INTERNATIONAL WELL BUILDING INSTITUTE™

Advancements in IAQ Technology are Driving Healthy Indoor Environments

April 18, 2024
GBCI Circle 2024

CIRCLE 2024

IWBI + GBCI

Green Business Certification Inc. (GBCI), the same organization that administers LEED certification, provides third-party certification for WELL.

VERIFIED PERFORMANCE

THE WELL DIFFERENTIATOR

Data-driven environmental assessments through onsite testing.

WELL is like a nutrition label for your building, providing transparency & accountability on the performance of your building.

CATALYZING GLOBAL ADOPTION

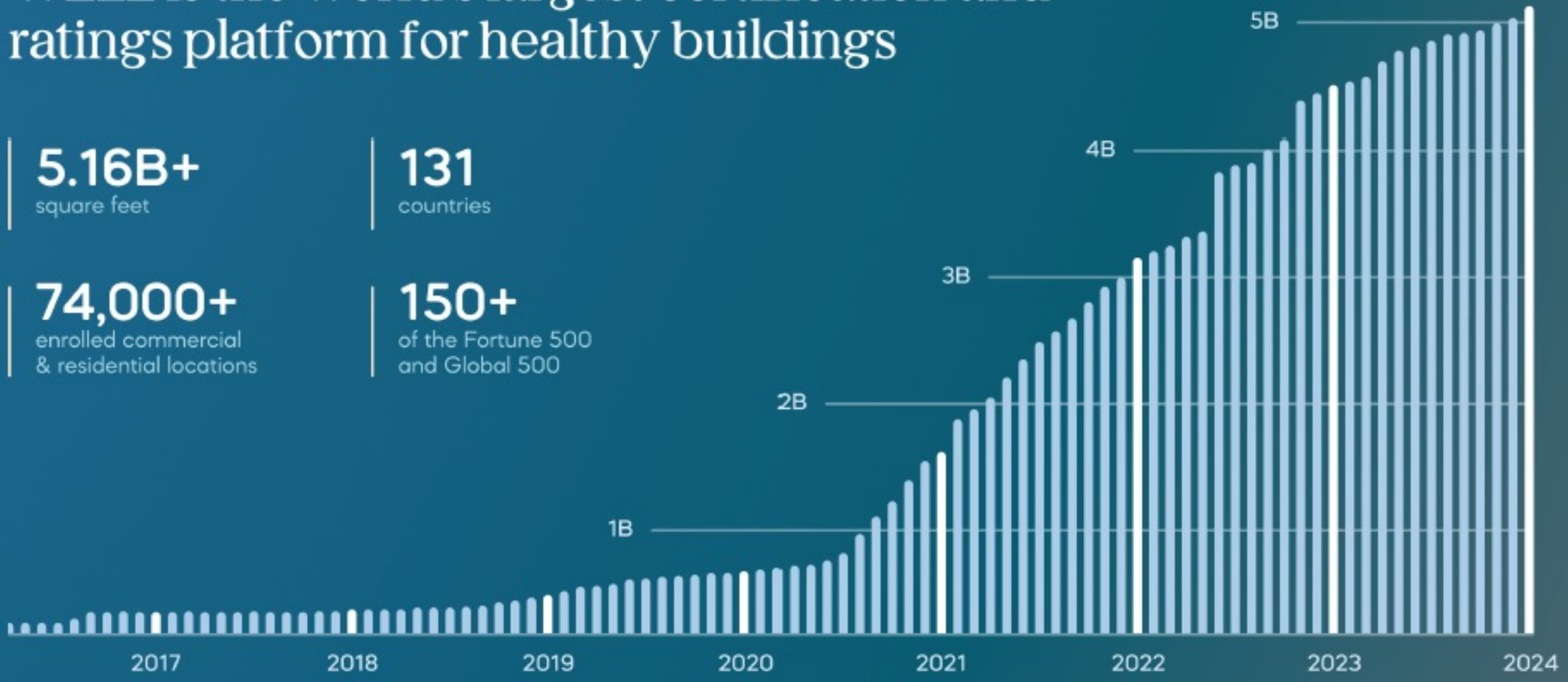
WELL is the world's largest certification and ratings platform for healthy buildings

5.16B+
square feet

131
countries

74,000+
enrolled commercial & residential locations

150+
of the Fortune 500 and Global 500



WELL in Europe

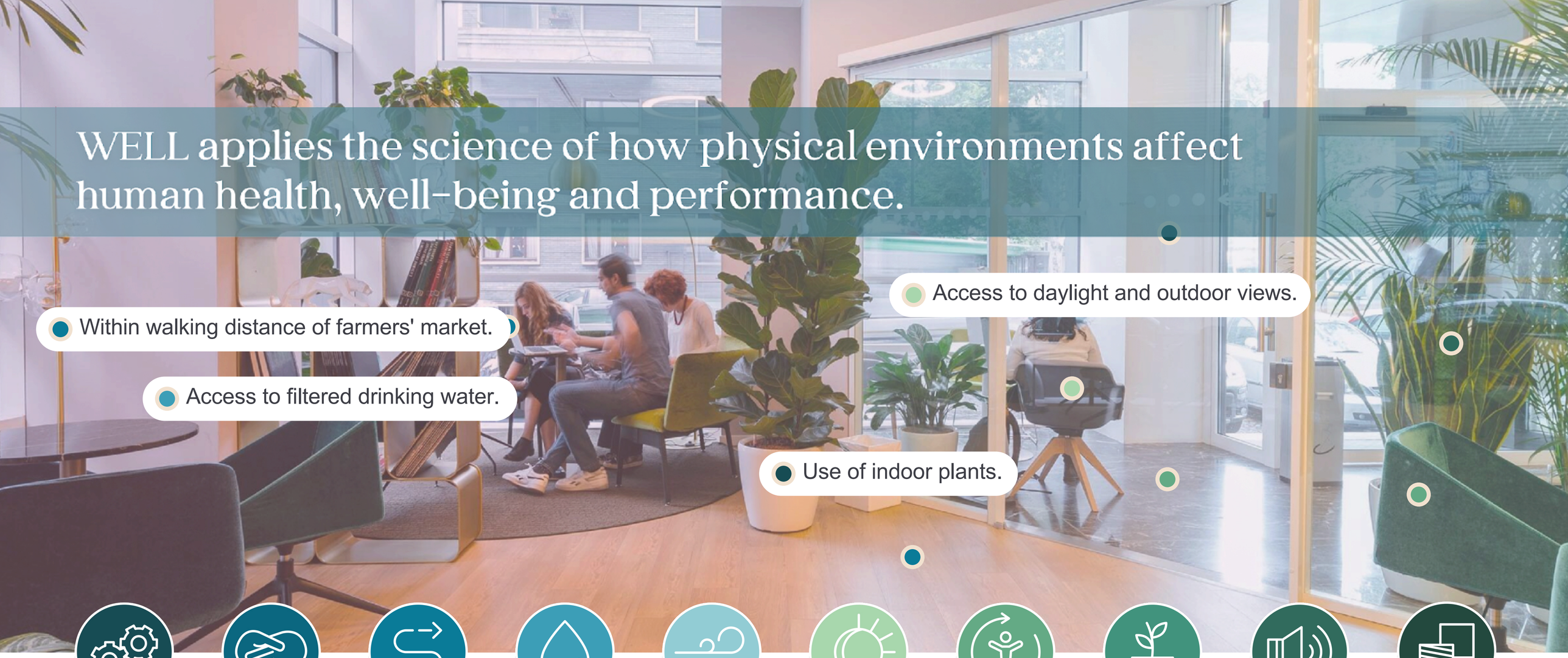
957
Certifications/ Ratings

3,736
Locations

458 million
Sq ft

1,122
WELL APs

Updated 4th April 2024, based on submitted information at enrollment
Visit wellcertified.com for latest metrics



MIND
COMMUNITY
MOVEMENT
WATER
AIR
LIGHT
THERMAL COMFORT
NOURISHMENT
SOUND
MATERIALS

R2M Solution

BEYOND DESIGN INTERVENTIONS

WELL IS HOLISTIC

POLICY

OPERATIONS

DESIGN


grupo aire limpio
Entra, respira, cuídate y dejate cuidar.


grupo aire limpio
Grupo Aire Limpio
Built spaces
Environmental Wellbeing
Leader

grupo aire limpio

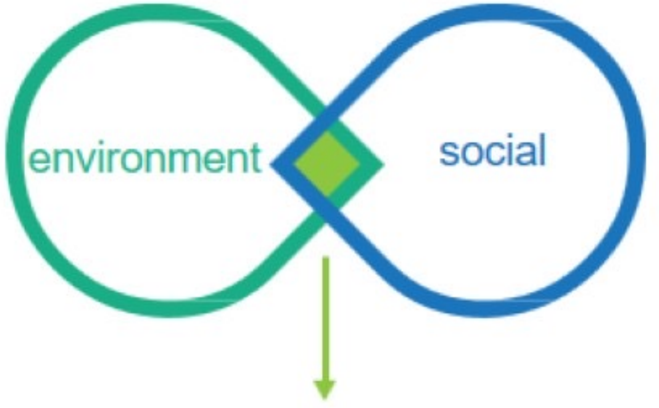
We lead in both areas of ESG within our industry

Sustainable Buildings

- Efficiency of the Water
- Reduction of Waste
- Indoor Air Quality
- Reduction of toxic substances
- Sustainable development Materials
- Smart Growth
- Net Zero Carbon: Carbon Footprint,
- Energy Efficiency
- Renewable Energy

PROFITS

- Helps investors measure their real estate performance.
- Increase in occupancy rate (+4% vs non-LEED buildings).
- 34% less CO2 emissions and 25% less energy consumed.



Healthy Buildings

- Ventilation
- Humidity
- Dust & Pests
- Water Quality
- Lighting & Views
- Noise
- Indoor Air Quality
- Safety
- Thermal Health

PROFITS

- Demand driven by tenants and investors (87% offices)Incremento
- Rental premiums of 4.4%
- Increased employee productivity and less absenteeism.

We Are a Group

aire limpio

Indoor Air Quality

for people's health and well-being. Ventilation, purification, filtration and IAQ monitoring equipment in building HVAC systems.

AmbiSalud

Consulting Services

for the control and improvement of Indoor Air Quality and efficiency energy management of buildings, as well as to ensure that the building or critical area always remains healthy and sustainable

COMMTECH

Commissioning Services

commissioning and auditing of building projects (new or existing) and mission-critical environments, thanks to the latest technology, guaranteeing the care of the inhabitants and the environment of the building.

Built Space

ACSOS
Evaluamos la Sostenibilidad

Building Certification

and WELL pretest and audits in LEED, BREEAM, DGNB and VERDE certifications.

ACSOS
Evaluamos la Sostenibilidad

WELL Performance verification Services

- WELL pretest performance services
- Building Certification Consulting
- Measurements and Audits for LEED Certification Projects
- Measurements and audits for BREEAM certification projects
- Measurements and audits for DGNB certification projects
- Measurements and audits for VERDE certification projects

www.acsos.es

WELL PERFORMANCE RATING

ACSOS
Evaluamos la Sostenibilidad

The WELL Performance Rating

WELLCERTIFIED.COM

INTERNATIONAL WELL BUILDING INSTITUTE
WELL
PERFORMANCE
RATED
2022

WELL PERFORMANCE RATING

ACSOS
Evaluamos la Sostenibilidad

The WELL Performance Rating is an evidence-based, third-party verified pathway for measuring, benchmarking and monitoring building performance and occupant experience.

Focus areas:

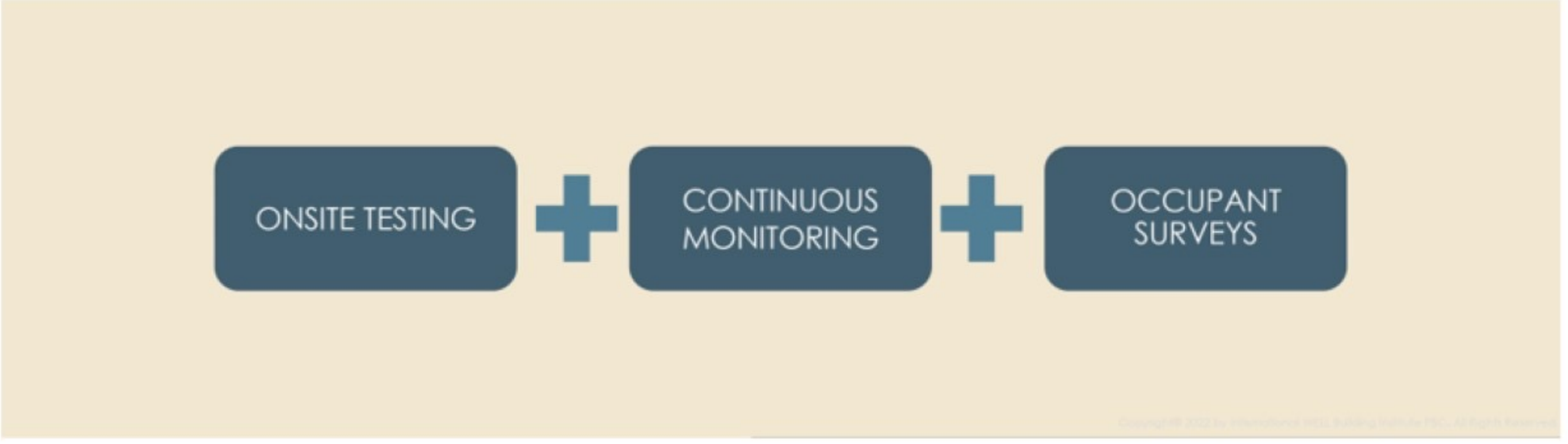
- Indoor Air Quality
- Water Quality Management
- Light Measurements
- Thermal Conditions
- Acoustic Performance
- Environmental Monitoring
- Occupant Experience

WELL PERFORMANCE RATING

ACSOS
Evaluamos la Sostenibilidad

VERIFIED PERFORMANCE

Performance Verification has been at the heart of the WELL Building Standard since 2014.

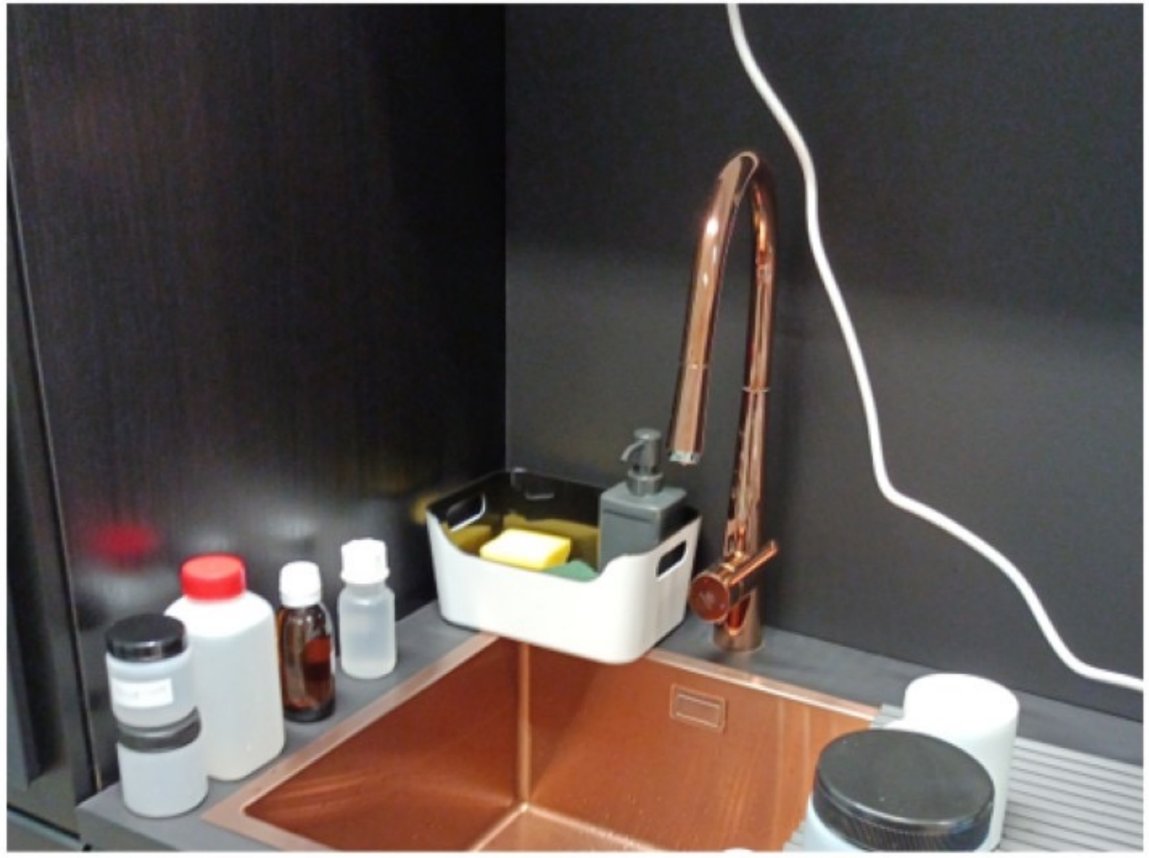


AIR QUALITY

ACSOS
Evaluamos la Sostenibilidad

WATER AND LIGHT TESTS

ACSOS
Evaluamos la Sostenibilidad



SOUND AND THERMAL COMFORT

ACSOS
Evaluamos la Sostenibilidad

ENVIRONMENTAL MONITORING AND OCCUPANT EXPERIENCE

ACSOS
Evaluamos la Sostenibilidad

ENHANCING INDOOR ENVIRONMENTAL QUALITY THROUGH WELL-BEING-ORIENTED CERTIFICATIONS

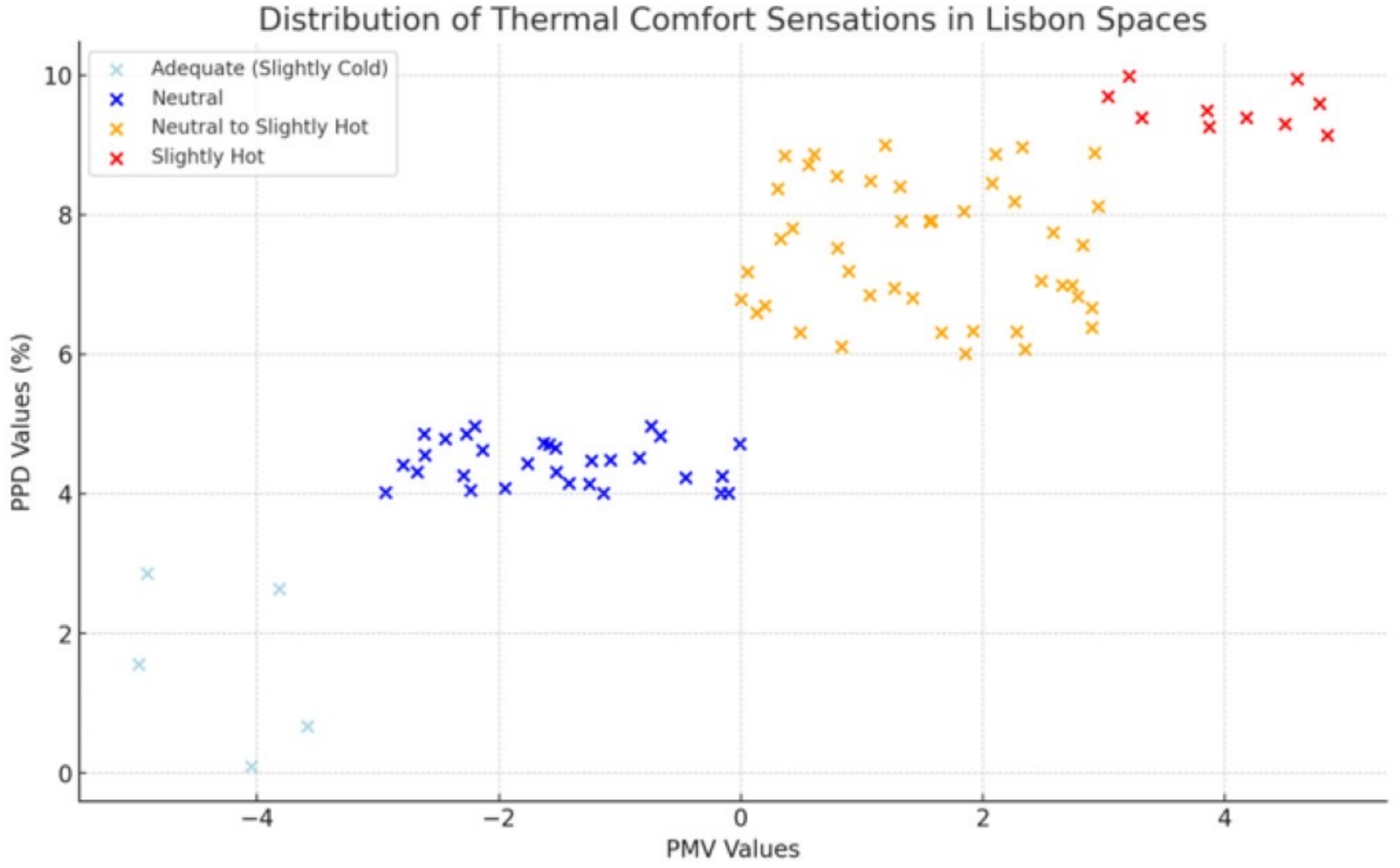
ACSOS
Evaluamos la Sostenibilidad

The case study

Through the WELL Certification procedures, the performance results in Indoor Air Quality and Thermal Comfort of 18 buildings located in Madrid, Barcelona, Lisbon and Milan with a surface area close to 200,000 sqm have been analyzed.

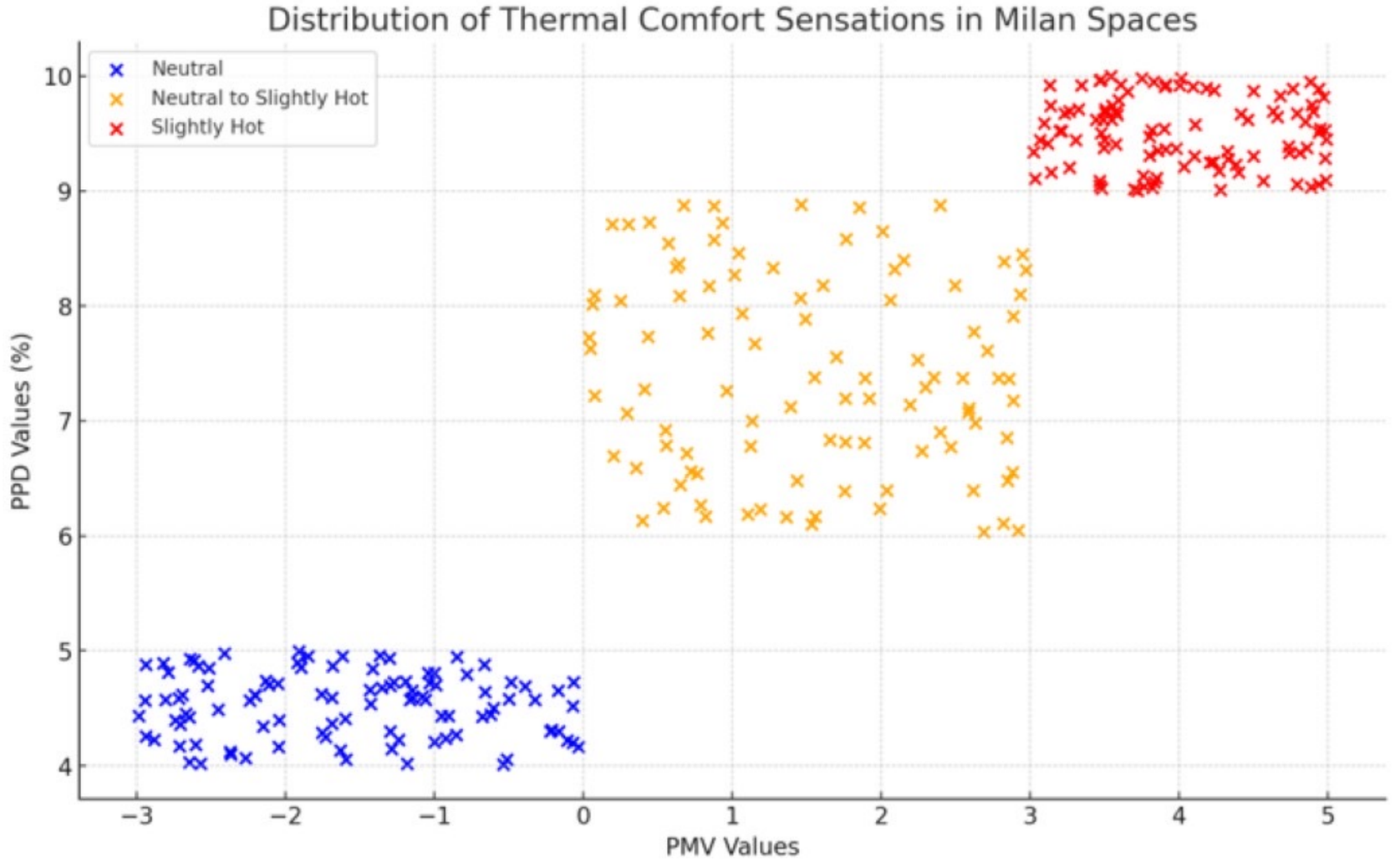
DISTRIBUTION OF THERMAL COMFORT SENSATIONS IN LISBON SPACES, AS MEASURED BY PMV AND PPD VALUES

ACSOS
Evaluamos la Sostenibilidad



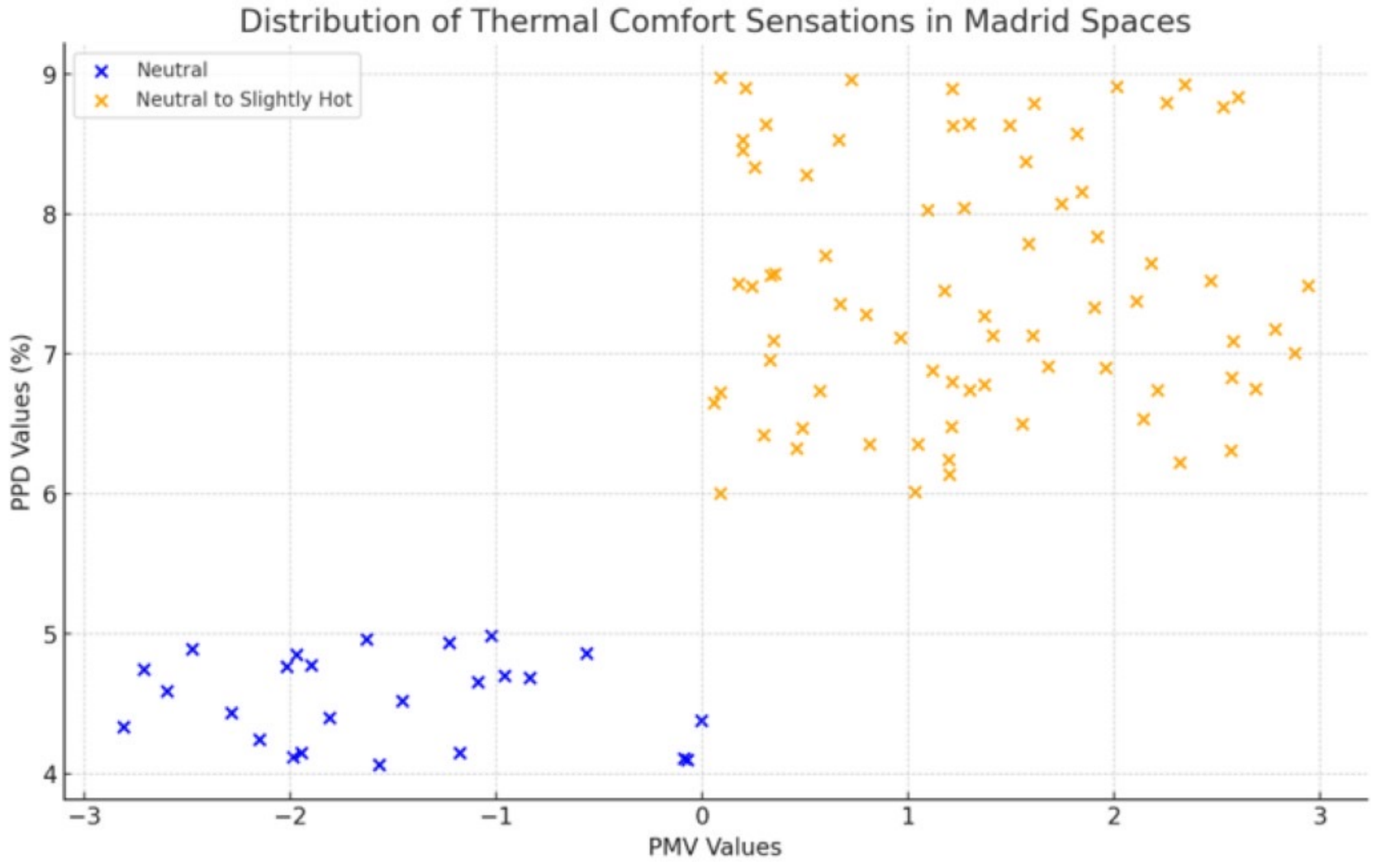
DISTRIBUTION OF THERMAL COMFORT SENSATIONS IN MILAN SPACES, AS MEASURED BY PMV AND PPD VALUES

ACSOS
Evaluamos la Sostenibilidad



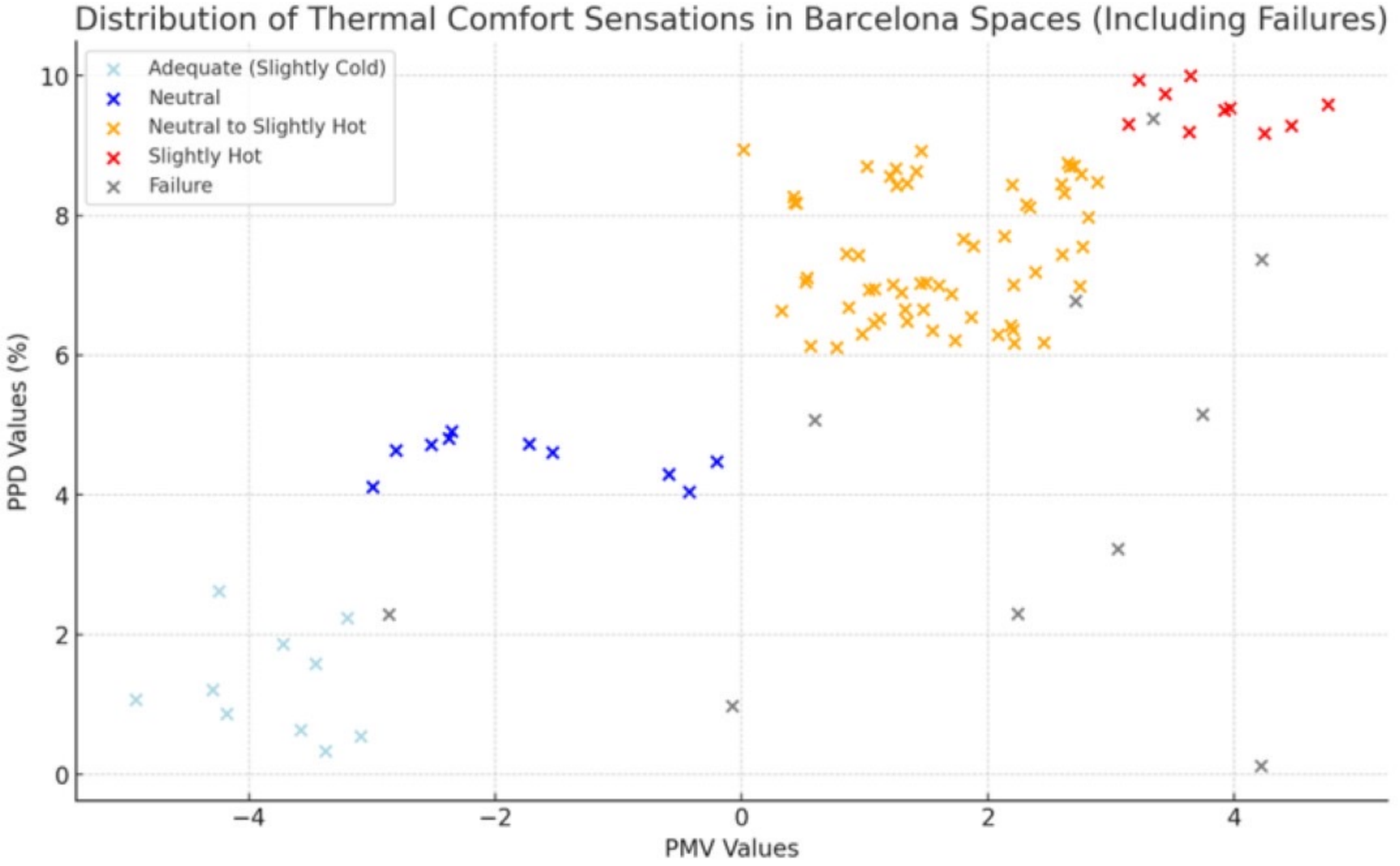
DISTRIBUTION OF THERMAL COMFORT SENSATIONS IN MADRID SPACES, AS MEASURED BY PMV AND PPD VALUES

ACSOS
Evaluamos la Sostenibilidad



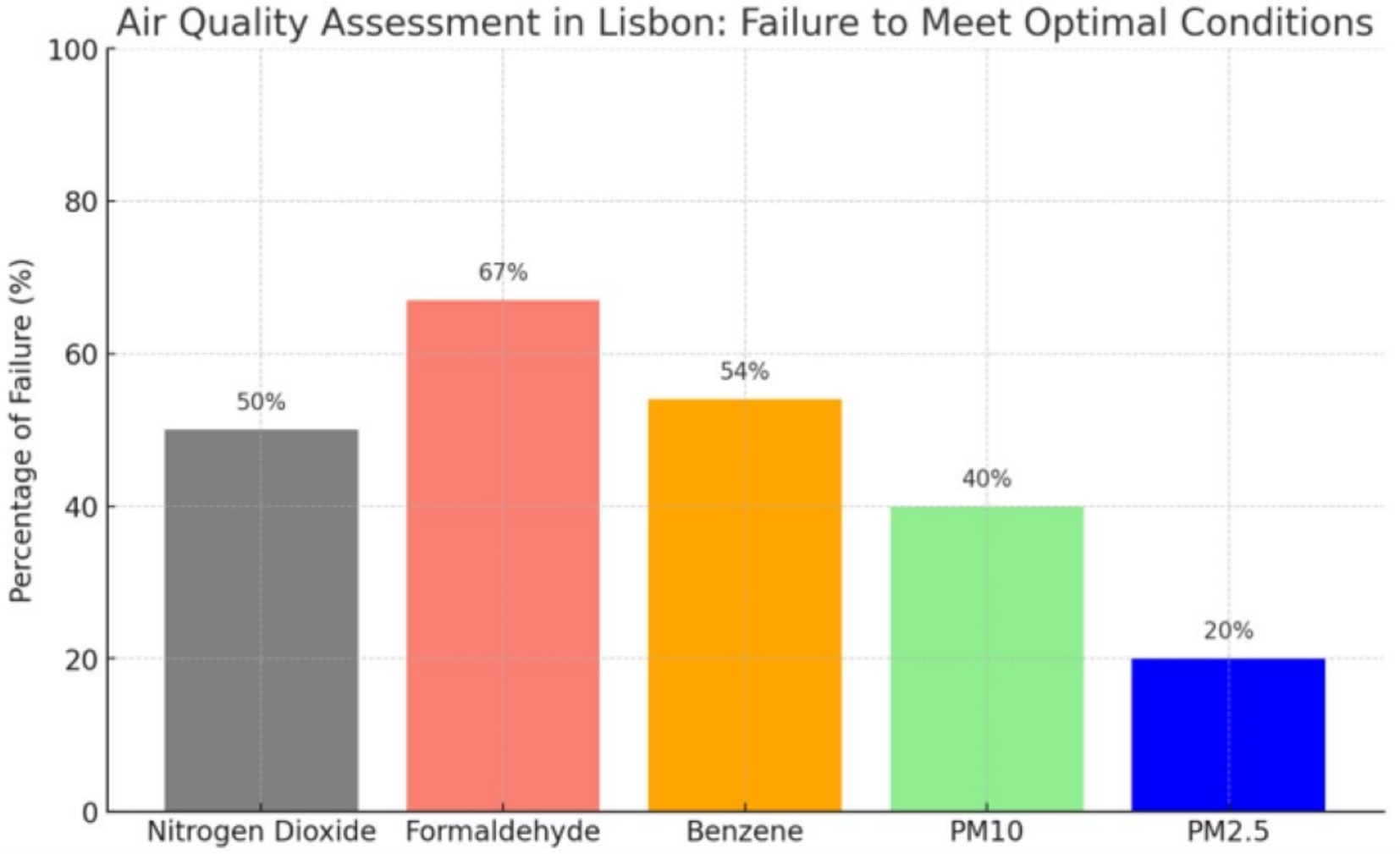
DISTRIBUTION OF THERMAL COMFORT SENSATIONS IN BARCELONA SPACES, AS MEASURED BY PMV AND PPD VALUES

ACSOS
Evaluamos la Sostenibilidad



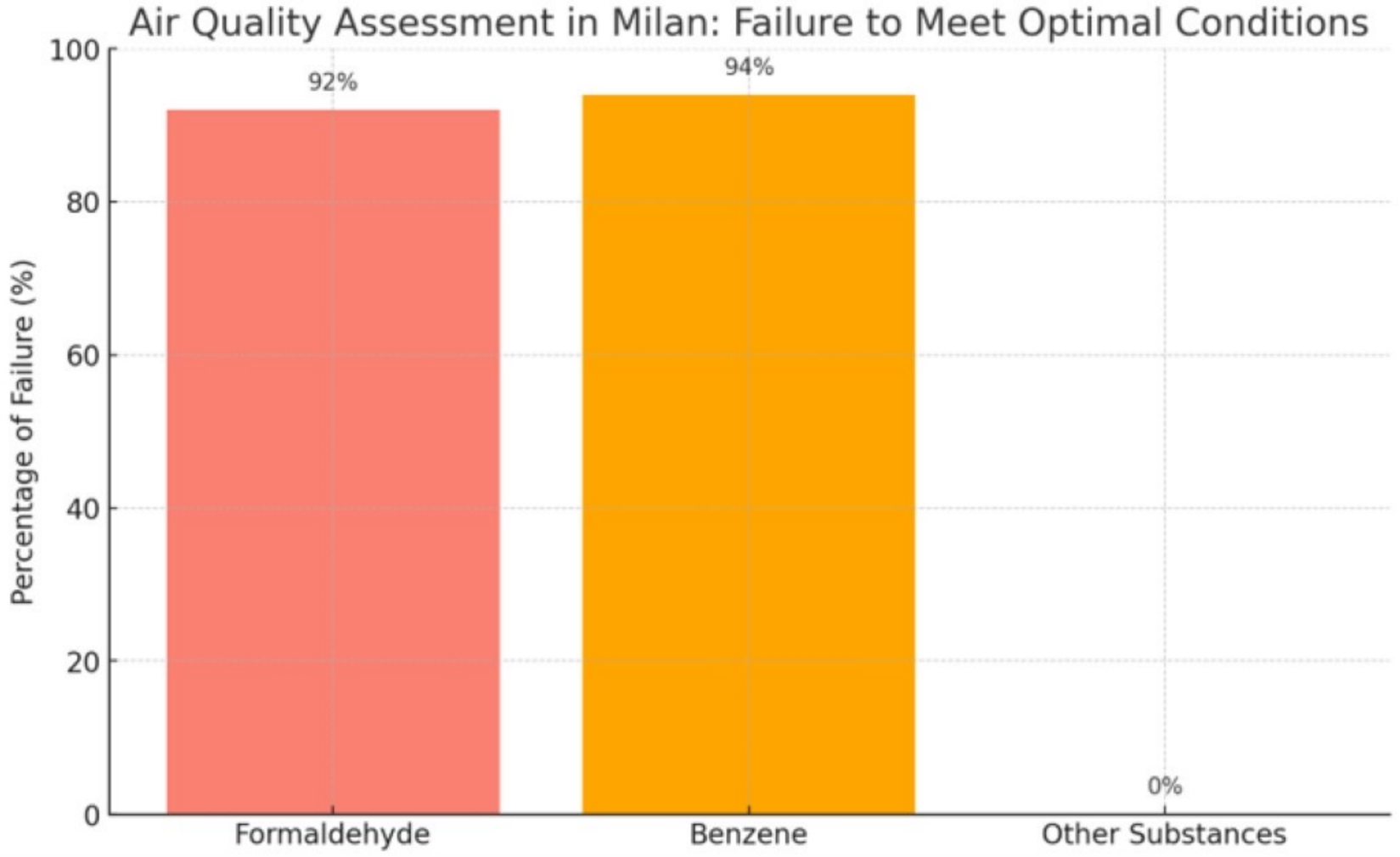
PERCENTAGE OF FAILURE TO MEET OPTIMAL CONDITIONS FOR EACH SUBSTANCE AND PARTICLE IN THE ANALYZED INDOOR SPACES FOR LISBON.

ACSOS
Evaluamos la Sostenibilidad



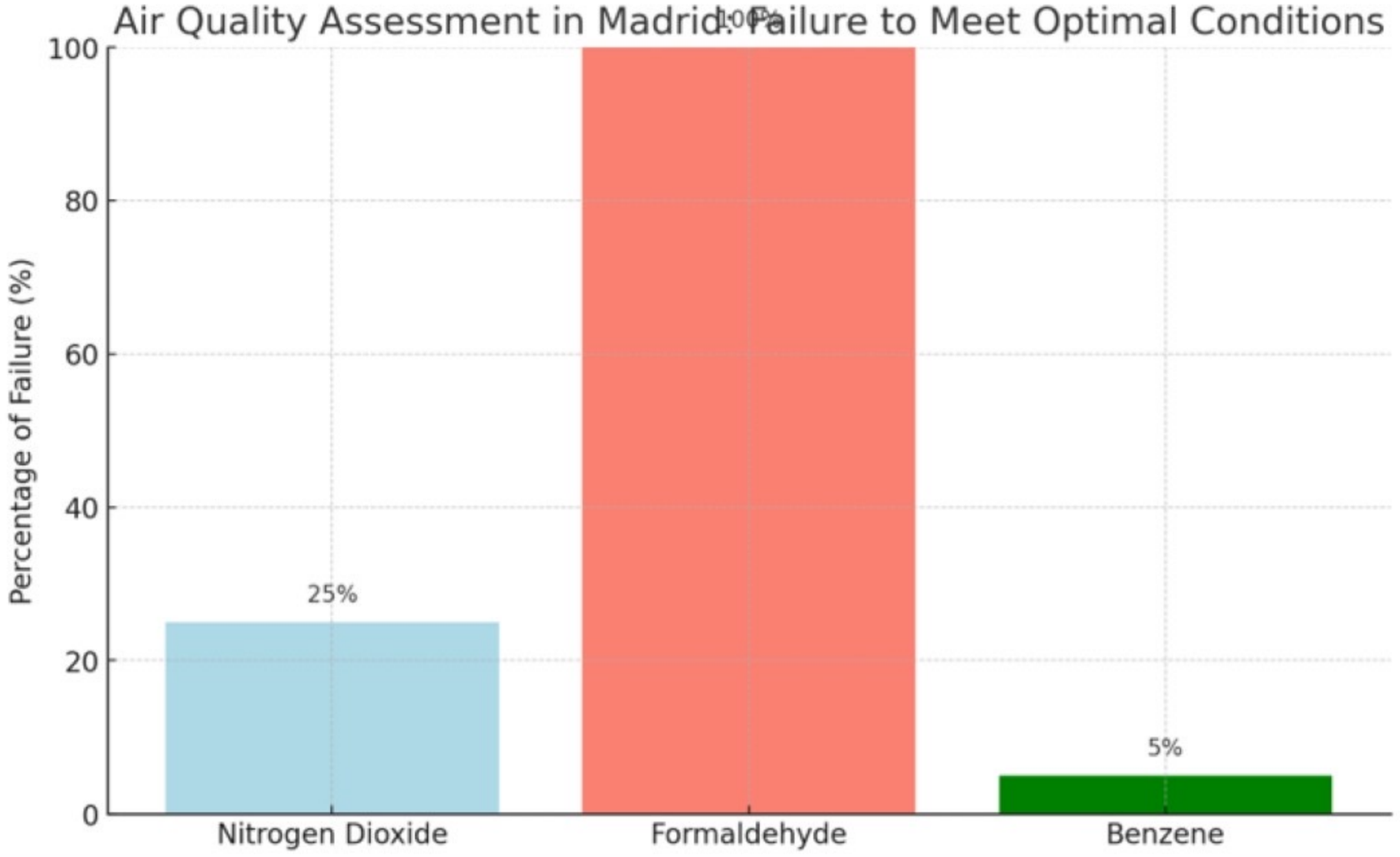
PERCENTAGE OF FAILURE TO MEET OPTIMAL CONDITIONS FOR EACH SUBSTANCE AND PARTICLE IN THE ANALYZED INDOOR SPACES FOR MILAN.

ACSOS
Evaluamos la Sostenibilidad



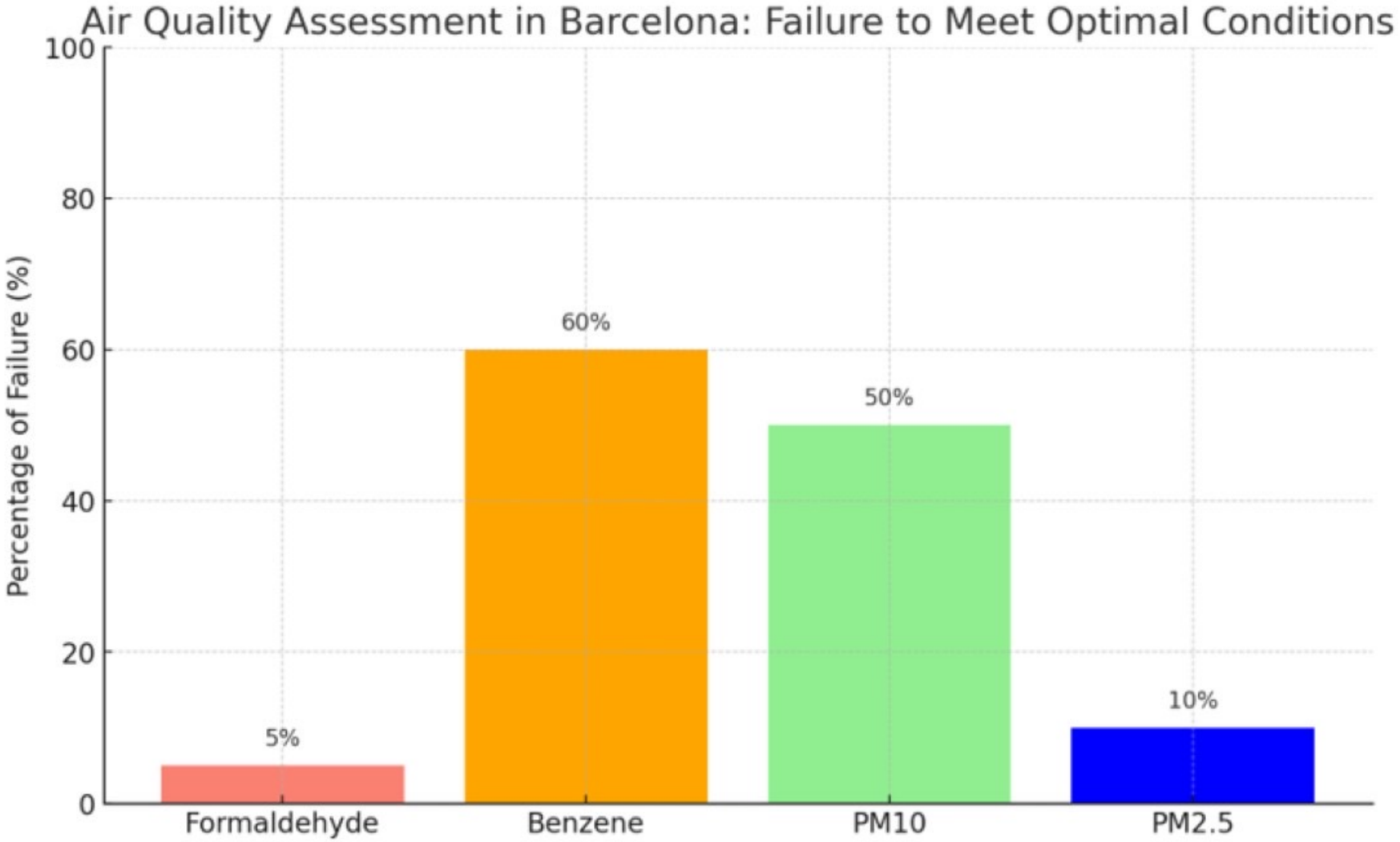
PERCENTAGE OF FAILURE TO MEET OPTIMAL CONDITIONS FOR EACH SUBSTANCE AND PARTICLE IN THE ANALYZED INDOOR SPACES FOR MADRID.

ACSOS
Evaluamos la Sostenibilidad



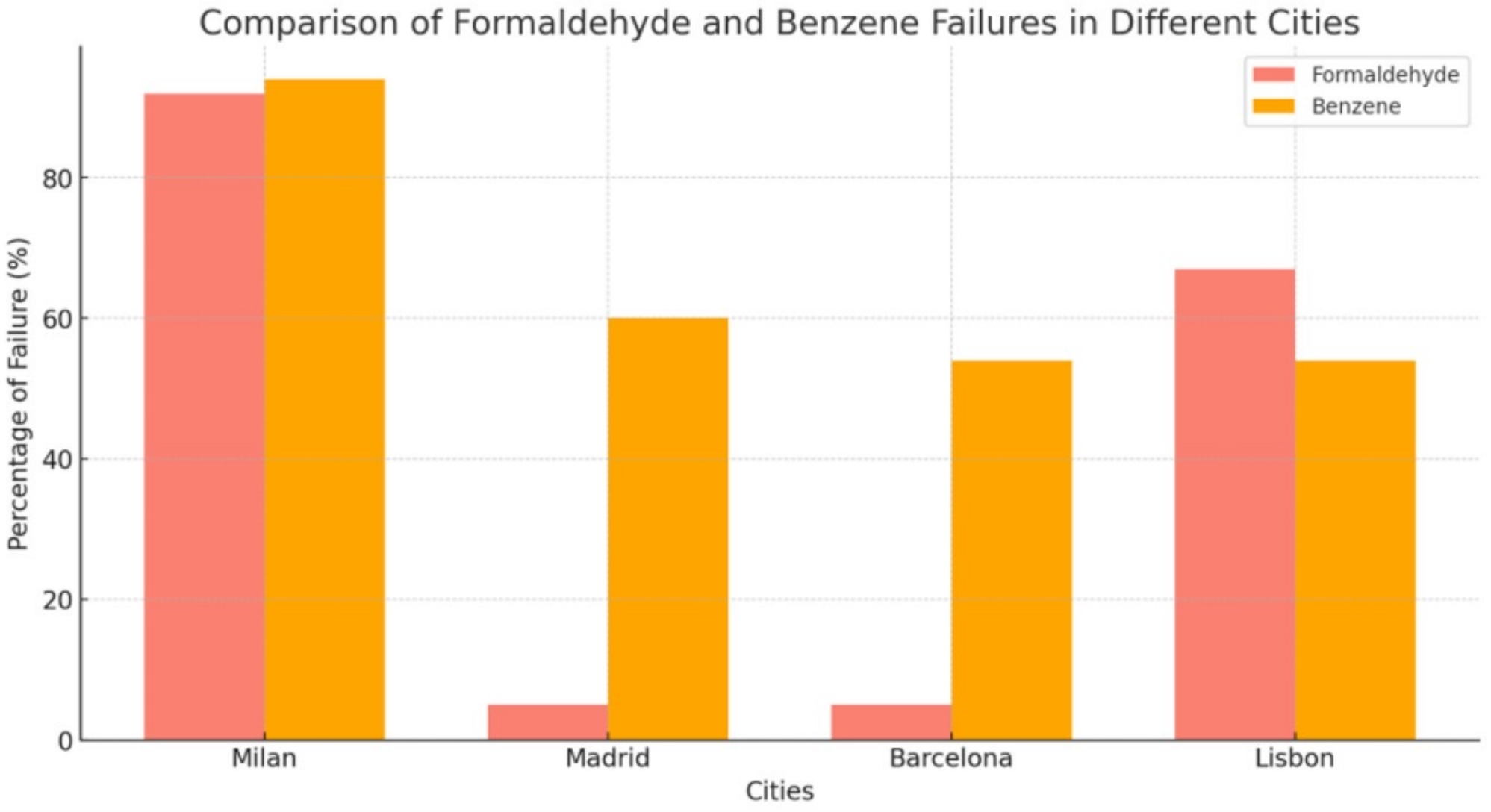
PERCENTAGE OF FAILURE TO MEET OPTIMAL CONDITIONS FOR EACH SUBSTANCE AND PARTICLE IN THE ANALYZED INDOOR SPACES FOR BARCELONA.

ACSOS
Evaluamos la Sostenibilidad



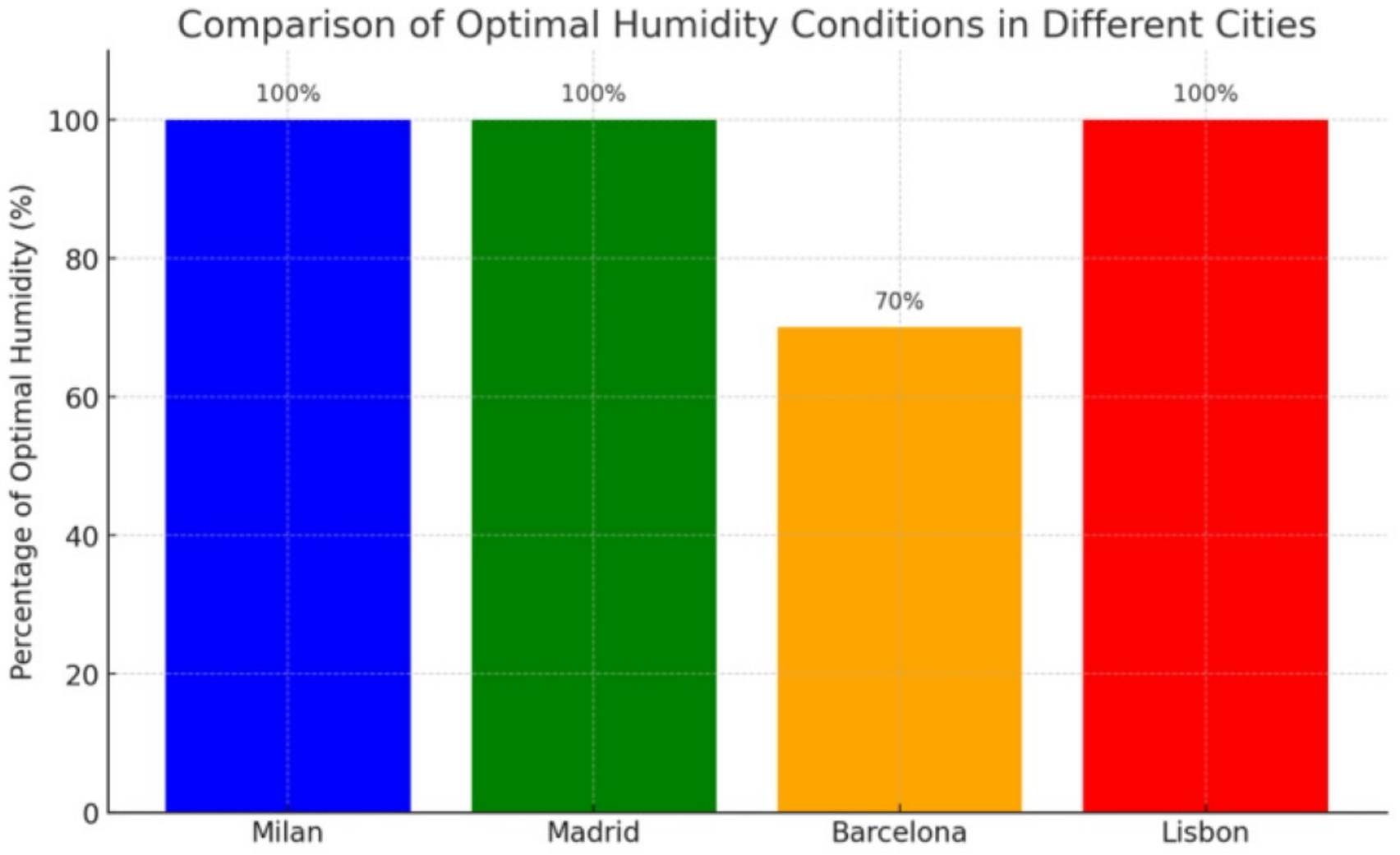
DISCUSSION, OVERALL COMPARISON AND IMPLICATIONS

ACSOS
Evaluamos la Sostenibilidad



DISCUSSION, OVERALL COMPARISON AND IMPLICATIONS

ACSOS
Evaluamos la Sostenibilidad



DISCUSSION, OVERALL COMPARISON AND IMPLICATIONS

ACSOS
Evaluamos la Sostenibilidad

- Milan faces significant air quality challenges, particularly with Benzene and Formaldehyde, and tends to have warmer indoor environments.
- Madrid, while managing particulate matter well, needs to address Nitrogen Dioxide and Benzene levels more effectively. Its indoor environments are also generally warmer.
- Barcelona shows a balanced indoor thermal environment but has room for improvement in managing PM10 levels.
- Lisbon, similar to Barcelona, has a varied thermal comfort profile but faces challenges with Formaldehyde and PM10.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INCORPORATIONS

GREEN BUILDING CERTIFICATION

LEED v5 BUILDING STANDARD

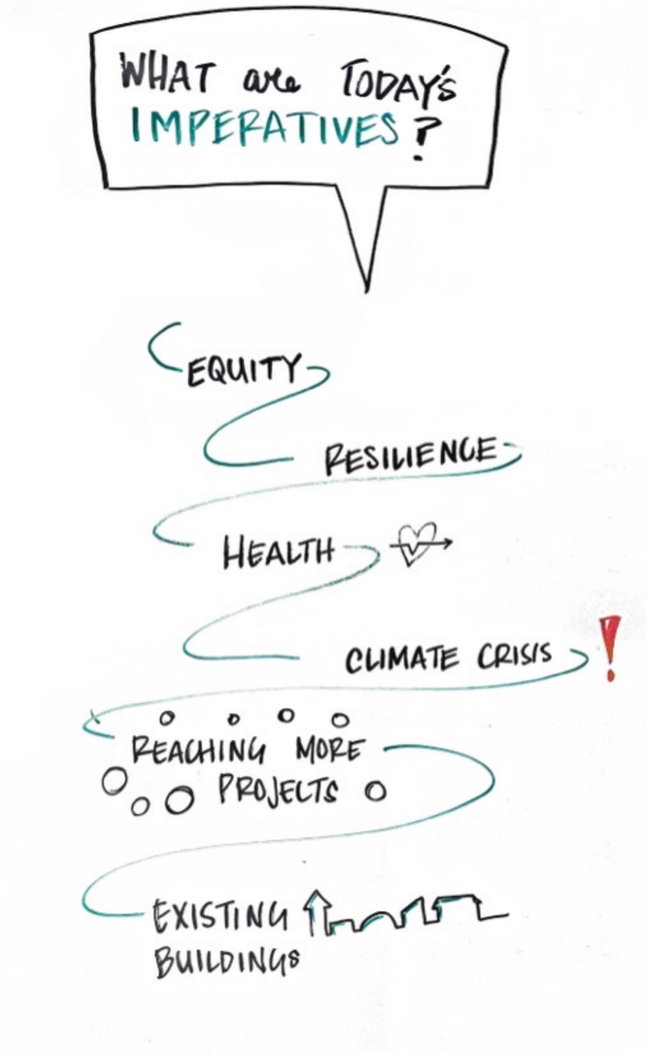
LEED V5 IS THE NEWEST VERSION OF LEED. IT MARKS A TRANSFORMATIVE MILESTONE IN THE BUILT ENVIRONMENT'S ALIGNMENT WITH A LOW-CARBON FUTURE AND ADDRESSES CRITICAL IMPERATIVES SUCH AS EQUITY, HEALTH, ECOSYSTEMS AND RESILIENCE.

GREEN BUILDING CERTIFICATION

THE FUTURE OF LEED

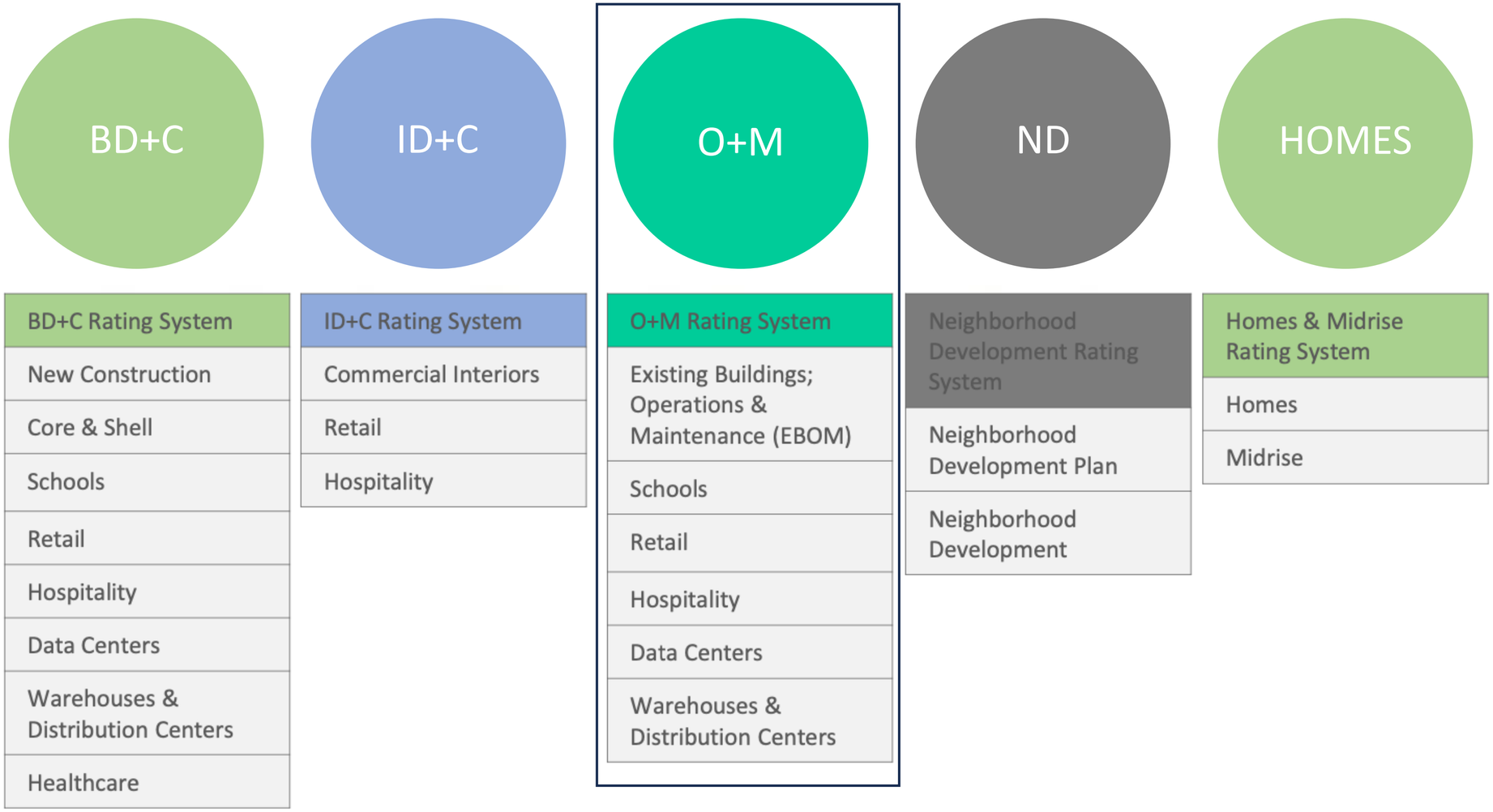
PRINCIPLES

- Scale for greatest impact.
- Decarbonize the building industry swiftly to reflect the urgency of the climate crisis.
- Inspire and recognize adaptive and resilient built environments.
- Invest in human health and well-being.
- Create environments in which diversity, equity and inclusivity thrive.
- Support flourishing ecosystems through regenerative development practices.



GREEN BUILDING CERTIFICATION

THE FUTURE OF LEED



GREEN BUILDING CERTIFICATION

LEED v5 SYSTEM GOALS

25% OF POINTS

- ✓ SITE
- ✓ LANDSCAPE ECOTOXICITY
- ✓ OTHER POLLUTION ASSOCIATED WITH MATERIALS

50% OF POINTS

- ✓ DECARBONIZATION
- ✓ RESILIENCE

25% OF POINTS

- ✓ SOCIAL EQUITY
- ✓ HEALTH
- ✓ WELL-BEING
- ✓ INDOOR AIR QUALITY

LEED V5

CREDITS HEALTH

WELL CROSSWALKS

LEED for the planet WELL for the people

Detailed alignment tools for LEED and WELL create efficiencies for organisations pursuing both programs.

Seamless technical alignments

Accelerate implementation with strategic overlaps between WELL and LEED

Coordinated review cycles

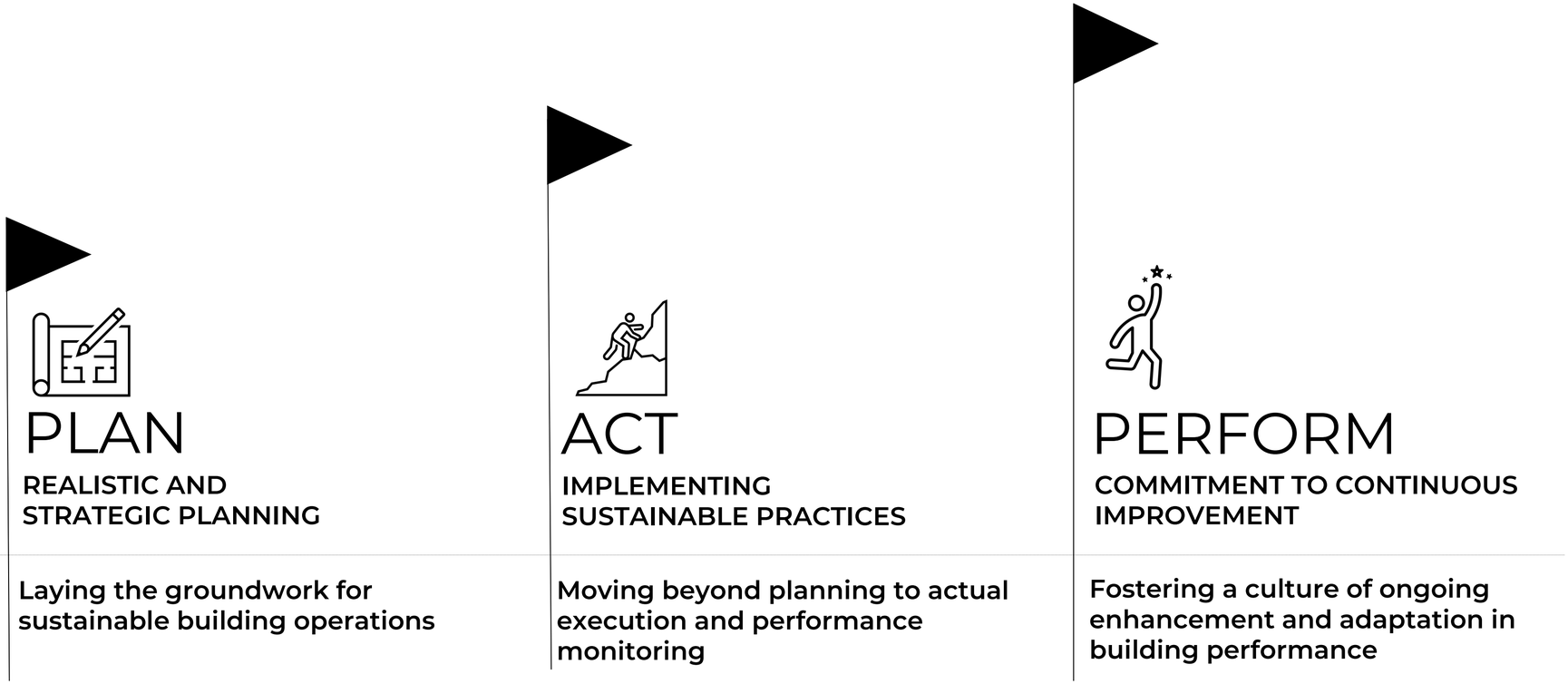
Expedite achievements by submitting documentation simultaneously

An integrative approach

Embed environmental and human health into business strategy from the onset

LEED V5

FRAMEWORK CREDIT STRUCTURE



PLAN

REALISTIC AND STRATEGIC PLANNING

Laying the groundwork for sustainable building operations

ACT

IMPLEMENTING SUSTAINABLE PRACTICES

Moving beyond planning to actual execution and performance monitoring

PERFORM

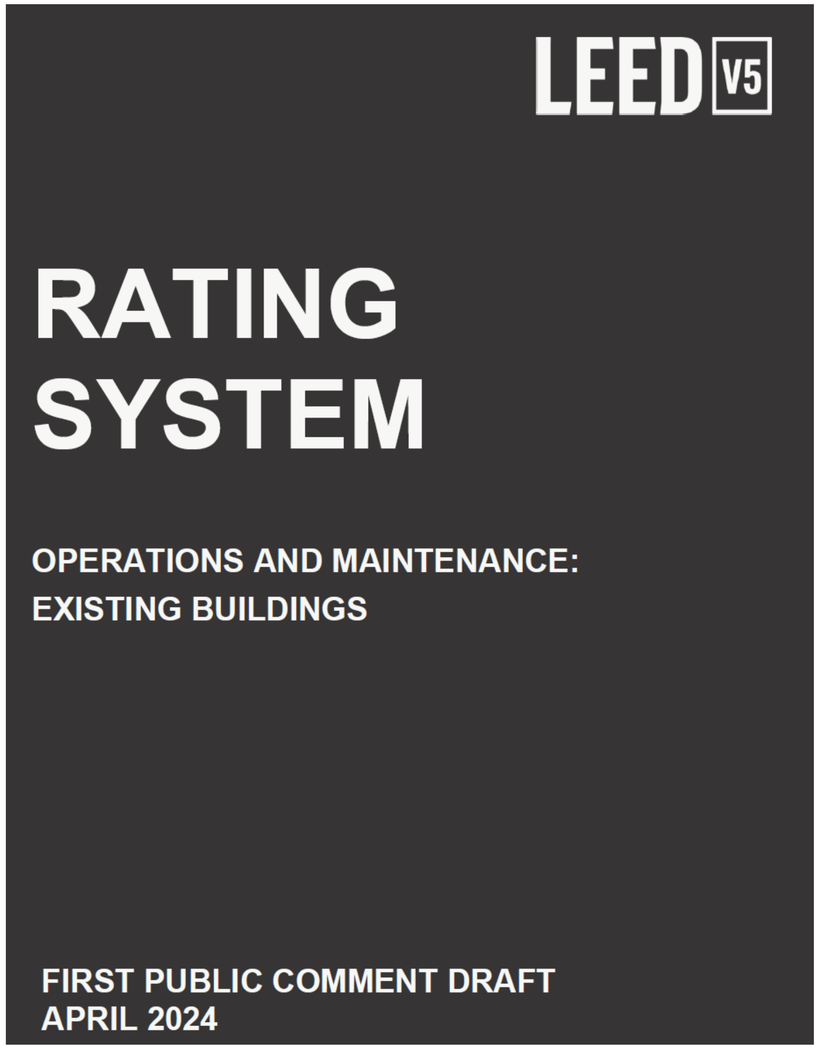
COMMITMENT TO CONTINUOUS IMPROVEMENT

Fostering a culture of ongoing enhancement and adaptation in building performance

CONTINUOUS IMPROVEMENT BECOMES AN ELEMENT OF SUCCESSFUL CERTIFICATION

LEED V5

CREDITS HEALTH



EQ Credit: Indoor Air Quality Performance

1 – 12 points

Intent

To support indoor air quality awareness and identify opportunities for additional air quality improvements or energy savings. To promote occupants' comfort, well-being, and productivity by achieving acceptable indoor air quality

LEED V5

CREDITS HEALTH

IAQ Credit Indoor Air Quality Performance Achievement Pathways

Option 1. Measure Indoor Air	Points	Option 2. Strategies to Improve Indoor Air Quality	Points
Path 1. Continuous Indoor Air Monitoring	1-12	**Path 1.** Ventilation per ANSI/ASHRAE Standard 62.1	2-4
Path 2. Meet air quality thresholds: via one-time air testing	1-4	**Path 2.** Filtration of outdoor air	1
		Path 3. Filtration of and recirculated air	1
		Path 4. Ventilation System Maintenance	1
		Path 5. Entryway systems	1
		Path 6. Automatic Filter Change Notification	1
		Path 7. Operable Windows	1
		Path 8. Infection Risk Management	1
		Path 9. Episodic Outdoor Ambient Conditions	1
		Path 10. Outdoor air Quality Monitoring	1
		Path 11. Operating Strategy Using Outdoor Air Quality Monitoring Information	1
combine paths for ***up to 12 points*** *maximum*		*combine paths for* ***up to 6 points*** *maximum*	

CREDITS HEALTH

Option 1. Measure Indoor Air	Points
Path 1. Continuous Indoor Air Monitoring	1-12

Table 1. Points for Continuous Indoor Air Monitoring

	Continuous Air Monitoring	Meet Minimum IAQ Limit*		Enhanced IAQ Limit*	
Parameter	Points	Threshold	Points	Threshold	Additional Point
Carbon dioxide (CO2)	2	1000 ppm	1	800 ppm	1
PM2.5	2	15 µg/m3	1	12 µg/m3	1
TVOC	2	n/a	1	n/a	n/a
Ozone (O3)	1	0.07 ppm	1	n/a	n/a
PM10	1	50 µg/m3	1	n/a	n/a
Nitrogen dioxide (NO2)	1	100 µg/m3 (53 ppb)	1	40 µg/m3 (21 ppb)	1
Formaldehyde	1	20 $\mu g/m^3$ (16 ppb)	1	n/a	n/a

LEED V5

CREDITS HEALTH

Option 1. Measure Indoor Air	Points
Path 2. Meet air quality thresholds: via one-time air testing	1-4

Table 3. One-time Air Testing of Particulate Matter and Inorganic Gases

Contaminant	Minimum IAQ limit	Allowed Test Methods
CO	9 ppm; no more than 2 ppm above outdoor levels	ISO 4224 EPA Compendium Method IP-3 GB/T 18883-2002 for projects in China Direct calibrated electrochemical instrument with accuracy of +/- 3% of reading and resolution of 0.1 ppm NDIR CO Sensors with accuracy of 1% of 10 ppm full scale and display resolution of less than 0.1ppm
PM 10	ISO 14644-1:2015, cleanroom class of 8 or lower 50 µg/m^3 Healthcare only: 20 µg/m^3	Particulate monitoring device with accuracy greater of 5 micrograms/m3 or 20% of reading and resolution (5 min average data) +/- 5 µg/m^3
PM 2.5	12 µg/m^3 or 35 µg/m^{3**}	
Ozone (O3)	0.07 ppm	Monitoring device with accuracy greater of 5 ppb or 20% of reading and resolution (5 min average data) +/- 5 ppb ISO 13964 ASTM D5149 — 02 EPA designated methods for Ozone
Nitrogen Dioxide (NO2)	40 µg/m^3 (21 ppb).	Monitoring device with measurement range: 0-500 ppb and lower detectable limit: 5 ppb.

Table 4. One-time Air Testing of Volatile Organic Compounds

Contaminant (CAS#)	Concentration Limit (µg/m^3)	Allowed Test Methods*
TVOC**	n/a**	ISO 16000-6, EPA TO-17 EPA TO-15
Formaldehyde 50-00-0	20 µg/m^3 (16 ppb)	ISO 16000-3, 4; EPA TO-11a, EPA comp. IP-6A ASTM D5197-16
Acetaldehyde 75-07-0	140 µg/m^3	
Benzene 71-43-2	3 µg/m^3	ISO 16000-6 EPA IP-1, EPA TO-17, EPA TO-15 ISO 16017-1, 2; ASTM D6196-15
Hexane (n-) 110-54-3	7000 µg/m^3	
Naphthalene 91-20-3	9 µg/m^3	
Phenol 108-95-2	200 µg/m^3	
Styrene 100-42-5	900 µg/m^3	
Tetrachloroethylene 127-18-4	35 µg/m^3	
Toluene 108-88-3	300 µg/m^3	
Vinyl acetate 108-05-4	200 µg/m^3	
Dichlorobenzene (1,4-) 106-46-7	800 µg/m^3	
Xylenes-total 108-38-3, 95-47-6, and 106-42-3	700 µg/m^3	
A fourth point is available for projects that test for the additional target volatile organic compounds specified in CDPH Standard Method v1.2-2017, Table 4-1 and do not exceed the full CREL levels for these compounds adopted by Cal/EPA OEHHA in effect on June 2016.		

LEED V5

CREDITS HEALTH

Option 2. Strategies to Improve Indoor Air Quality	Points
combine paths for up to 6 points maximum	1-6

Option 2 Paths	Points
Path 1. Ventilation per ANSI/ASHRAE Standard 62.1	2-4
Path 2. Filtration of outdoor air	1
Path 3. Filtration of and recirculated air	1
Path 4. Ventilation System Maintenance	1
Path 5. Entryway systems	1
Path 6. Automatic Filter Change Notification	1

Option 2 Paths	Points
Path 7. Operable Windows	1
Path 8. Infection Risk Management	1
Path 9. Episodic Outdoor Ambient Conditions	1
Path 10. Outdoor air Quality Monitoring	1
Path 11. Operating Strategy Using Outdoor Air Quality Monitoring Information	1

BENEFITS • DATA • REQUIREMENTS

IAQ MONITORING

BENEFITS

- **REAL TIME** monitoring
- **UNLIMITED DATA** collection & storage
- Live **ALERTS** & notifications
- Sentential trends
- **COMPARE**
    - expected vs actual values
    - Against certified standards e.g. LEED/ WELL/ RESET
    - Indoor vs outdoor air quality
- Occupant **HEALTH** & **WELLBEING**
    - Ensure Clean & Comfortable Air Quality
- Specify review time period i.e. Day/ month/ year

DATA POINTS

1. Particulate Matter [PM2.5/ 10]
2. Volatile Organic Compound (VOCs)
3. Carbon Dioxide (CO2)
4. Formaldehyde
5. Ozone
6. Humidity
7. Temperature
8. Viral Index

REQUIREMENTS

INFORMATION REQUIRED:

1. GENERAL LAYOUT

REQUIRED FOR PROPOSAL TO IDENTIFY POTENTIAL LOCATIONS

SITE REQUIREMENTS:

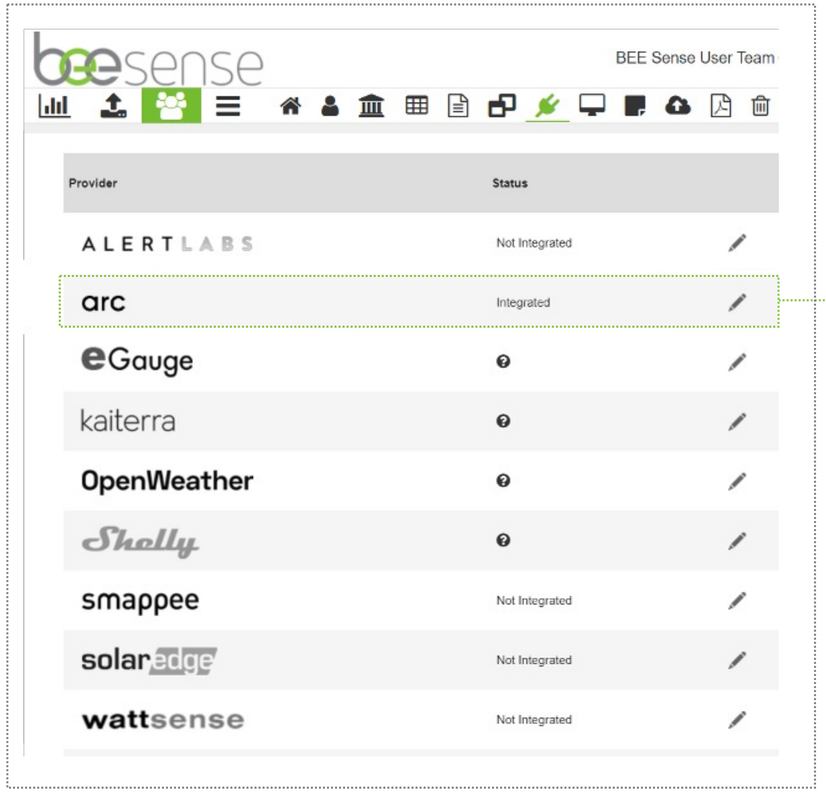
1. CONSISTENT POWER SOURCE
2. STABLE INTERNET CONNECTION

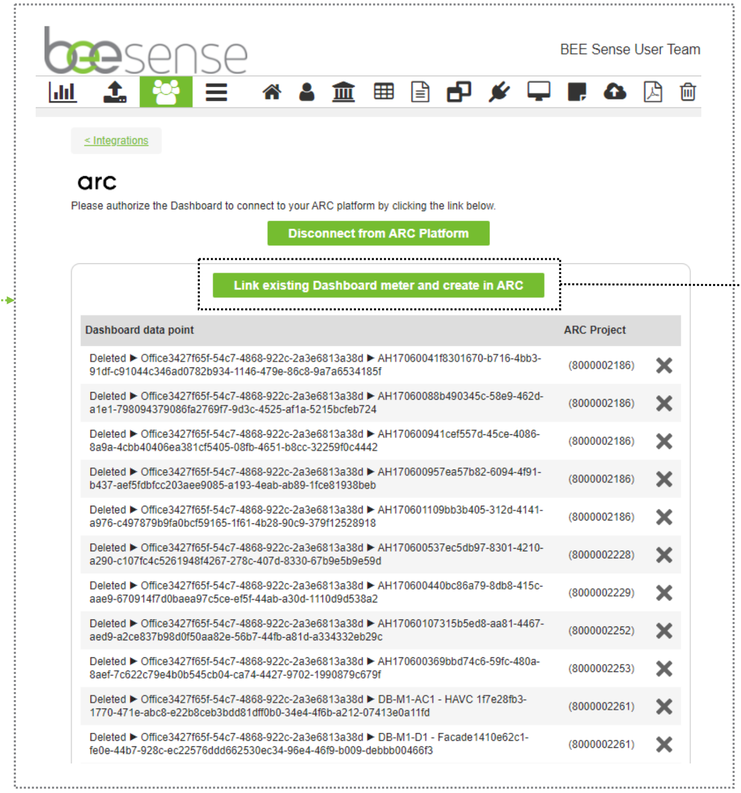
RECOMMENDED INSTALLATION:

1.5m AFF (ABOVE FLOOR FINISH)

SERVICES SNAPSHOT · DATA INTEGRATION

beesense + arc





Link existing Dashboard meter and create in ARC

① enter beesense portal → ② manage integration to arc

AUSTRALIA I CAMBODIA I FRANCE I HONG KONG I INDIA I ITALY I JAPAN I MONGOLIA I SHANGHAI I SHENZHEN I TAIWAN

IAQ as a driver for both LEED and WELL standards

GBCI Circles – April 18th 2024

Andrea Costa

From Research to Market

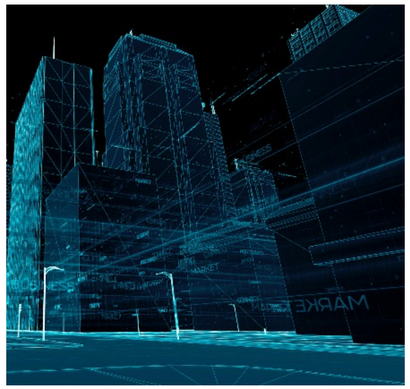
Our Journey

Innovation

Commissione Europea

Innovative Products & Services

ESG Digital Twin Ecosystem
for the Real Estate Eco Digital transition



Sustainability Consulting

LEED AP BD+C
LEED AP O+M
LEED AP ID+C
BREEAM LICENSED ASSESSOR COMPANY
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BREEAM ACCREDITED PROFESSIONAL
WELL AP
WELL
fitwel
RESET
COPILOT
CEPAS Commissioning Authority (CxA)
GREEN BUILDING COUNCIL ITALIA
GBC HOME
FIRE
ENVISION
ARCA
WIRED SCORE ACCREDITED PROFESSIONAL
aee
EVO Efficiency Valuation Organization
RINA

RESEARCH TO MARKET

From Research to Market

Our Journey

Innovation

+CITYXCHANGE

iBECOME

MAKING PEDs

REGEN

Step-WISE

Innovative Products & Services

IES

greenpass

BRAINBOX AI

ZUTEC

Matterport™

spaceti

Sustainability Consulting

WELL

LEED

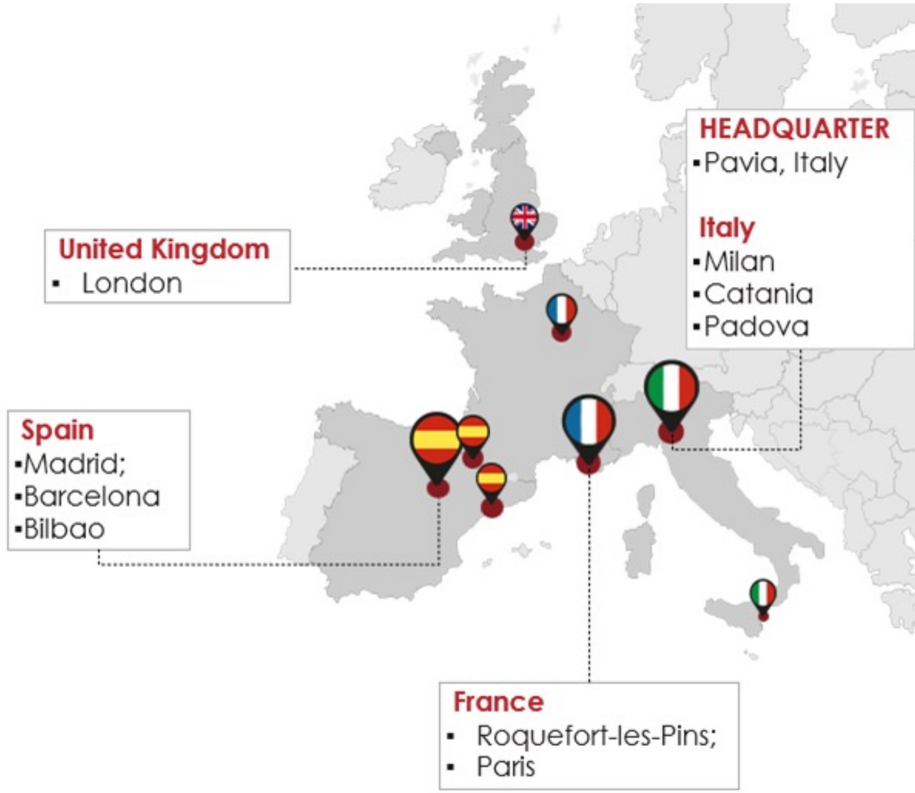
WELL™ PERFORMANCE TESTING ORGANIZATION

RESEARCH TO MARKET

Our numbers

Founded	People	Offices	Research	Funds raised	First time EU
2012	**119**	**8** 4 Countries	**124** R&D projects	**591 M** Total R&D Portfolio	**43** Organizations

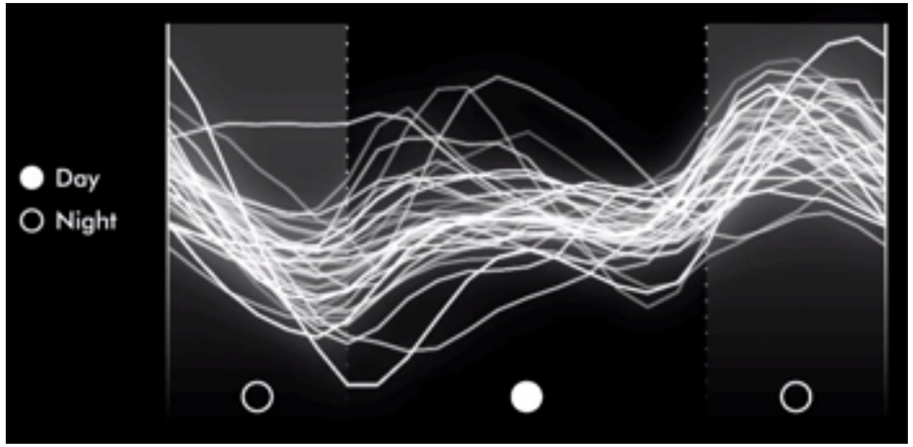
Turnover: **€9.1 Million (2023)**
Over half in commercial activities

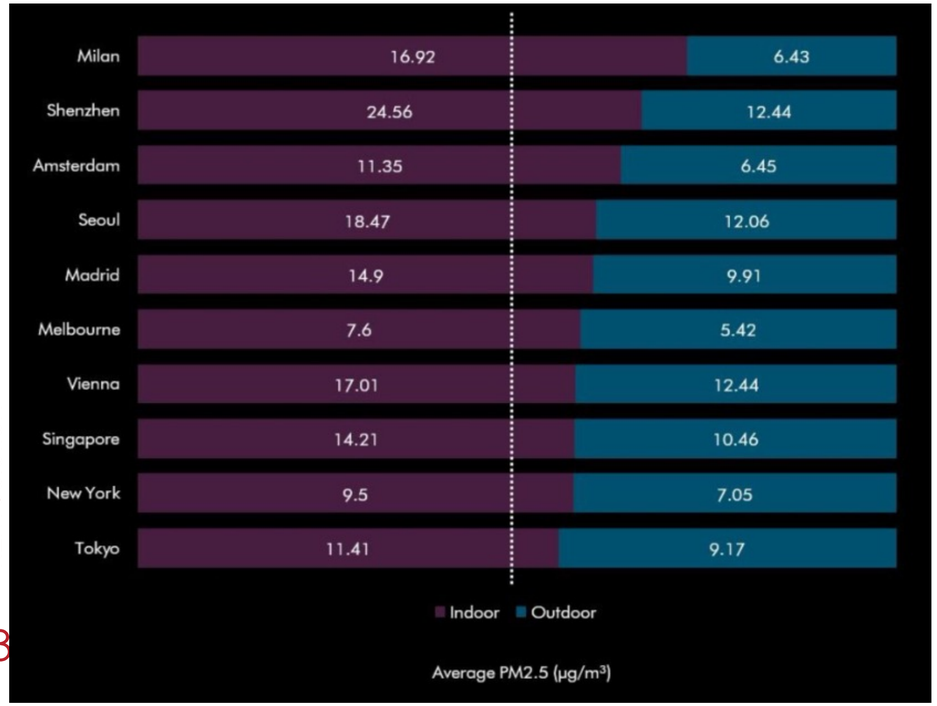


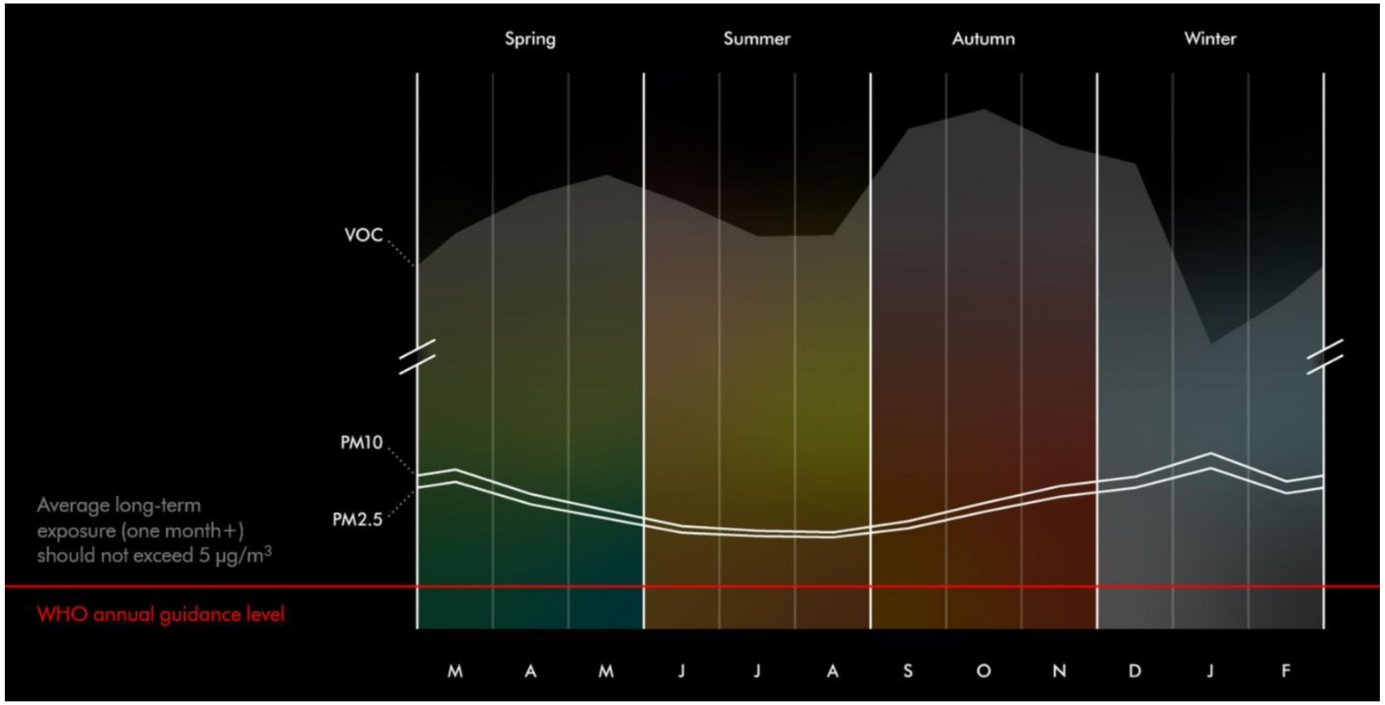
January 2024 – context:

Dyson Global Connected Air Quality Data Research

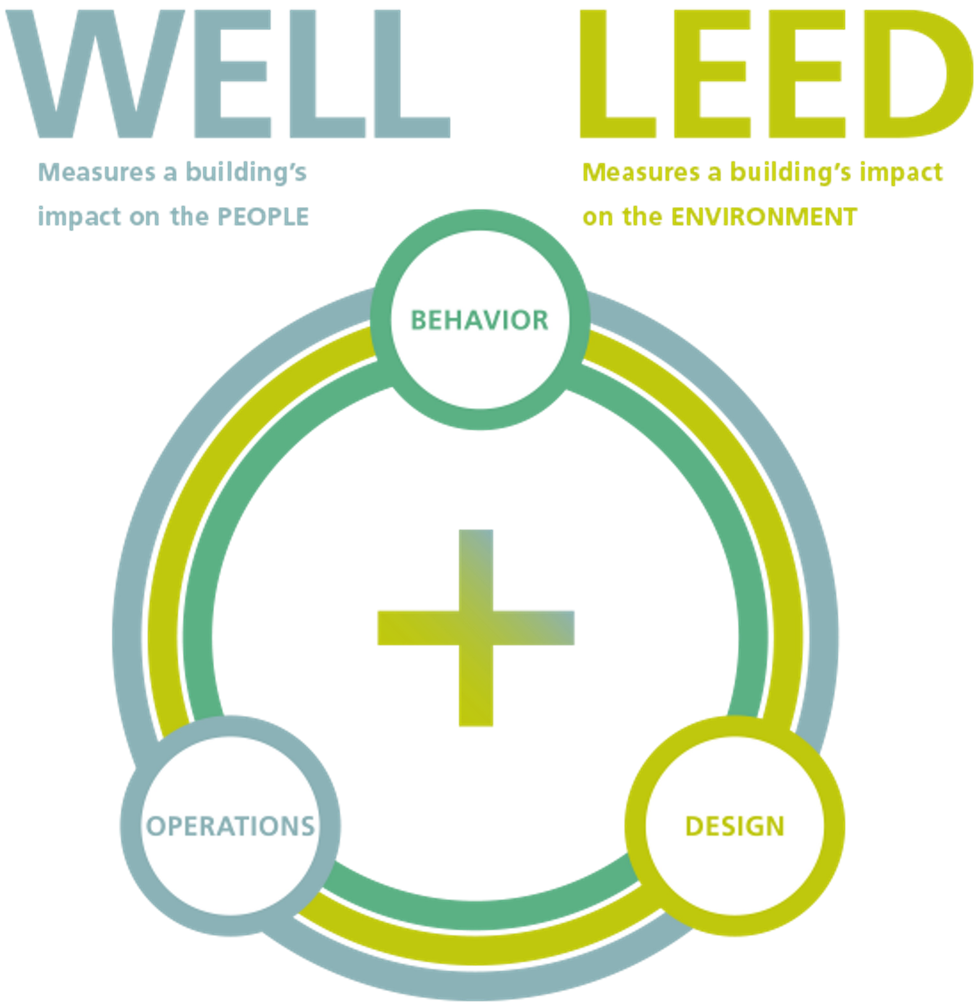
85% of countries experienced indoor air quality worse than outdoor for more than 6 months of 2022







LEED and WELL synergies



From Research to Market

Gioia 22, Milan

COIMA

Real Estate, since 1974

INTESA SANPAOLO

isybank

ARIATTA

INGEGNERIA DEI SISTEMI SPA

R2M

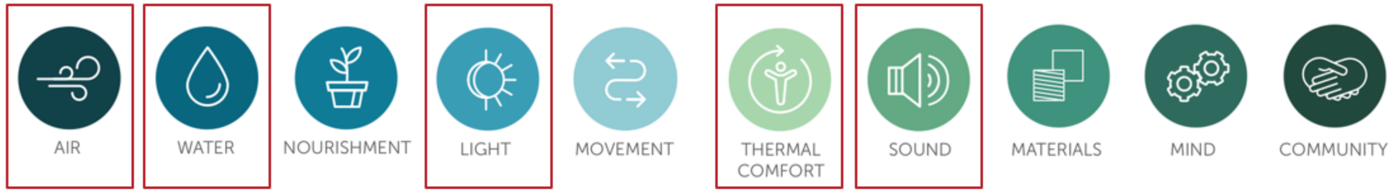
RESEARCH TO MARKET

SOLUTION

From Research to Market

Gioia 22, Milan

WELL v2



AIR	Parametri testati	N° test
	$PM_{2.5}$	12
	PM_{10}	10
	Benzene	10
	Formaldeide	12
	Toluene	10
	Monossido di carbonio	12
	Ozono	12
	Acetaldeide	10
	Acrilonitrile	10
	Naftalene	10
	Biossido di azoto	10

WATER	Parametri testati	N° test
	Torbidità	4
	Coliformi	4
	Arsenico	2
	Cadmio	2
	Cromo (totale)	2
	Rame	2
	Fluoruro	2
	Piombo	2
	Mercurio (totale)	2
	Nichel	2
	Nitrato	2
	Nitrito	2
	Cloro totale	2
	Cloro residuo (libero)	2
	Concentrazione di trialometani totali	2
	Concentrazione di acidi aloacetici	2
	Aldrin e Dieldrin	2
	Atrazina	2
	Carbofuran	2
	Clordano	2
	Acido 2,4-diclorofenossiacetico	2

WATER	Parametri testati	N° test
	Diclorodifeniltricloroetano e metaboliti	2
	Lindano	2
	Pentaclorofenolo	2
	Benzene	2
	Benzo[a]pirene	2
	Tetracloruro di carbonio	2
	1,2-dicloroetano	2
	Tetracloroetene	2
	Toluene	2
	Tricloroetene	2
	2,4,6-Triclorofenolo	2
	Cloruro di vinile	2
	Xileni	2
	pH	2
	Alluminio	2
	Cloruro	2
	Manganese	2
	Ferro	2
	Argento	2
	Sodio	2
	Solfato	2
	Zinco	2

LIGHT	Parametri testati	N° test
	Illuminamento artificiale	112
	Luce circadiana	0

THERMAL COMFORT	Parametri testati	N° test
	PMV	40
	Umidità relativa	40

SOUND	Parametri testati	N° test
	Rumore di fondo	54
	Speech privacy	6
	Tempo di riverbero	0

EXPECTED

From Research to Market

Chiesi HQ, Parma

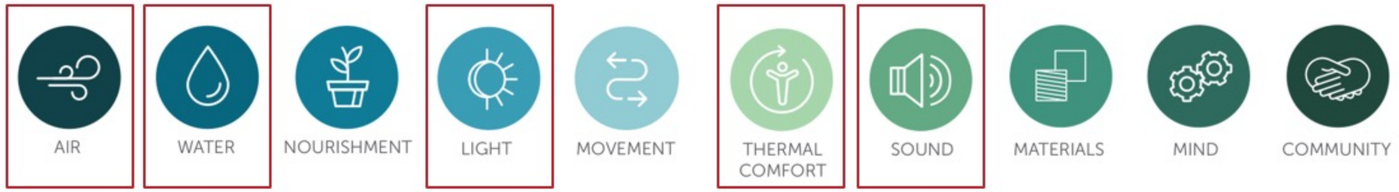
Chiesi

NATIVA

R2M
RESEARCH TO MARKET
SOLUTION

Chiesi HQ, Parma

WELL v2



AIR	Parametri testati	N° test
	$PM_{2.5}$	7
	PM_{10}	6
	Benzene	6
	Formaldeide	7
	Toluene	6
	Monossido di carbonio	7
	Ozono	7
	Acetaldeide	6
	Acrilonitrile	6
	Naftalene	6
	Biossido di azoto	6

WATER	Parametri testati	N° test
	Torbidità	5
	Coliformi	5
	Arsenico	1
	Cadmio	1
	Cromo (totale)	1
	Rame	1
	Fluoruro	1
	Piombo	1
	Mercurio (totale)	1
	Nichel	1
	Nitrato	1
	Nitrito	1
	Cloro totale	1
	Cloro residuo (libero)	1
	Concentrazione di trialometani totali	1
	Concentrazione di acidi aloacetici	1
	Aldrin e Dieldrin	1
	Atrazina	1
	Carbofuran	1
	Clordano	1
	Acido 2,4-diclorofenossiacetico	1

WATER	Parametri testati	N° test
	Diclorodifeniltricloroetano e metaboliti	1
	Lindano	1
	Pentaclorofenolo	1
	Benzene	1
	Benzo[a]pirene	1
	Tetracloruro di carbonio	1
	1,2-dicloroetano	1
	Tetracloroetene	1
	Toluene	1
	Tricloroetene	1
	2,4,6-Triclorofenolo	1
	Cloruro di vinile	1
	Xileni	1
	pH	1
	Alluminio	1
	Cloruro	1
	Manganese	1
	Ferro	1
	Argento	1
	Sodio	1
	Solfato	1
	Zinco	1

LIGHT	Parametri testati	N° test
	Illuminamento artificiale	103
	Luce circadiana	60

THERMAL COMFORT	Parametri testati	N° test
	PMV	21
	Umidità relativa	21

SOUND	Parametri testati	N° test
	Rumore di fondo	31
	Speech privacy	0
	Tempo di riverbero	11

EXPECTED

Accenture People Hub Milanofiori

MILANOFIORI NORD

accenture

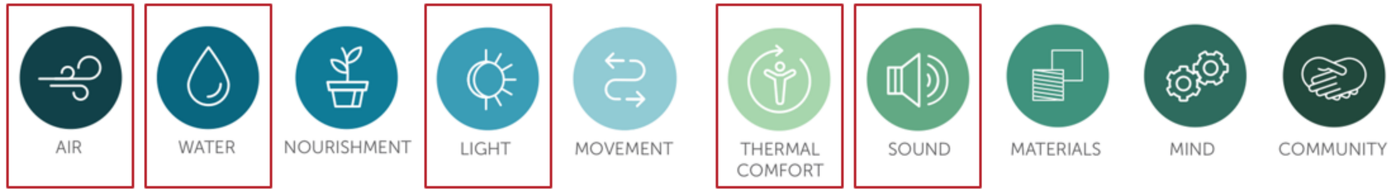
Deerns

greenwich SUSTAINABILITY CONSULTING

R2M RESEARCH TO MARKET SOLUTION

Accenture People Hub Milanofiori

WELL v2 pilot



AIR	Parametri testati	N° test
	PM2.5	8
	PM10	8
	Benzene	8
	Carbon disulfide	8
	Carbon tetrachloride	8
	Chlorobenzene	8
	Chloroform	8
	Dichlorobenzene	8
	Dichloroethylene	8
	Ethylbenzene	8
	Hexane	8
	Isopropyl alcohol	8
	Methyl chloroform	8
	Methylene chloride	8
	Methyl tert-butyl ether	8
	Styrene	8
	Tetrachloroethene	8
	Toluene	8
	Trichloroethylene	8

AIR	Parametri testati	N° test
	Vinyl acetate	8
	Xylene	8
	Carbon monoxide	8
	Ozone	8
	Formaldehyde	8
	Nitrogen dioxide	8

WATER	Parametri testati	N° test
	Turbidity	4
	Coliforms	4
	Lead	4
	Arsenic	2
	Antimony	2
	Mercury	2
	Nickel	2
	Copper	2
	Cadmium	2
	Chromium (total)	2
	Styrene	2
	Benzene	2

WATER	Parametri testati	N° test
	Ethylbenzene	2
	Vinyl chloride	2
	Toluene	2
	Xylenes	2
	Tetrachloroethylene	2
	Total trihalomethanes	2
	Total haloacetic acids	2
	Atrazine	2
	Simazine	2
	2,4-Dichlorophenoxyacetic acid	2
	Nitrate	2
	Fluoride	2
	Total chlorine	4
	Chloramine	4
	Aluminum	2
	Chloride	2
	Manganese	2
	Sodium	2
	Sulfate	2
	Iron	2
	Zinc	2
	Total Dissolved Solids	2

LIGHT	Parametri testati	N° test
	Illuminamento artificiale	103
	Luce circadiana	0

THERMAL COMFORT	Parametri testati	N° test
	PMV	21
	Umidità relativa	21

SOUND	Parametri testati	N° test
	Rumore di fondo	21
	Speech privacy	0
	Tempo di riverbero	8

European Space Agency

- …

ESA - Italian Campus ESRIN

ESA B12 450 m2
- LEED Gold nel 2019

test qualità:
aria
acqua
comfort
termico

ESA B14 1350 m2
- LEED Platinum nel 2023
- WELL Platinum nel 2023

ESA B9 5000 m2
- LEED Platinum in corso
- WELL Platinum in corso

ESA – Building 14

WELL™ PLATINUM

ESA - ESRIN

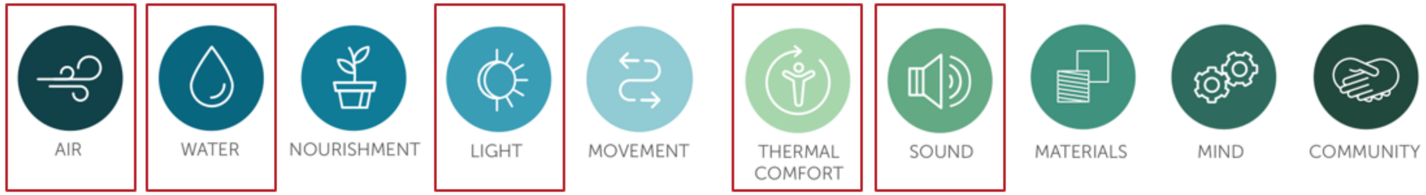
GIANNI GIORGI -ALBERTI

99 POINTS

HIGHEST RANKED
WELL PLATINUM
IN THE
EUROPEAN UNION

ESA – Building 14

WELL v2 pilot



AIR	Parametri testati	N° test
	PM2.5	2
	PM10	2
	Benzene	2
	Carbon disulfide	2
	Carbon tetrachloride	2
	Chlorobenzene	2
	Chloroform	2
	Dichlorobenzene	2
	Dichloroethylene	2
	Ethylbenzene	2
	Hexane	2
	Isopropyl alcohol	2
	Methyl chloroform	2
	Methylene chloride	2
	Methyl tert-butyl ether	2
	Styrene	2
	Tetrachloroethene	2
	Toluene	2
	Trichloroethylene	2

AIR	Parametri testati	N° test
	Vinyl acetate	2
	Xylene	2
	Carbon monoxide	2
	Ozone	2
	Formaldehyde	2
	Nitrogen dioxide	2

WATER	Parametri testati	N° test
	Turbidity	2
	Coliforms	2
	Lead	2
	Arsenic	2
	Antimony	2
	Mercury	2
	Nickel	2
	Copper	2
	Cadmium	2
	Chromium (total)	2
	Styrene	2
	Benzene	2

WATER	Parametri testati	N° test
	Ethylbenzene	2
	Vinyl chloride	2
	Toluene	2
	Xylenes	2
	Tetrachloroethylene	2
	Total trihalomethanes	2
	Total haloacetic acids	2
	Atrazine	2
	Simazine	2
	2,4-Dichlorophenoxyacetic acid	2
	Nitrate	2
	Fluoride	2
	Total chlorine	2
	Chloramine	2
	Aluminum	2
	Chloride	2
	Manganese	2
	Sodium	2
	Sulfate	2
	Iron	2
	Zinc	2
	Total Dissolved Solids	2

LIGHT	Parametri testati	N° test
	Illuminamento artificiale	50
	Luce circadiana	0

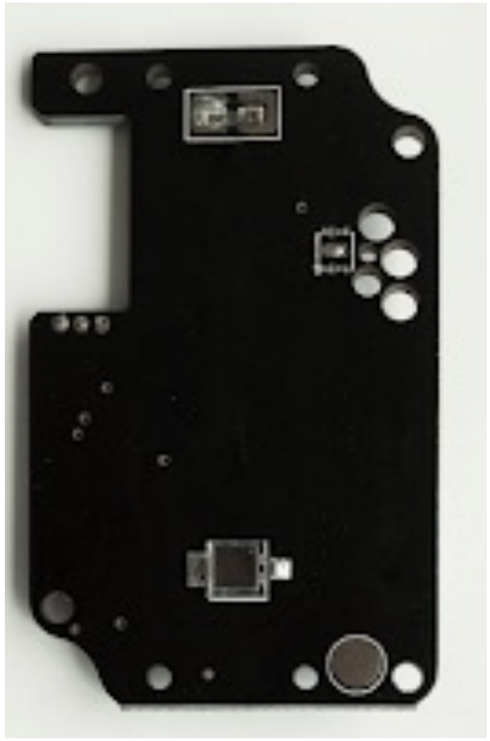
THERMAL COMFORT	Parametri testati	N° test
	PMV	4
	Umidità relativa	4

SOUND	Parametri testati	N° test
	Rumore di fondo	4
	Speech privacy	0
	Tempo di riverbero	1

From Research to Market

ESA – Building 14

- …



ESA ESRIN ▾ B14 Ground Floor

Space vs. Time Report

$PM_{2.5}$ ▾ All Rooms ▾ Last 24 hours ▾

Space	Floor	Type	8AM	9AM	10AM	11AM	12AM	1PM	2PM	3PM	4PM	AVG
Room 1	1	Open Plan										
Room 2	1	Conference										
Room 3	2	Open Plan										
Room 7	2	Open Plan										
Room 8	3	Conference										
Room 10	3	Open Plan										
Room 12	3	Open Plan										
Room 14	4	Conference										
Room 15	4	Open Plan										
Room 17	4	Open Plan										

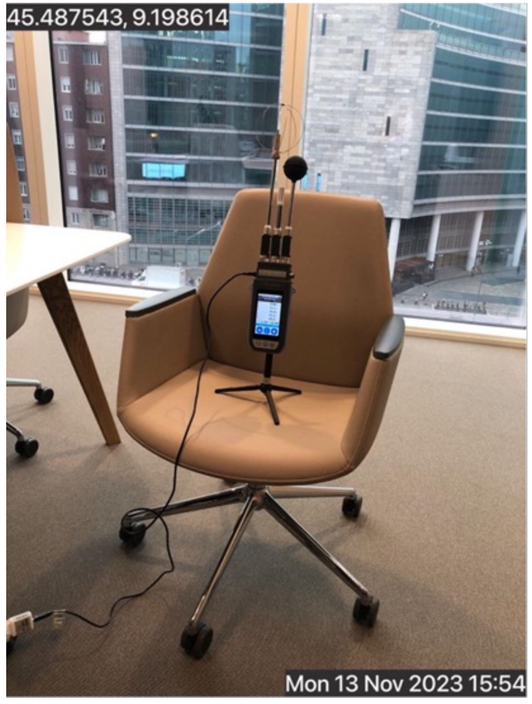
Top Issues to Address

In the past 7 days

Increase ventilation	Meeting Room	Tuesday
Check/replace filter	Cafeteria	Monday to Friday
Increase temperature	Open Office	Tuesday, Wednessday
Reconnect device	Wellness Room	Monday to Friday

Overlap in parameters for IAQ testing

AIR Parameter	LEED	WELL
$PM_{2.5}$	X	X
PM_{10}	X	X
Benzene (CAS 71-43-2)	X	X
Formaldeide (CAS 50-00-0)	X	X
Toluene (CAS 108-88-3)	X	X
Monossido di carbonio	X	X
Ozono	X	X
Acetaldeide	X	X
Naftalene	X	X
Acrilonitrile		X
Biossido di azoto		X
Dichlorobenzene (1,4-) 106-46-7	X	
Hexane (n-) 110-54-3	X	
Phenol 108-95-2	X	
Styrene 100-42-5	X	
Tetrachloroethylene 127-18-4	X	
Vinyl acetate 108-05-4	X	
Xylenes-total 108-38-3, 95-47-6, and 106-42-3	X	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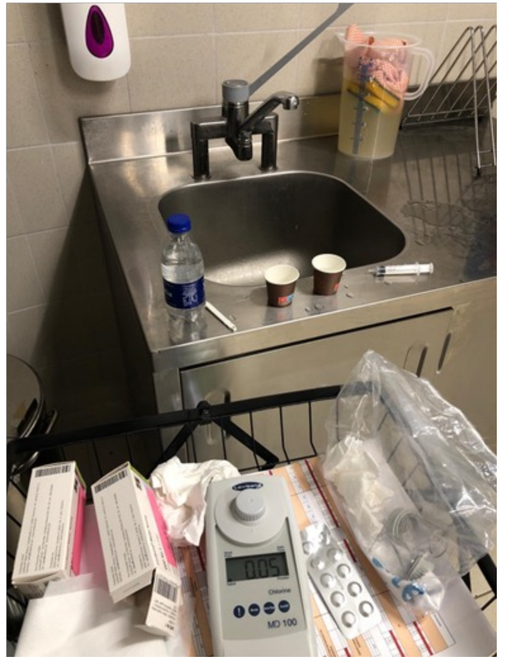
Mon 13 Nov 2023 15:54


Wed 11 Oct 2023 02:31


Common measure
Tue 10 Oct 2023 23:48

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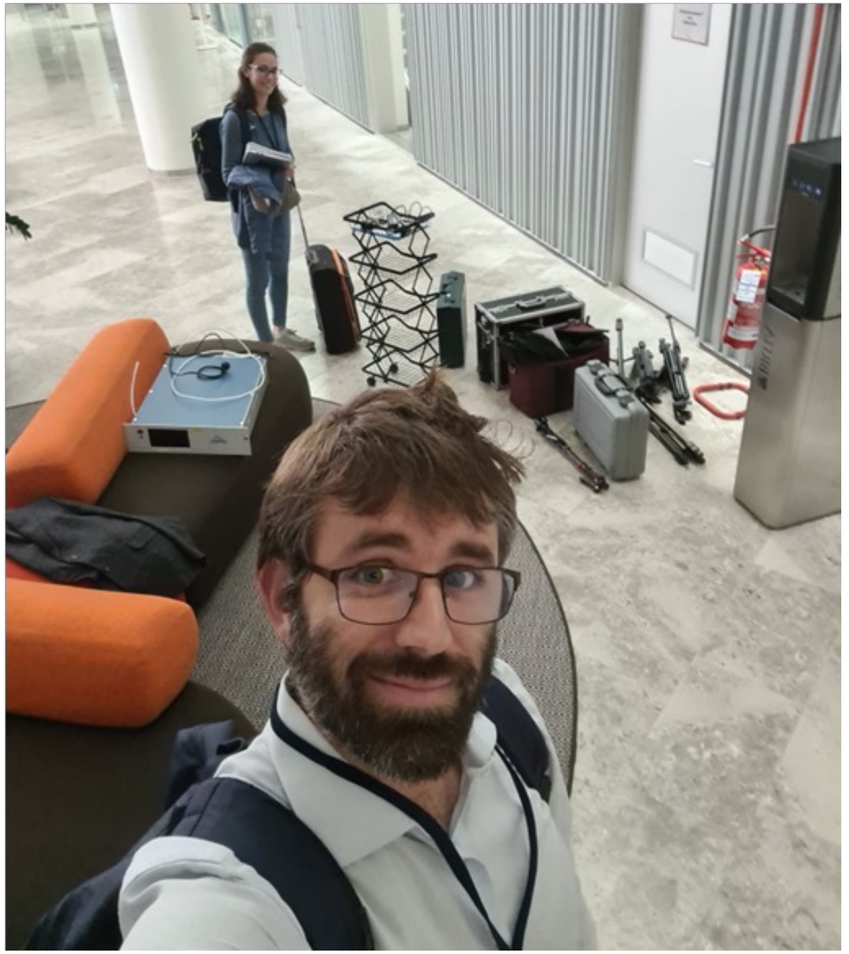
Via Melchiorre Gioia 16–22
20124 Milano Lombardia
Italia



Grazie

www.r2msolution.com

T: +39 0382 1726596

Via F.lli Cuzio 42, 27100 Pavia, Italia

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