive number

Loft apartment

1. Entrance | Hallway
2. Bathroom
3. Kitchen
4. Livingroom
5. Bedroom
6.Technical space

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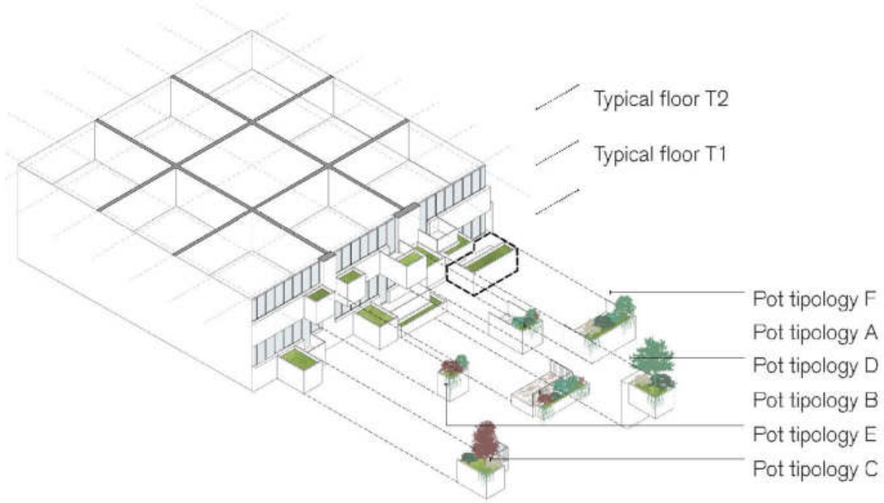
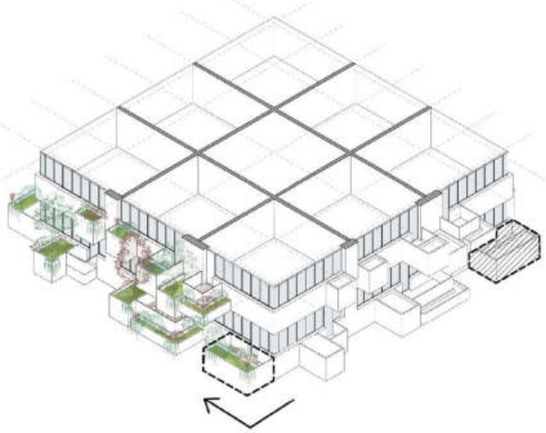
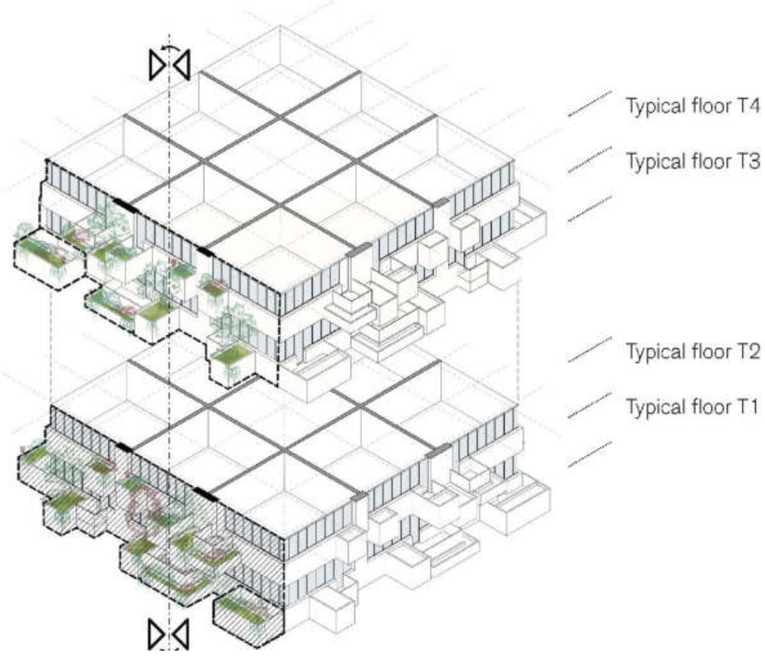
Facade system basic module



Step 1: rotate



Step 2: reflect



2017 – ONGOING

WONDERWOODS
UTRECHT

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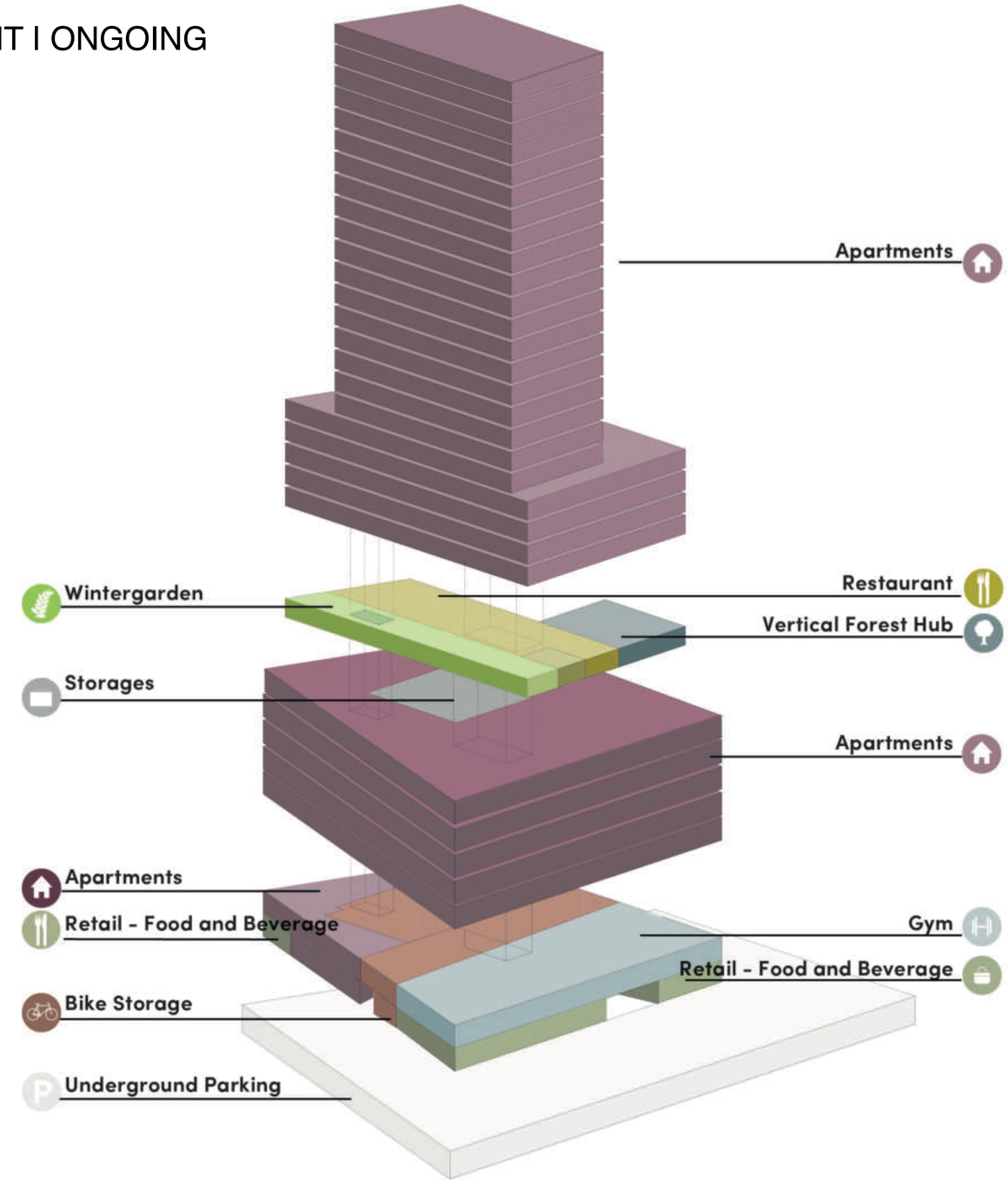
MIPIM The Architectural Review
Future Project Awards 2018
BEST
FUTURE
PROJECT
2019


EUROPEAN
PROPERTY
AWARDS
DEVELOPMENT
2021-2022

WONDERWOODS
Program - Plot A



WONDERWOODS I UTRECHT I ONGOING

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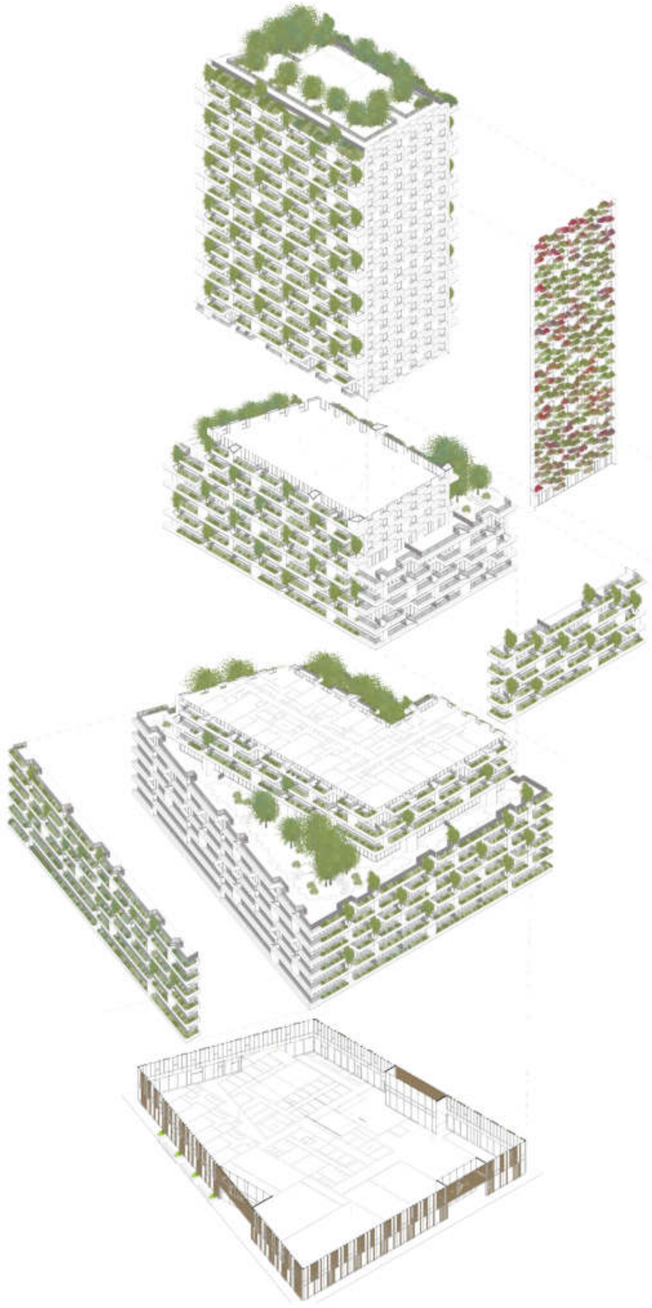
WONDERWOODS I UTRECHT I ONGOING




THE WHITE
BUT
FIRST
bamboo
café
caffè
LOFT
CAFE

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WONDERWOODS | UTRECHT | ONGOING