FESTIVAL DELLO SVILUPPO SOSTENIBILE 2019

NATURE 4 CITIES

A knowledge diffusion and decision platform for renaturing cities

Città metropolitana di Milano

Festival dello Sviluppo Sostenibile 2019

Giovedì 23 Maggio 2019,
Sala del Consiglio, Palazzo Isimbardi
ore 14:30 – 17:30

Nature-Based Solutions come opportunità per la sostenibilità urbana

Nuovi modelli di governance, business e finanziamento per la pianificazione urbana orientata alla NBS

Thomas Messervey
R2M Solution

R2M RESEARCH TO MARKET SOLUTION

Join the comunity!

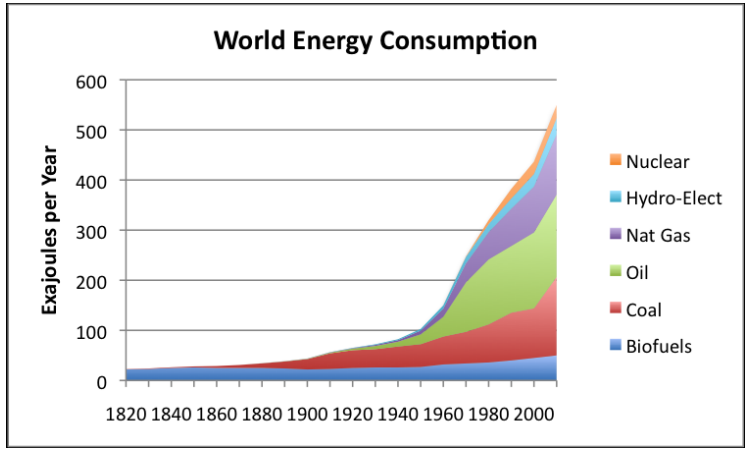
www.nature4cities.eu

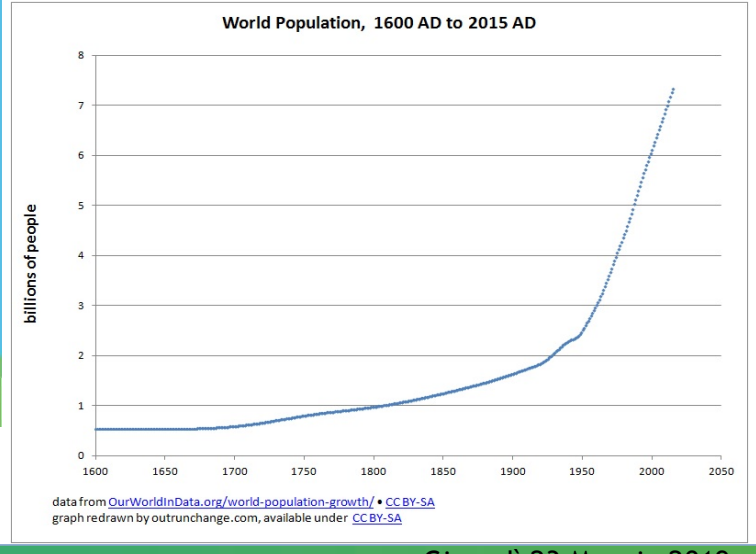
This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No 730468

Agenda

- Motivation – trends that will drive implementation of NBS solutions
- Considerations within the Nature4Cities Project
- The role of policy and Vienna as an NBS best practice example
- Greenpass – an emerging NBS market leader

Motivation I



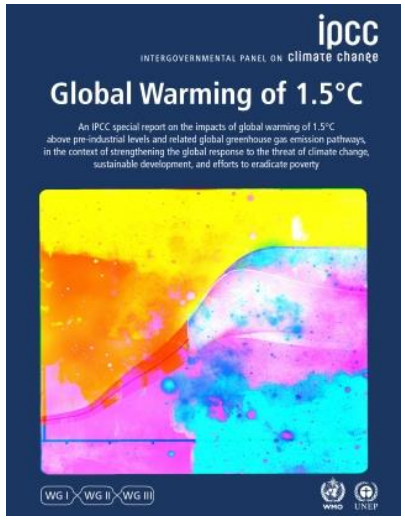


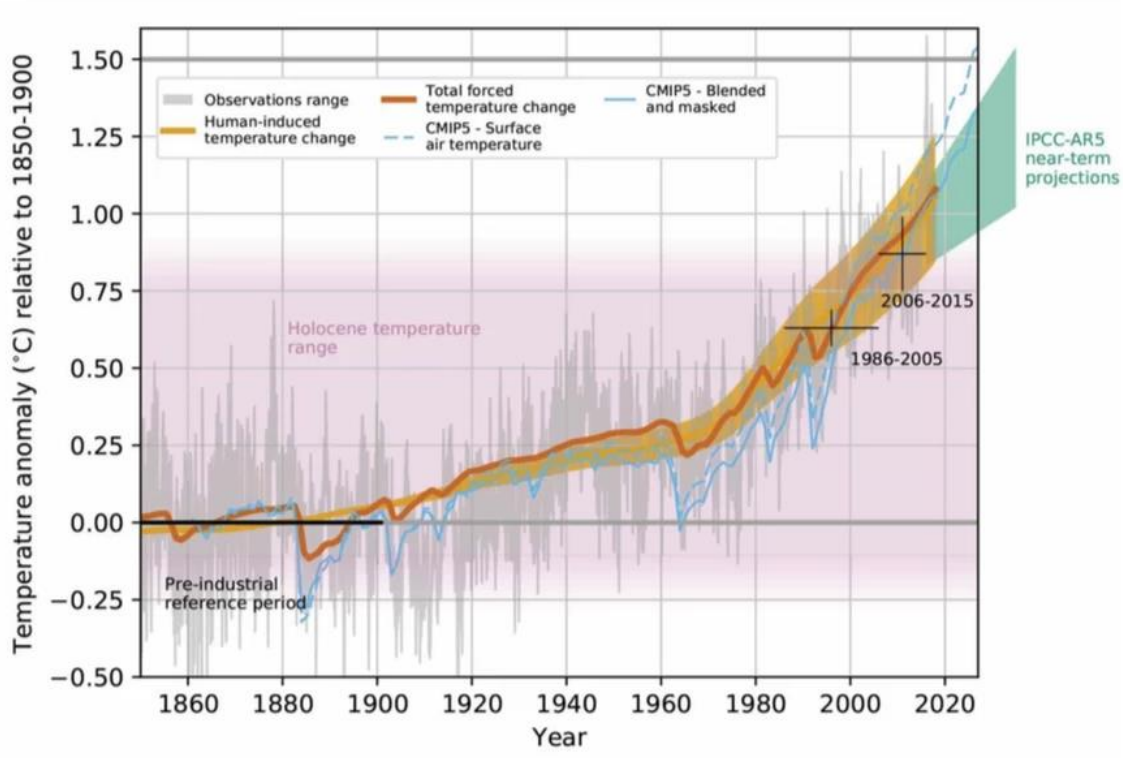
DG Research & Innovation at Build Up website: http://www.buildup.eu

Motivation II

Devastating UN Report: CO2 Emissions Must Go to Zero By 2050 to Avoid Worst Effects of Climate Change

The IPCC's '1.5 Degree Report' paints a dire picture that suggests we must fundamentally change the nature of society in the next decade.





At 1.5 degrees of warming compared to 2 degrees of warming, 90 percent of coral reefs will bleach, as opposed to 98 percent. Sea levels will rise by 40 centimeters, as opposed to 50…

Motivation III

The New York Times

Humans Are Speeding Extinction and Altering the Natural World at an 'Unprecedented' Pace

Intelligencer

CLIMATE CHANGE | MAY 6, 2019

Humanity Is About to Kill 1 Million Species in a Globe-Spanning Murder-Suicide

By Eric Levitz *@EricLevitz*

The Washington Post
Democracy Dies in Darkness

Climate and Environment

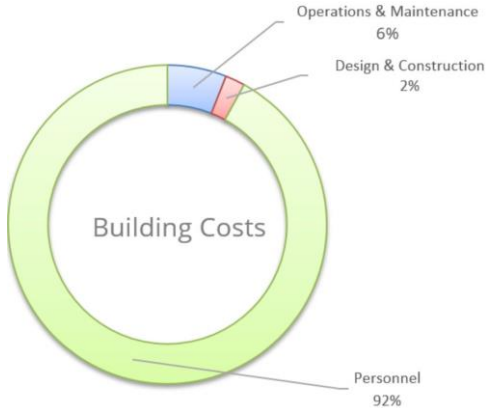
One million species face extinction, U.N. report says. And humans will suffer as a result.

Megatrend I: Beyond Buildings Simulation & Digitalization

Simulation and Digital Twins Beyond Buildings

https://www.iesve.com/icl

Megatrend II: Beyond Energy Efficiency to Wellness & Circularity



INTERNATIONAL WELL BUILDING INSTITUTE

AIR
- Quality
- Purification
- Humidity

WATER
- Quality
- Treatment
- Drinking Promotion

LIGHT
- Natural Access
- Color
- Dimming/Circadian Rhythms

NOURISHMENT
- Selection/Availability
- Serving Size
- Information

FITNESS
- Fitness Centers
- Stairs
- Bike Room
- Incentives Programs

COMFORT
- Ergonomics
- Sound Reduction
- Olfactory Comfort

MIND
- Collaboration
- Quiet Rooms
- On-site Child Care
- Health & Wellness Library

INTRODUCING LEVEL(S)

Level(s) is a voluntary reporting framework to improve the sustainability of buildings. Using existing standards, Level(s) provides a common EU approach to the assessment of environmental performance in the built environment.

The buildings sector is one of the most resource consuming sectors in Europe, accounting for approximately half of all extracted materials, half of total energy consumption, one third of water consumption and one third of waste generation. That's why the buildings sector is a key target in the European Commission's policy for circular economy; a regenerative economic system in which resource and energy consumption are minimised.

Level(s) is a sustainability framework of the circular economy, and offers a tiered approach to life cycle assessment.

The Level(s) common framework of core indicators aims at:

WHAT DO THE INDICATORS COVER?

Within the framework, each indicator is designed to link the individual building's impact with the priorities for sustainability at the European level.

THESE PRIORITIES ARE:

- → Greenhouse gas emissions throughout the building's life cycle
- → Resource efficient and circular material life cycles
- → Efficient use of water resources
- → Healthy and comfortable spaces
- → Adaptation and resilience to climate change
- → Life cycle cost and value

R2M – Your Pavia Based Innovation Company for Sustainability

Soluzioni integrate a 360 gradi per tutte le filiere dell'edilizia. Dalla fase di progettazione e realizzazione a quella di gestione, attraverso tecnologie innovative, sviluppo di nuovi tools per il monitoraggio ed uso dei dati, nuove modalità per il rilievo delle performance effettive degli edifici (+).

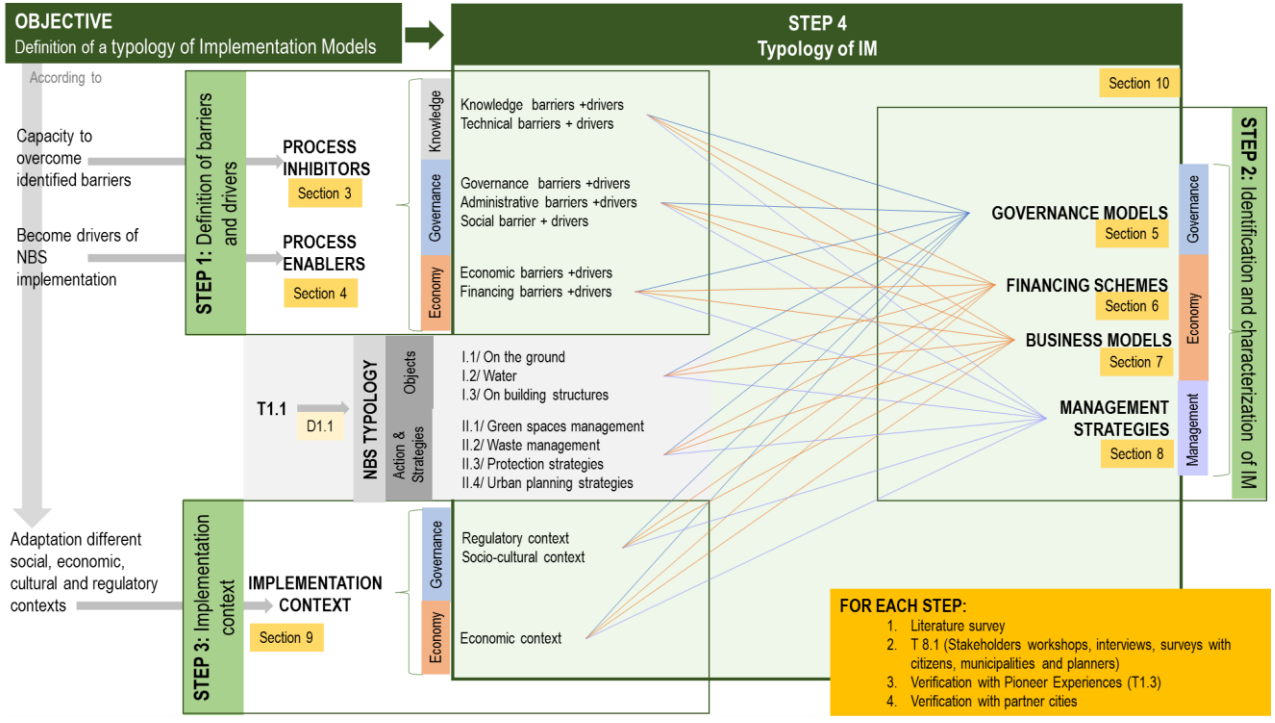
IES

ZUTEC

onyx SOLAR

NBS Planning and Decision Making: Nature4Cities

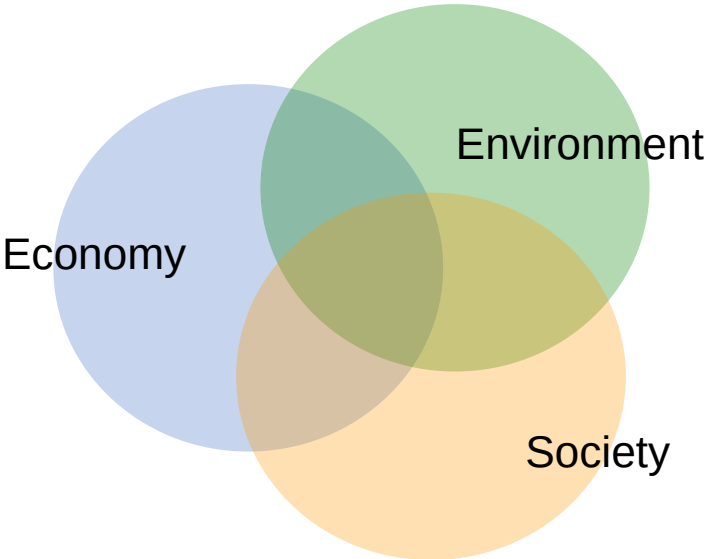
N4C aims at creating a knowledge base on NBS to support decision making . A new methodology was defined to include «Nature» within the urban ecosystems: NBS planning and implementation process



Drivers of NBS implementation (Process Enablers)

Governance drivers

- Collaborative Governance
- Citizens' engagement
- Public-Private Partership
- Capacity Building
- Adaptive Management and Risk Management
- Building a common vision



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730468

Governance Implementation Models

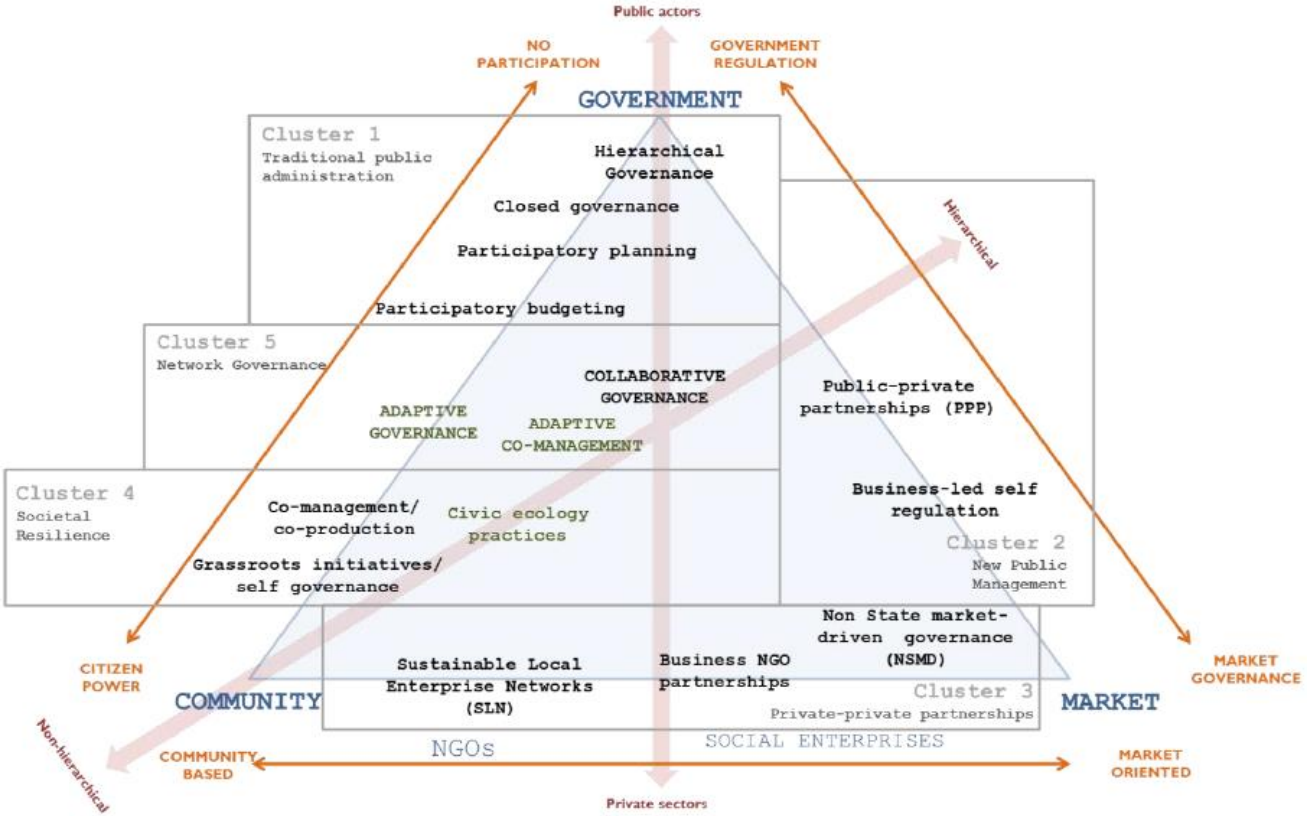
CLUSTER 1: Traditional public administration
- Hierarchical governance
- Closed governance
- Participatory planning & budgeting

CLUSTER 2: New Public Management
- Public–private partnership (PPP)
- Business-led self-governance

CLUSTER 3: Private-private partnerships
- Non State Market-driven governance (NSMD)
- Business–NGO partnerships
- Sustainable Local Enterprise Networks (SLEN)

CLUSTER 4: Societal Resilience
- Co-management
- Civic ecology practices
- Self-governance/grassroots initiatives

CLUSTER 5: Network Governance
- Collaborative governance
- Adaptive governance
- Adaptive co-management
- Scale-crossing brokers



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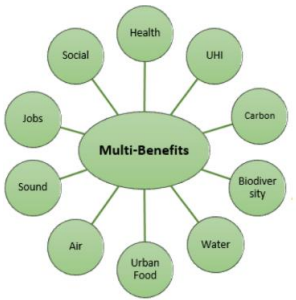
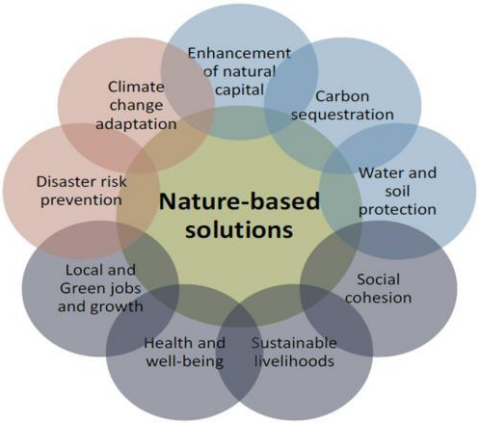
NBS Financing mechanisms

No NBS plan can be implemented unless a clear "how-to-pay" strategy has been identified, irrespective of the scale

Conventional and non-conventional funding methods to pay for NBS implementation both public and private funding opportunities at various levels, from local to national and supra-national, initiated and led by diverse stakeholders.

Depending on size and scope NBS may be funded through diverse actors, from informal, grassroots, citizen-led fundraising up to structured multi-national cooperation plans managed by Development Financial Institutions.





Financing methodologies

1. International level (mainly referable to EU), that can involve both private and public subjects;
2. National level;
3. Regional level;
4. Metropolitan/Provincial level;
5. Municipality level.
6. Formal or informal urban communities.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730468

Implementation Models Database

	ID	Title	Type	Location	Status
	1	European Federation of Green Roofs and Walls (EFB)	Green roofs and walls	Europe	Ongoing (since 1997)
	2	Vrijburcht	Private garden	Amsterdam (Netherlands) - IJburg, Steigereiland	Project delivered (2001-2008)
	3	UK National Forest	Urban Forest	Britain	Ongoing (Since 1990s)
	4	Park Lingezegen	Large urban public park	Arnhem and Nijmegen (The Netherlands)	Project delivered (2008-2015)
	5	Hundertwasserhaus	Green roofs, tree tenants	Wien (Austria)	Project delivered (1983-1985)
	6	Paris Climate Bond	Urban public parks, single trees	Paris (France)	Ongoing (2015-2031)

Resource for non-project participants / NBS Stakeholders

http://implementation-models.nature4cities-platform.eu

Vienna as a best practice example

StaDt Wien
Wien ist anders.

PETITION CARRIED UNANIMOUSLY ON 24.01.2019

- **Application for climate-sensitive urban development concerning greater consideration of climate change adaptation in competition proceedings**
- For optimal climate change adaptation - urban planning and architectural competition procedures will in future consider the following aspects as quality criterion:
- **Thermal Comfort** (e.g reduction of air temperature up to 4°C and 15°C perceived temperature)
- **Thermal Storage** (Urban Heat Islanding prevention and night cooling)
- **Thermal Load:** Air temperature for adjacent districts (for the purpose of a prohibition of reformatio in peius)
- **Rain water management:** Minimization of rain water run-off
- **CO_2-sequestration:** Optimization of CO_2-sequestration
- **Green and blue infrastructure, surface materials and facilities as well as the building orientation and design shall be considered and profound in microclimatic simulation modelling systems.**

HEAT

RELATED DEATHS

766

TRAFFIC

RELATED DEATHS

400

2018

Quelle: AGES/Statistik Austria

GREEN 4 CITIES ...

WHERE...?

WHICH...?

HOW MUCH...?

A Method / A Simulation Analytical Result / A Certification

GREENPASS

GREENPASS®

enables

Planning

of climate-resilient urban development

Evaluation

of the effects of urban structures, materials, and NBS on the microclimate

Optimization

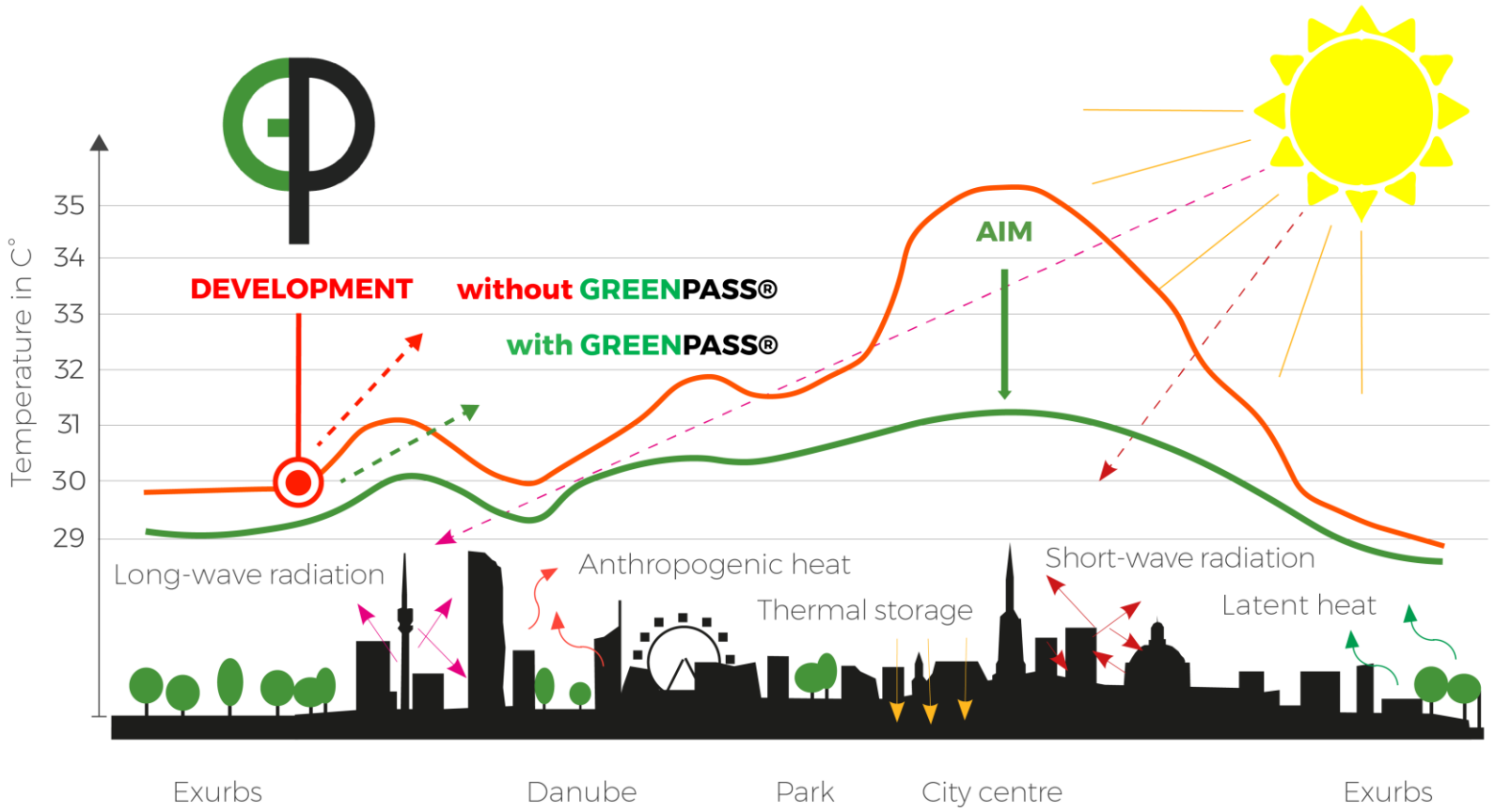
by enhancing cost-effectiveness and performance of projects

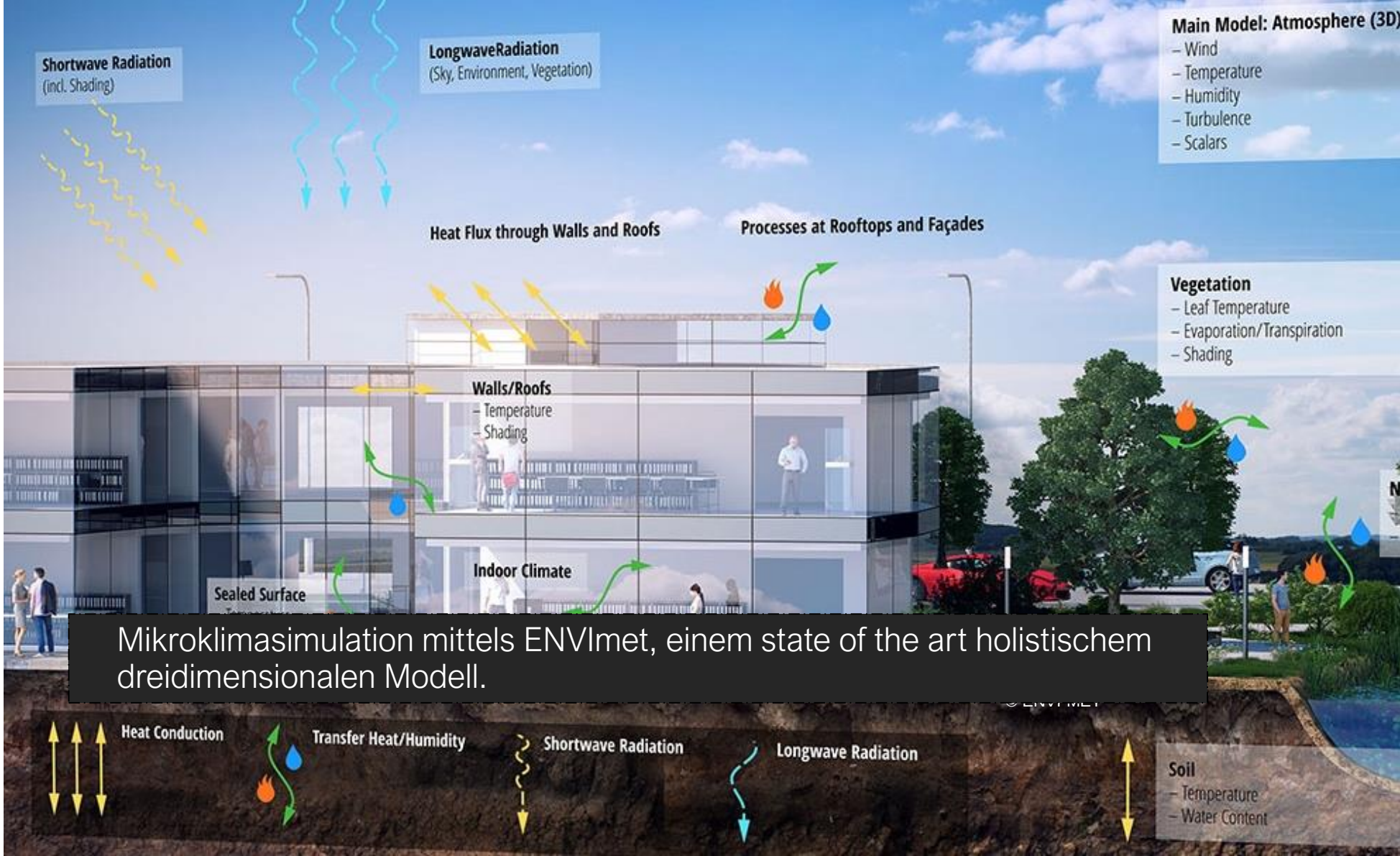
Certification

by offering the 1st international certification standard for climate-resilient urban development

GREENPASS®

delivers climate-resilient cities





Mikroklimasimulation mittels ENVImet, einem state of the art holistischem dreidimensionalen Modell.

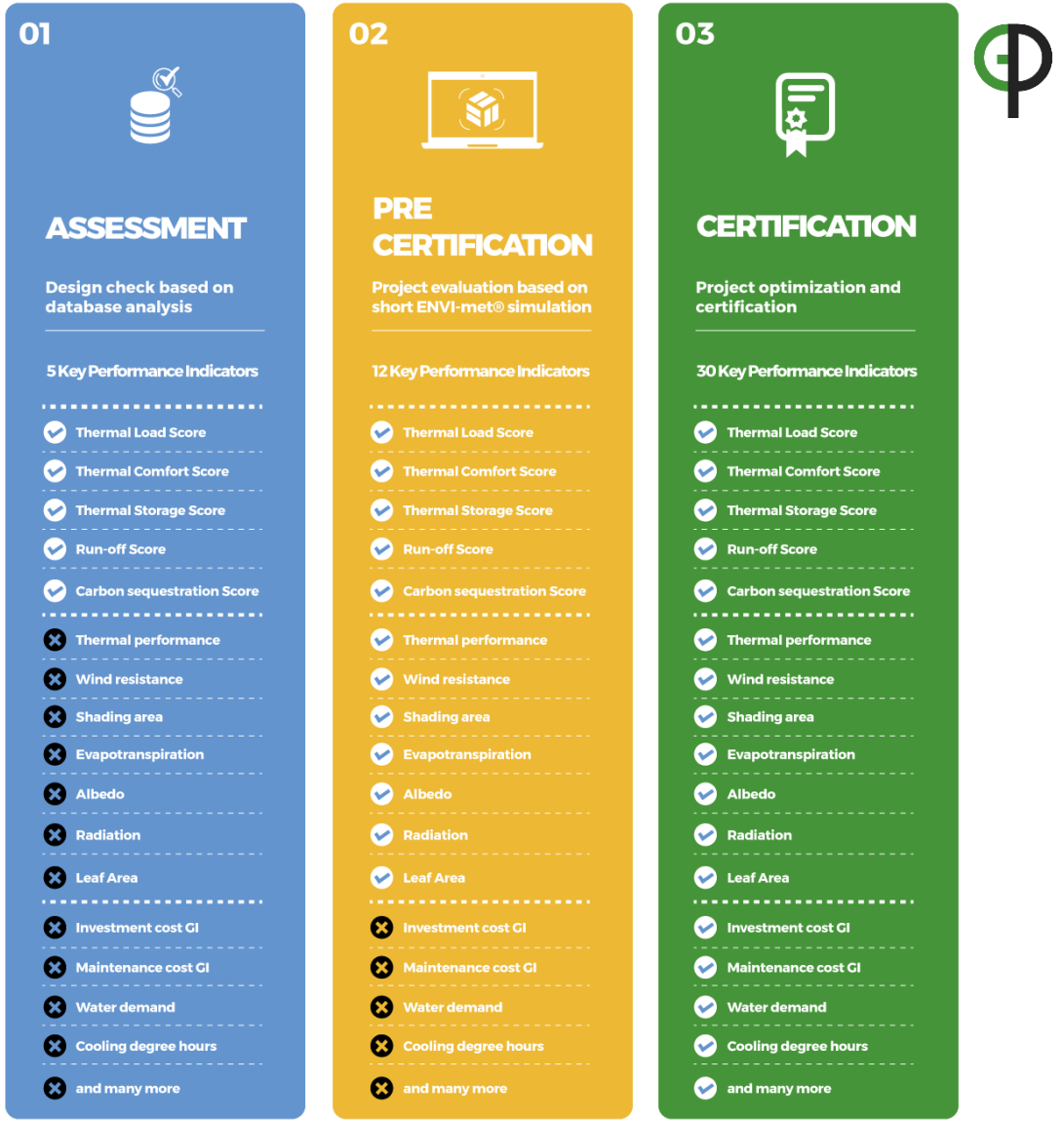
ENVI-met microclimate simulation.

Greenpass Example in Vienna: Eurogate II - Social Housing

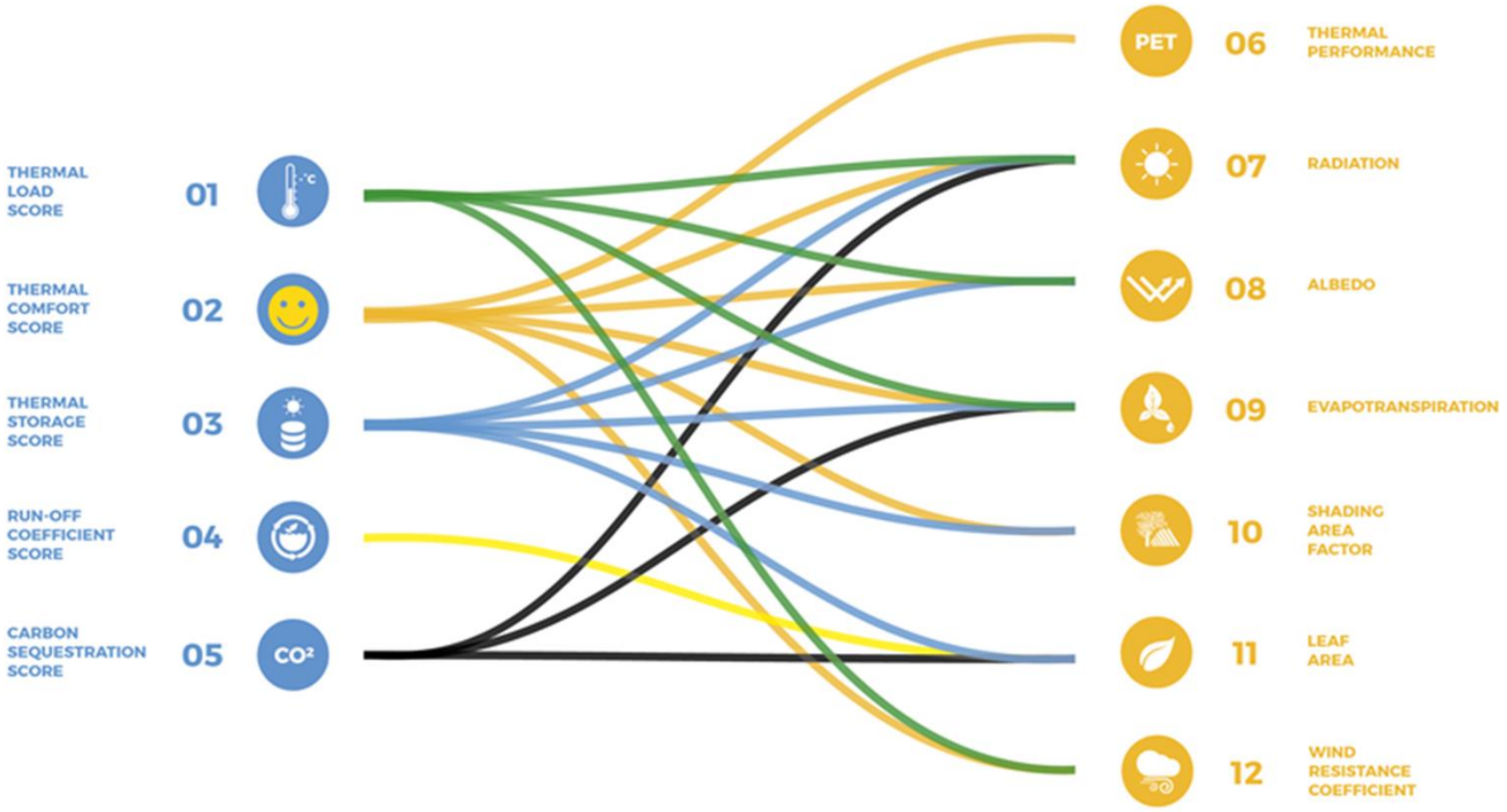
GREENPASS® TOOLBOX

5 Performance Scores
covering the urban challenges
climate, water, air and energy

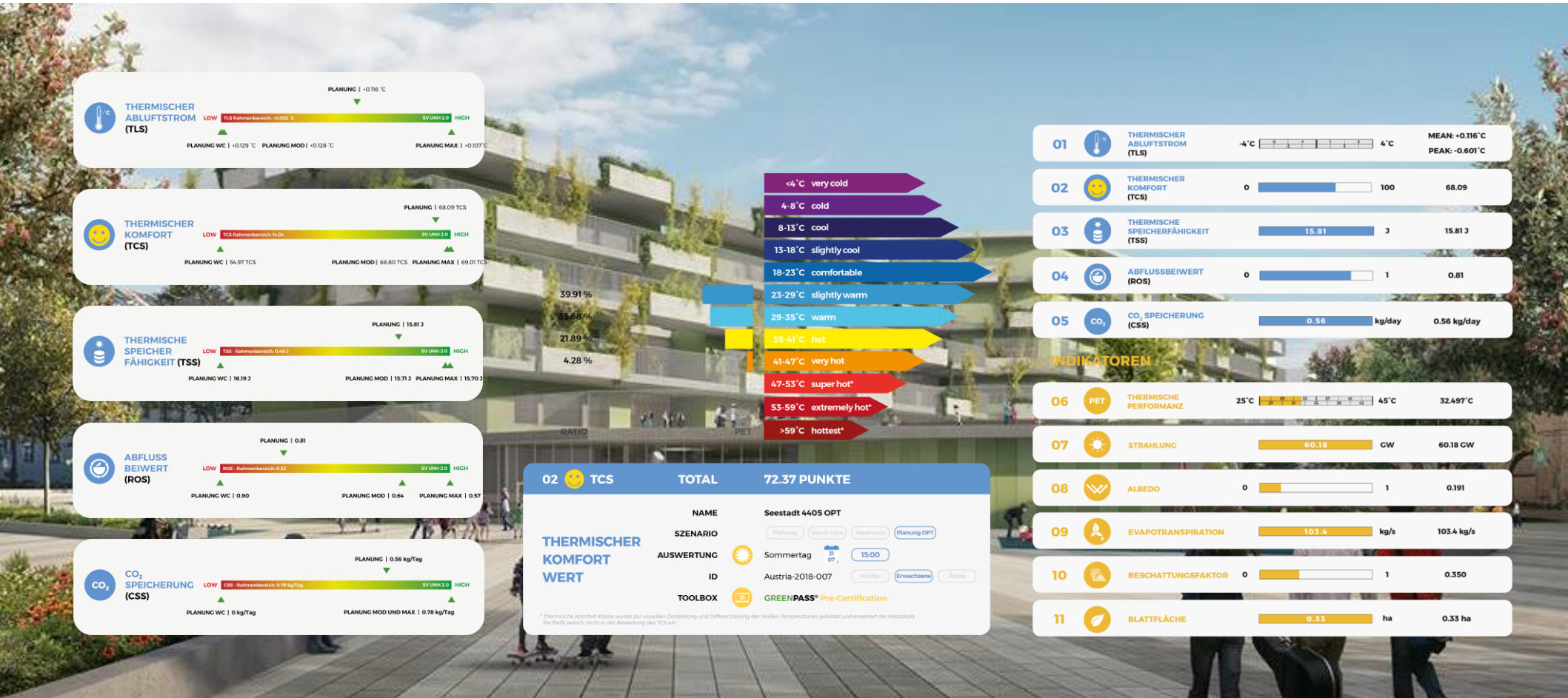
23 Key Performance Indicators
covering the urban challenges
climate, water, air, energy, biodiversity and costs



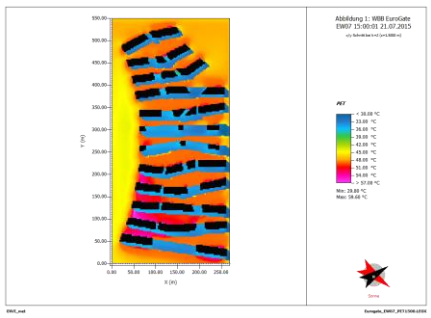
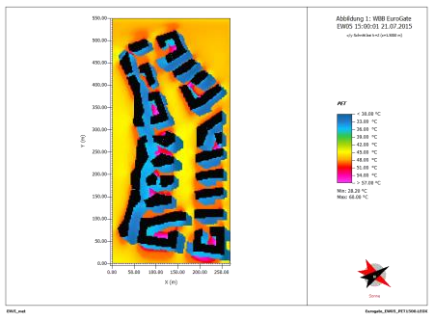
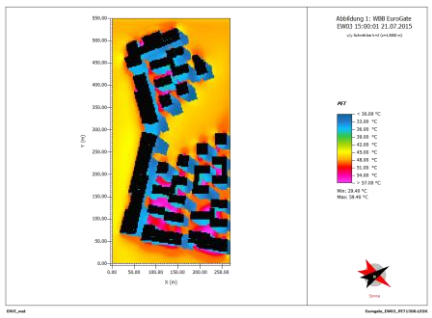
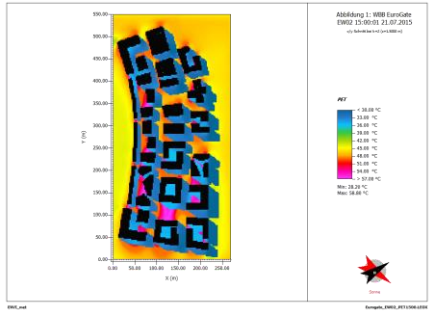
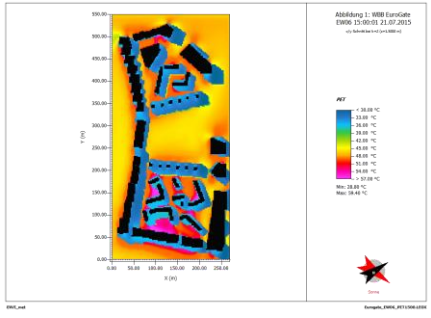
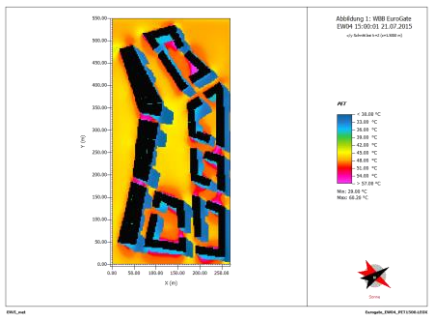
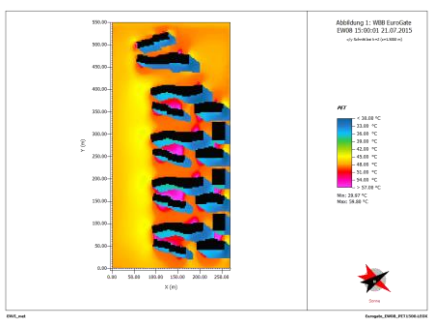
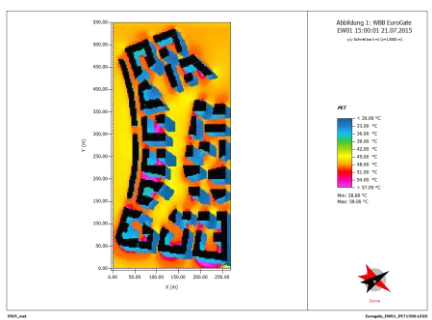
GREENPASS® KPIs



GREENPASS® KPIs



GREENPASS | Example

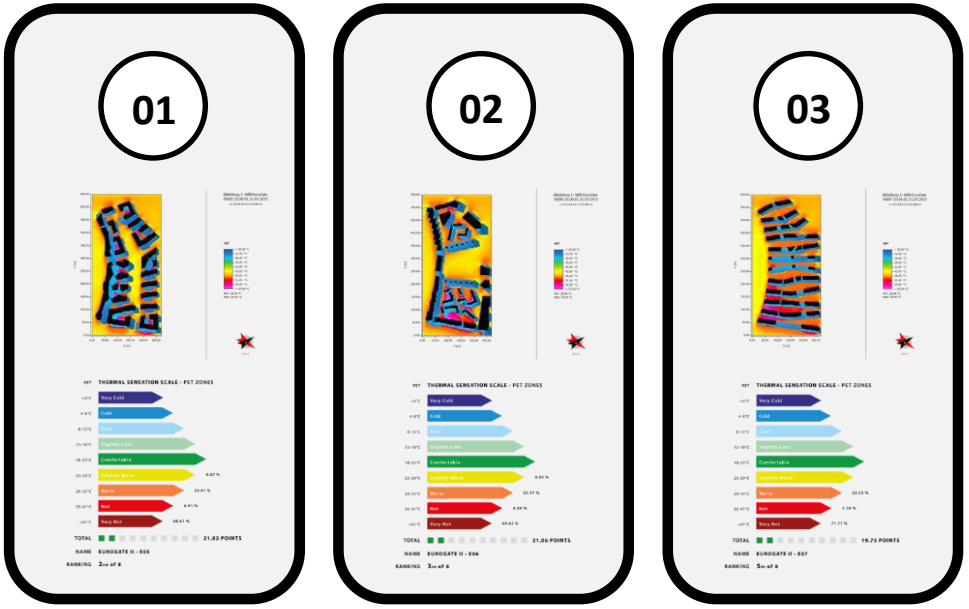
Empfehlung	%	Entwurfsvariante	Punkte
sehr empfehlenswert	100 %	Entwurfsvariante - E02	27.29
empfehlenswert	< 75 %	Entwurfsvariante - E05	21.82
		Entwurfsvariante - E06	21.06
ausreichend	< 50 %	Entwurfsvariante - E01	20.60
		Entwurfsvariante - E07	19.75
wenig empfehlenswert	< 35 %	Entwurfsvariante - E04	17.60
		Entwurfsvariante - E03	17.23
		Entwurfsvariante - E08	13.92

* Entwurfsvariante E02 (100%) und E08 (0%) dienen als Berechnungsgrundlage für die relative Rahmenbildung der Empfehlung.

GREENPASS®
allows

FACT—BASED DECISION MAKING

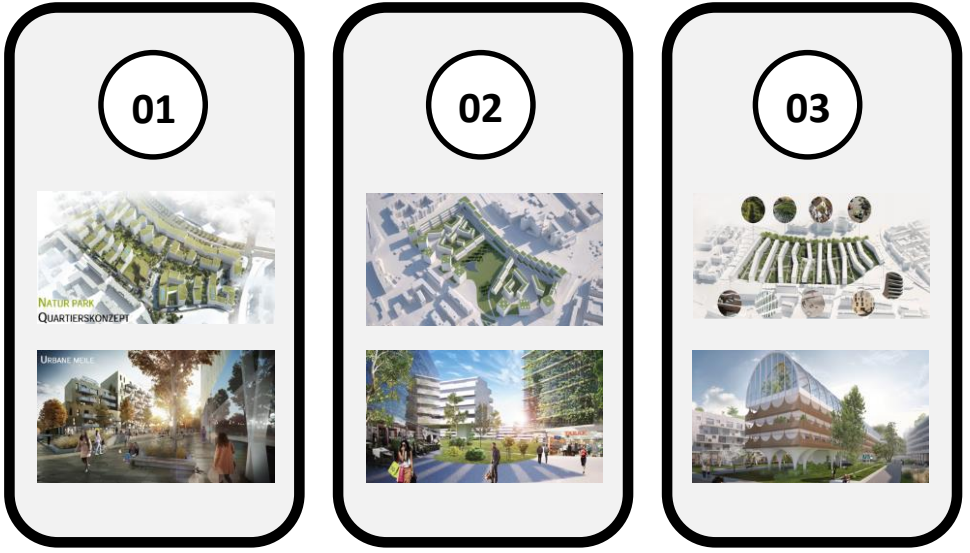
in each planning or competition phase



Most climate-resilient?

FIND THE BEST DESIGN

in each planning or competition phase



GREEN 4 CITIES

EUROGATE II - Vienna (AUT)

GREENpass® Pre Assessment

GREENPASS® PRE-CERTIFICATION

SEGRATE | MILANO - IT

RESEARCH TO MARKET SOLUTION

GREENPASS®

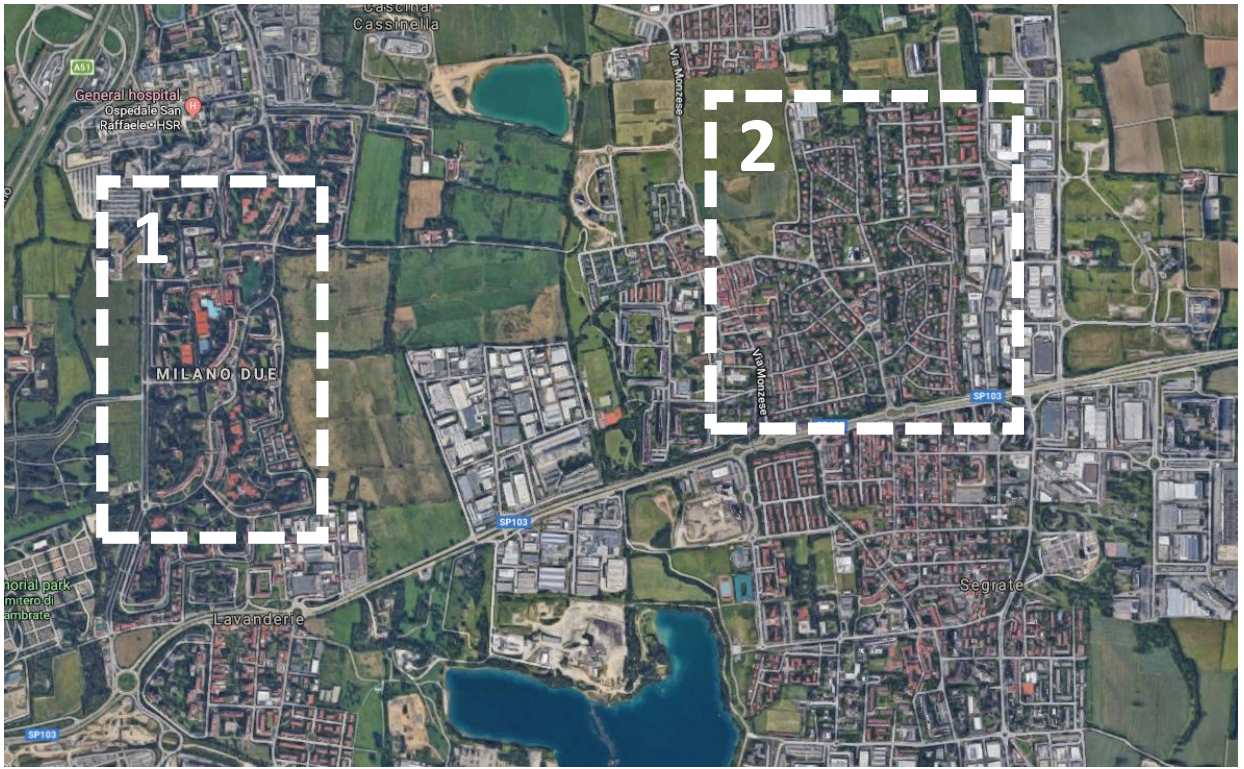
UNIVERSITÀ DI PAVIA

1. MILANO DUE

It includes large sealed and unsealed open spaces and different building types from residential buildings to high-rise buildings.

2. VILLAGGIO AMBROSIANO

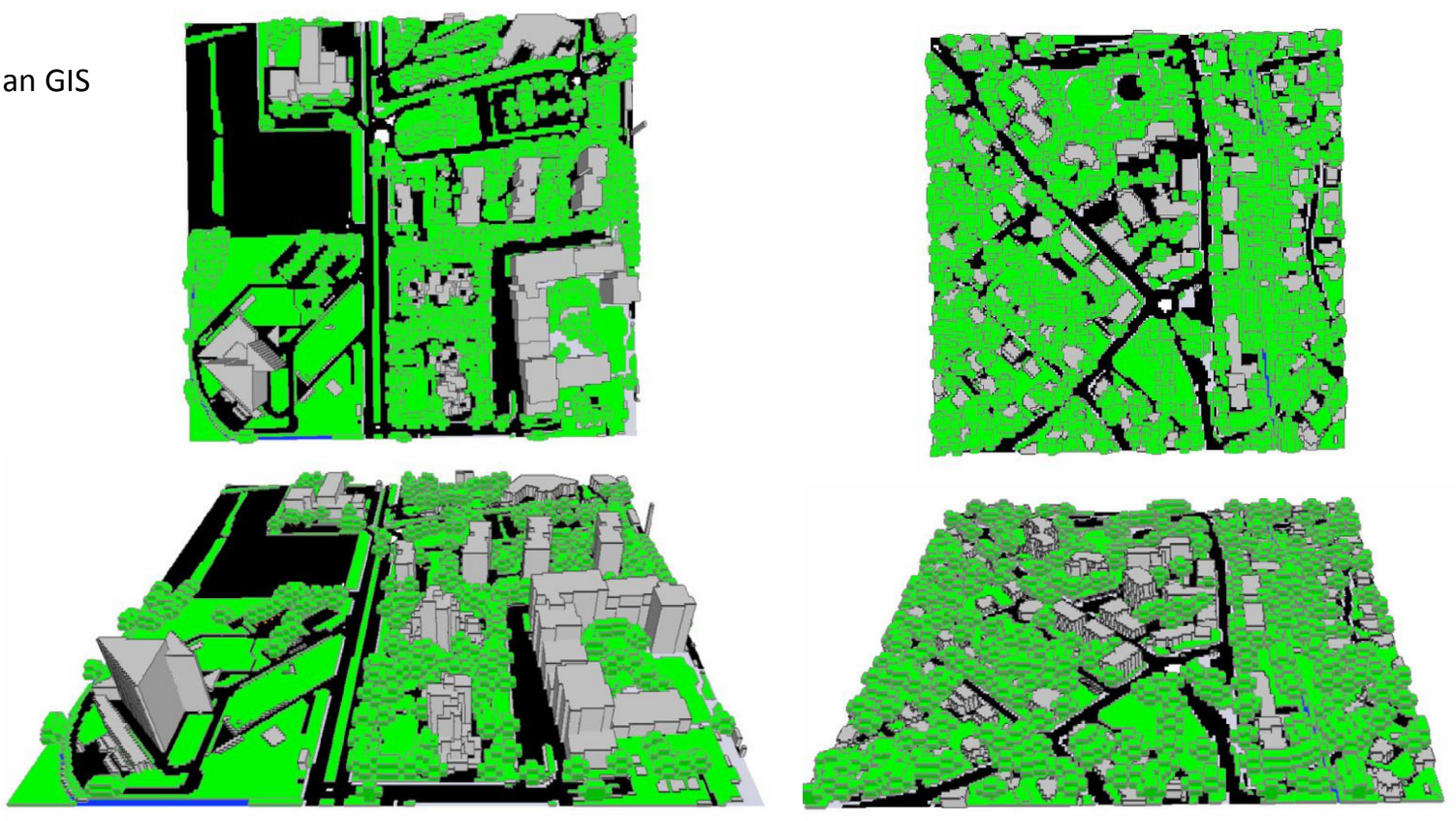
The urban structure is dominated by detached houses and residential buildings with large-area green spaces with trees.



1. MILANO DUE

2. VILLAGGIO AMBROSIANO

Modelling work based on Milan GIS files



12 simulations in 3 different times for each area has been performed

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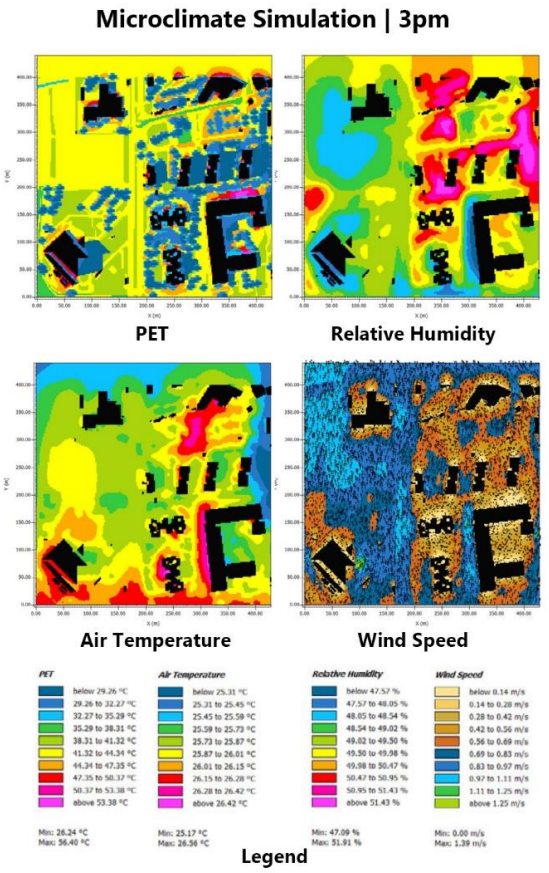

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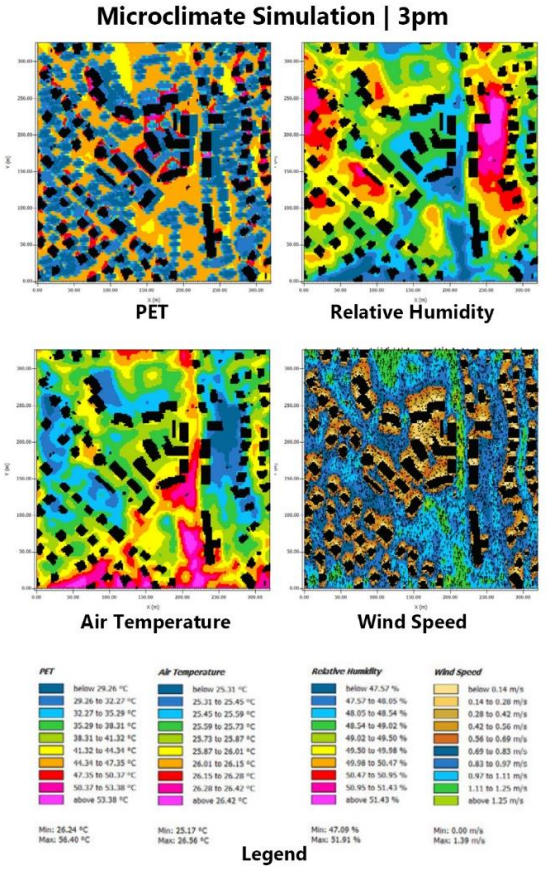

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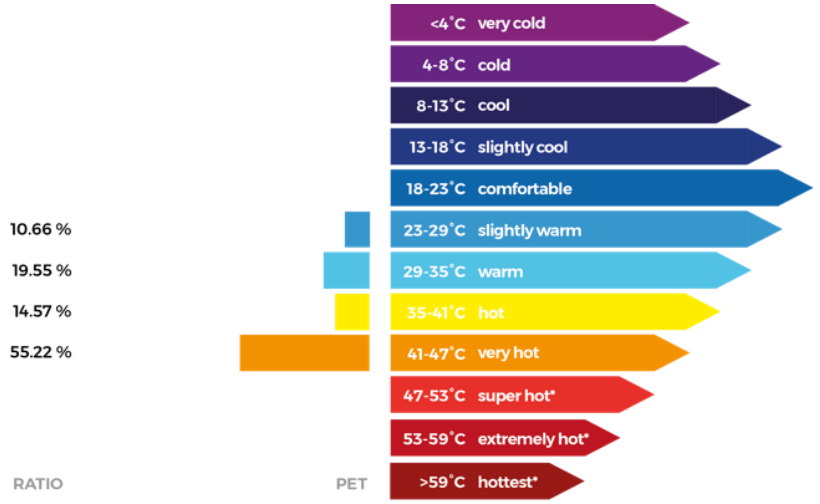
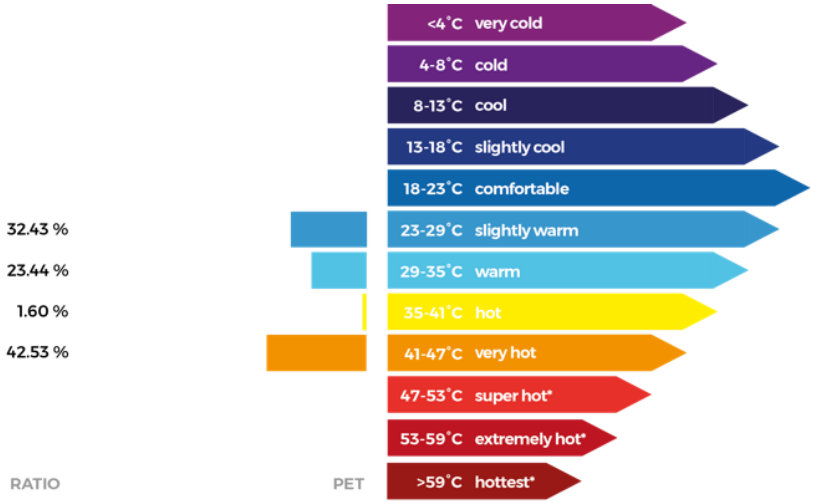


02 TCS	TOTAL	31.54 POINTS
THERMAL COMFORT SCORE	NAME	Segrate Milano 2
	SCENARIO	Status Quo
	EVALUATION	Summer day 21 07 15:00
	ID	Italy-2018-002 Child Adult Elder
	TOOLBOX	GREENPASS® Pre-Certification

* Thermal Comfort classes super hot, extremely hot and hottest have been set up for visual illustration and differenciation of hot temperatures in thermal images. They extend official measuring scale but do not count for scoring of TCS.

2. VILLAGGIO AMBROSIANO



02 TCS	TOTAL	47.57 POINTS
THERMAL COMFORT SCORE	NAME	Segrate Villagio Ambrosiano
	SCENARIO	Status Quo
	EVALUATION	Summer day 21 07 15:00
	ID	Italy-2018-001 Child Adult Elder
	TOOLBOX	GREENPASS® Pre-Certification

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GREENPASS® PRE-CERTIFICATION

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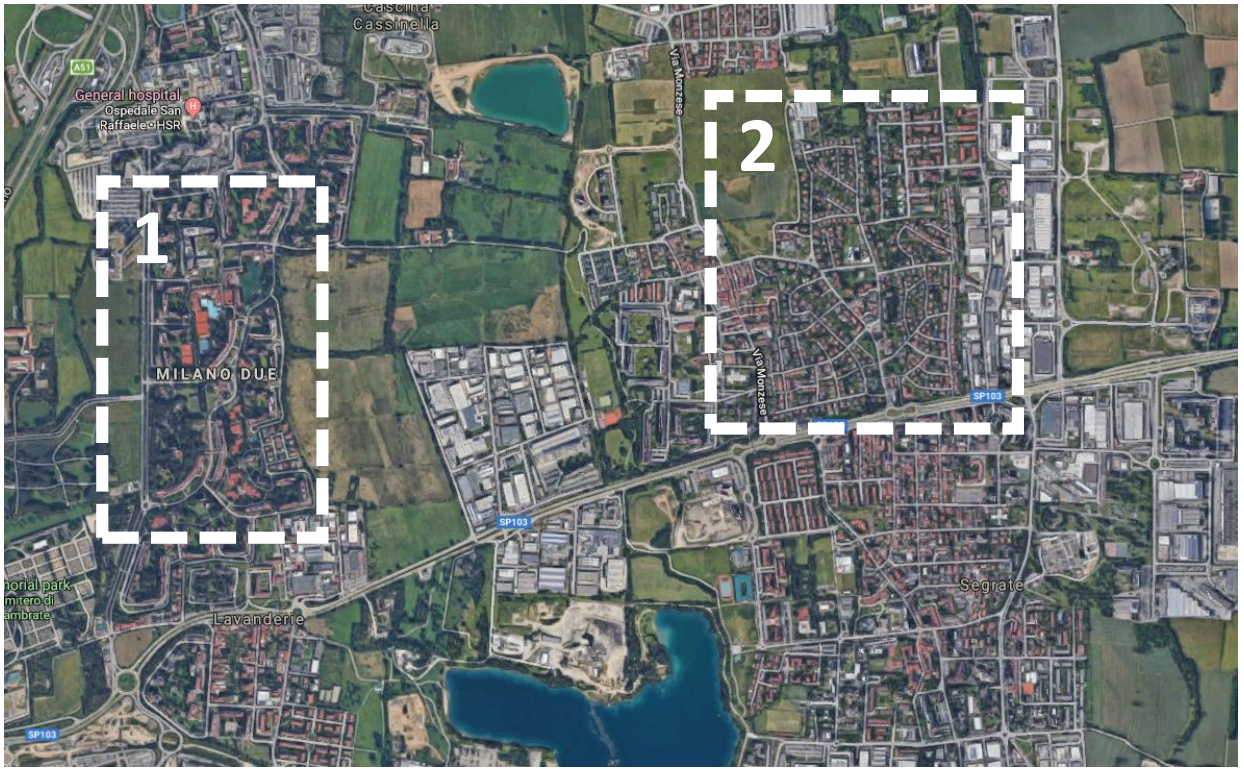

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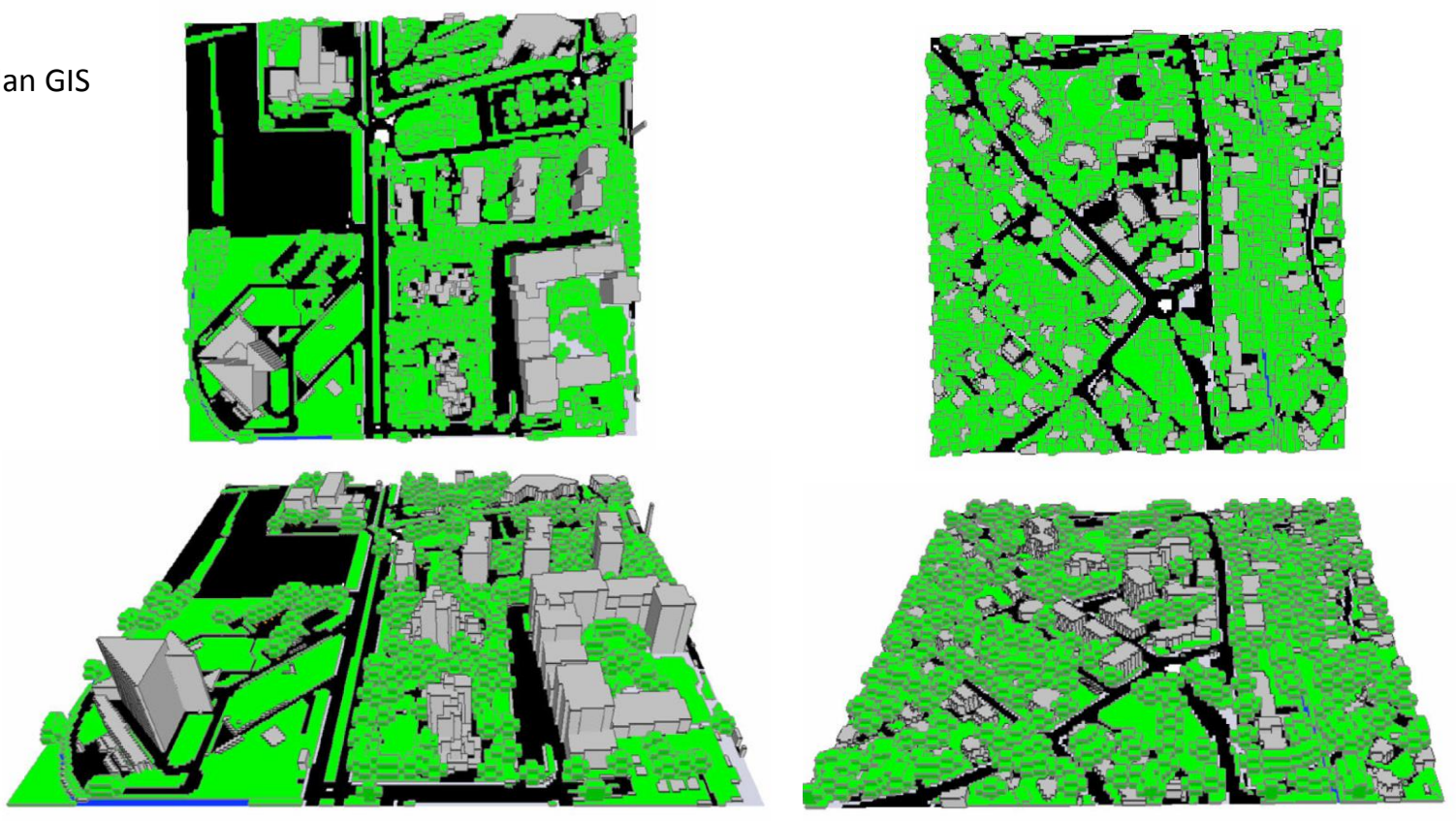

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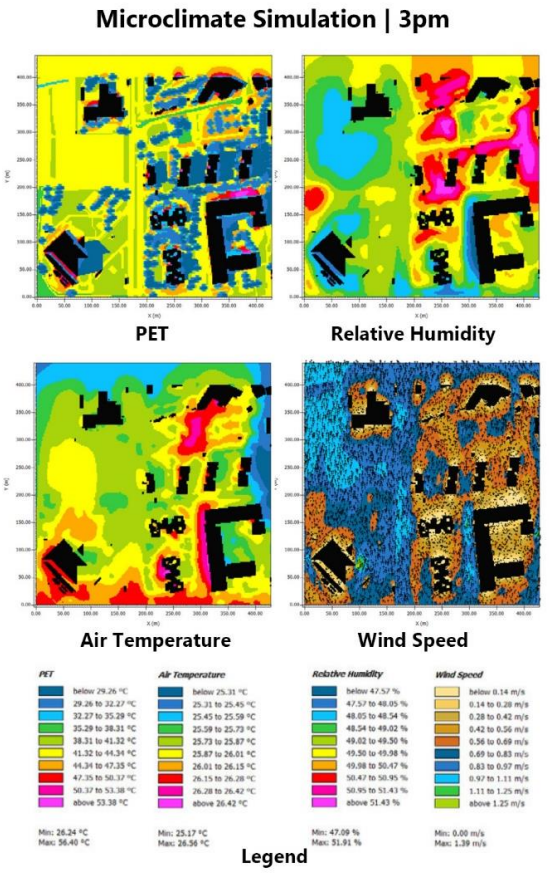

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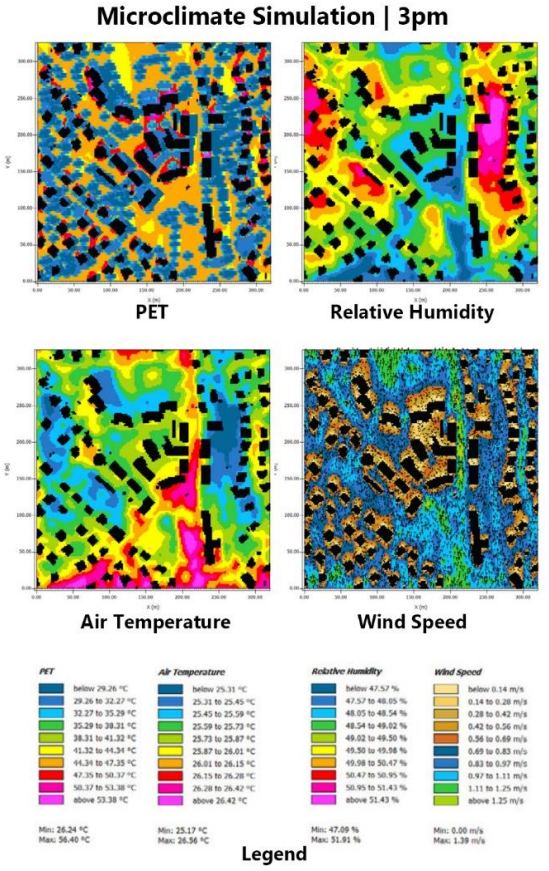
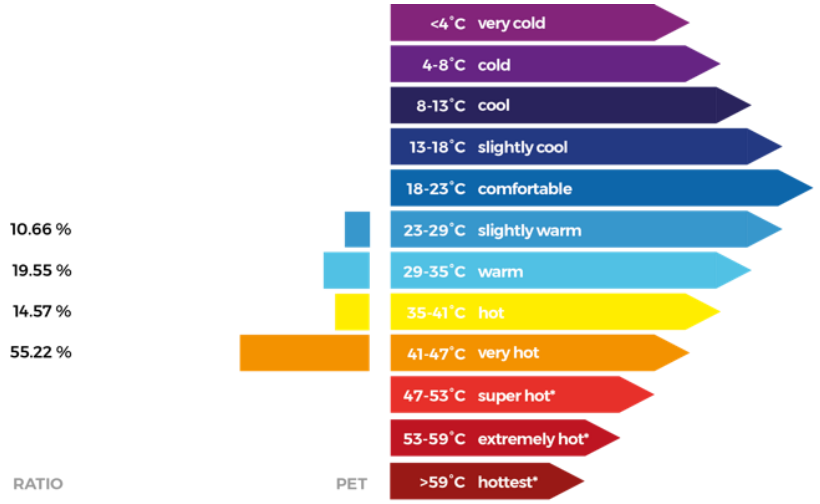


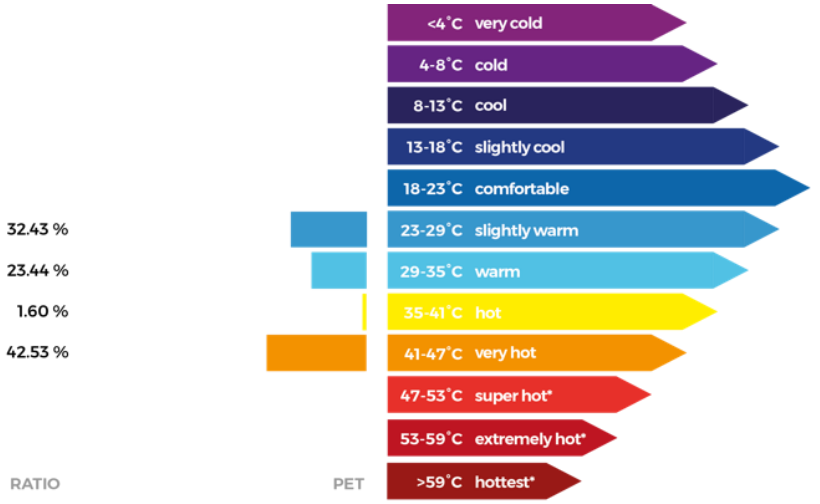
1. MILANO DUE



02 TCS	TOTAL	31.54 POINTS
THERMAL COMFORT SCORE	NAME	Segrate Milano 2
	SCENARIO	Status Quo
	EVALUATION	Summer day 21 07 15:00
	ID	Italy-2018-002 Child Adult Elder
	TOOLBOX	GREENPASS® Pre-Certification

* Thermal Comfort classes super hot, extremely hot and hottest have been set up for visual illustration and differenciation of hot temperatures in thermal images. They extend official measuring scale but do not count for scoring of TCS.

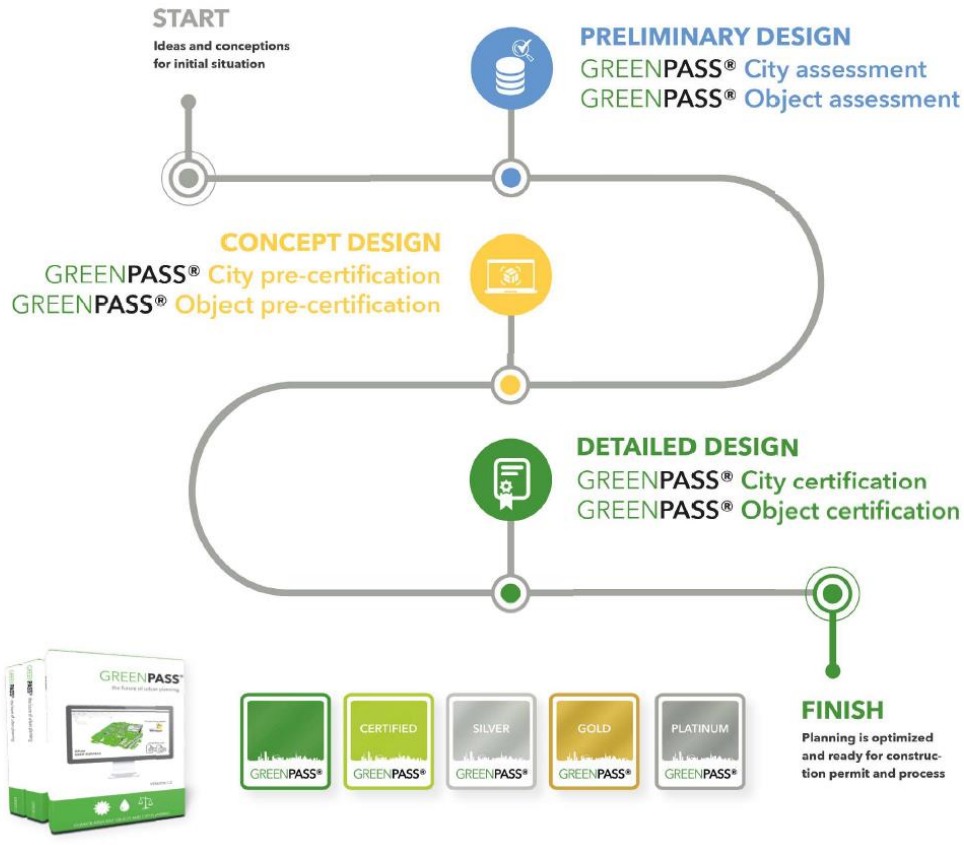
2. VILLAGGIO AMBROSIANO



02 TCS	TOTAL	47.57 POINTS
THERMAL COMFORT SCORE	NAME	Segrate Villagio Ambrosiano
	SCENARIO	Status Quo
	EVALUATION	Summer day 21 07 15:00
	ID	Italy-2018-001 Child Adult Elder
	TOOLBOX	GREENPASS® Pre-Certification

* Thermal Comfort classes super hot, extremely hot and hottest have been set up for visual illustration and differenciation of hot temperatures in thermal images. They extend official measuring scale but do not count for scoring of TCS.

A Method / A Simulation Analytical Result / A Certification



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Grazie per l'attenzione

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