

aero SQAIR



reintegrating nature into urban infrastructure



85%
not compliant

>10x
worse than
city traffic



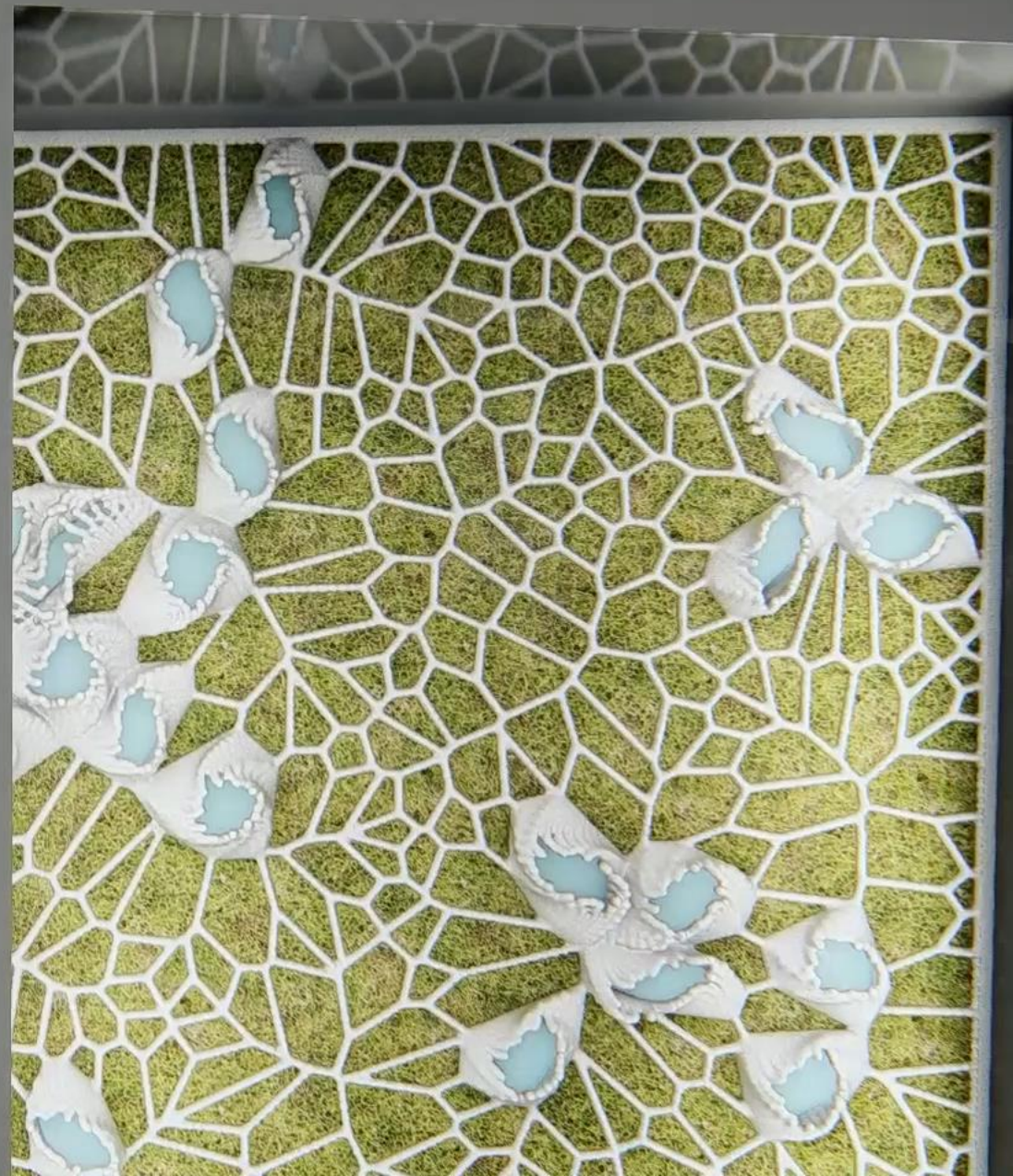
41.6 million
passengers / day in Europe

€ 18bn → € 150bn

air pollution related
healthcare costs

SOLUTION





SUBWAY USERS



SUBWAY OPERATORS

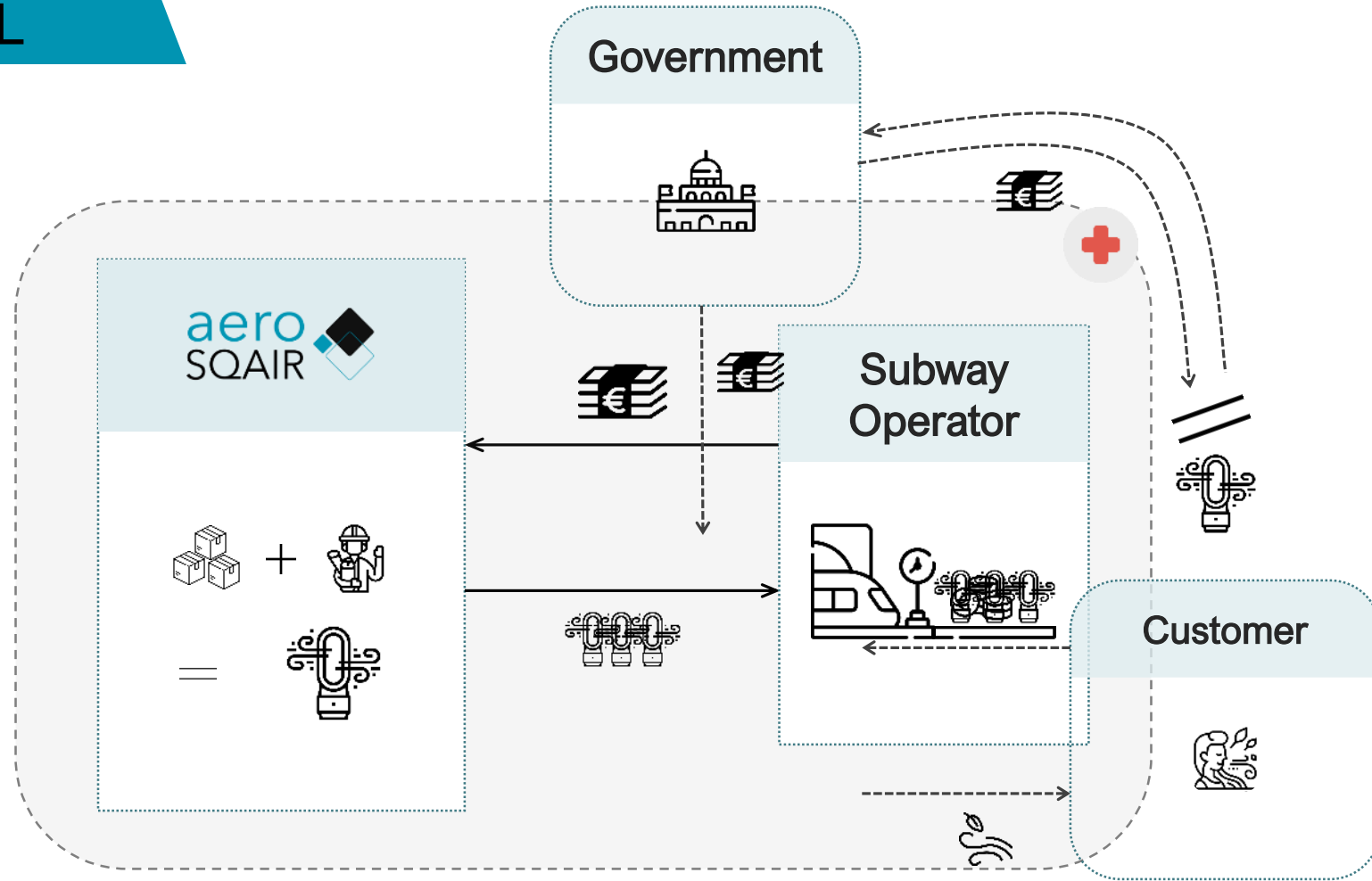


**Sustainable
Image**


**Increased
Attractiveness**

**Risk
Reduction**

BUSINESS MODEL



MARKET OPPORTUNITY

 \times  \times € 10k =

€ 38.1m

Obtainable
market

€ 6.41bn

European subway
clean air market

2122 subway stations

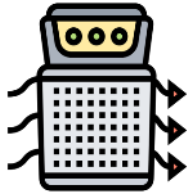
3-5 years

MARKET ENTRY



GREENER LINIEN

COMPETITIVE COMPARISON



Industrial
Air Filters



aero
SQAIR 

TEAM

Nastia Martinet



BIOLOGY



Patrick N. Frank



BUSINESS



Chloé Sachot



BIOLOGY



Harsh Vora



ARCHITECTURE



Esther Hummel



BUSINESS



Bharath Lakshmesh



ARCHITECTURE



ADVISORY BOARD

BUSINESS



**MARTIN
ANDREAS
PETERSEN**

*Serial Entrepreneur
and CEO Green
Innovation Group A/S*



**MARKUS
RAUNIG**

*Managing Director at
AustrianStartups*

TECHNOLOGY



**CHIARA
FARINEA**

*Head of European
Projects at IAAC*



**MOHAMAD
ATAB**

*Computational design
and digital fabrication
expert*

BIOLOGY



**CHRISTOPHE
SCHWARTZ**

*Environmental
sciences and
engineering*



**GEOFFROY
SÉRÉ**

*Sustainable
development,
environmental
biotechnologies*

WHY US?



3 Incubation Programs



Pilot Project



Research Partner

Backpanel Prototype



ClimateLaunchpad



WHAT WE ARE LOOKING FOR

€ 20k

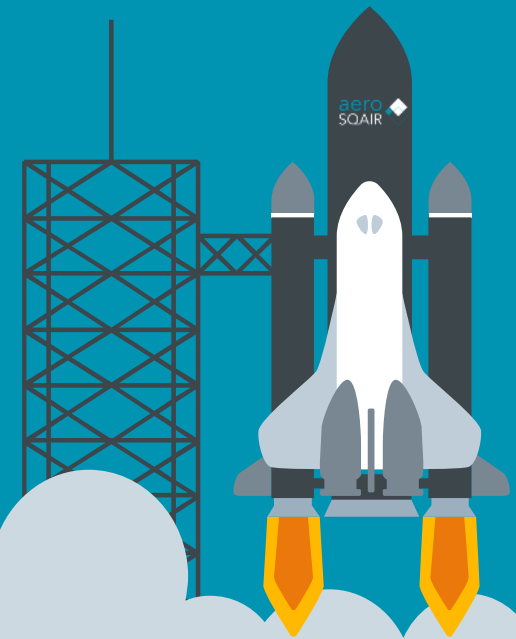
for building and
testing our prototype

BLOX **HUB**

perfect environment to
make our vision a reality

please get in contact:

welcome@aerosqair.com





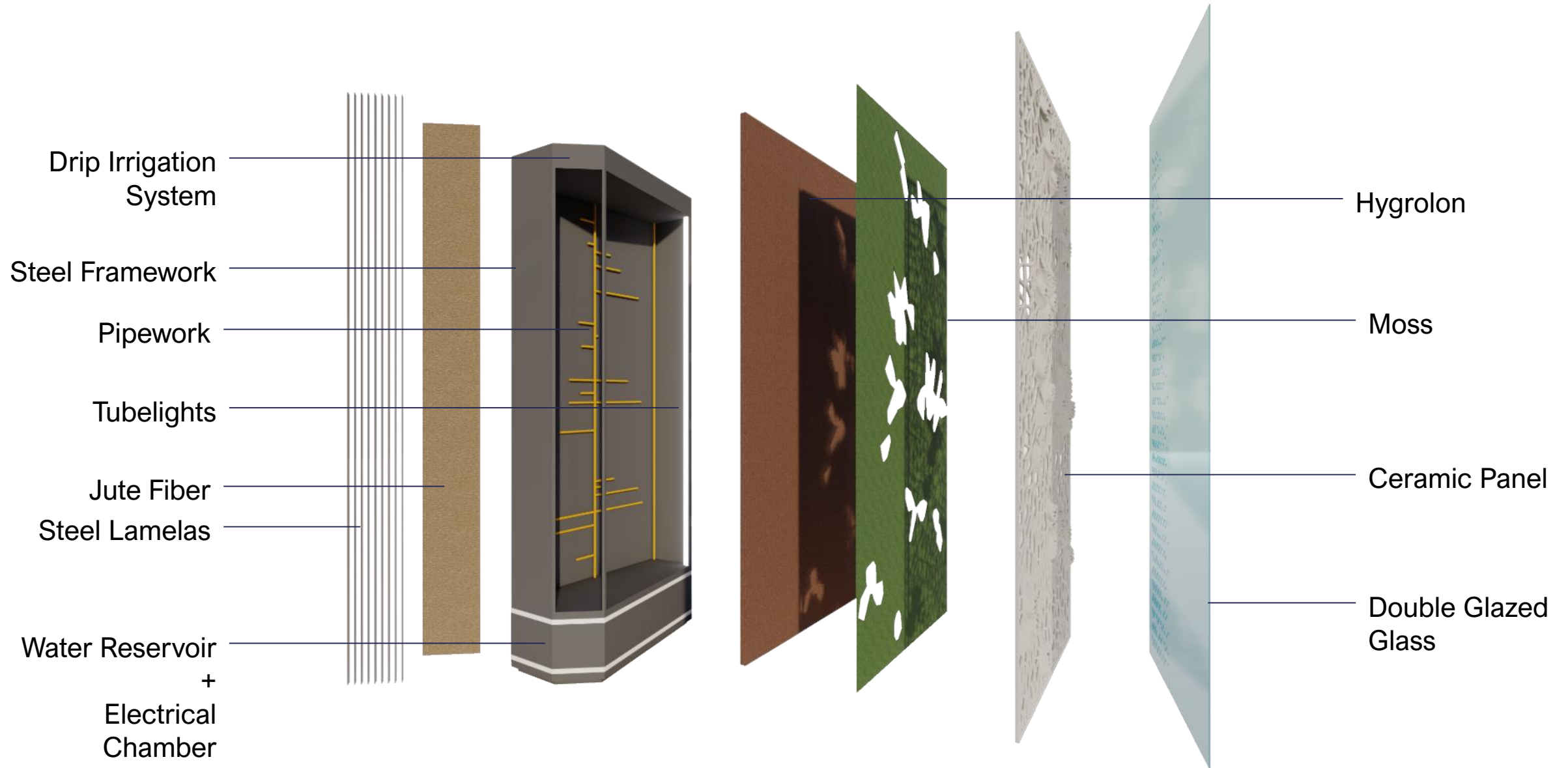
BACK-UP



SOLUTION

TECH. DETAILS





IMPACT

[$\mu\text{g}/\text{m}^3$]

~15%

50

45

40

35

30

25

20

15

10

5

0

WHO air quality standards

Subway line U3 Vienna
(Pollution level PM 2.5)

FACT SHEET – MOSS

1

While some emissions are absorbed directly during the filtration process, other pollutants are deposited on the surface of the moss.

3

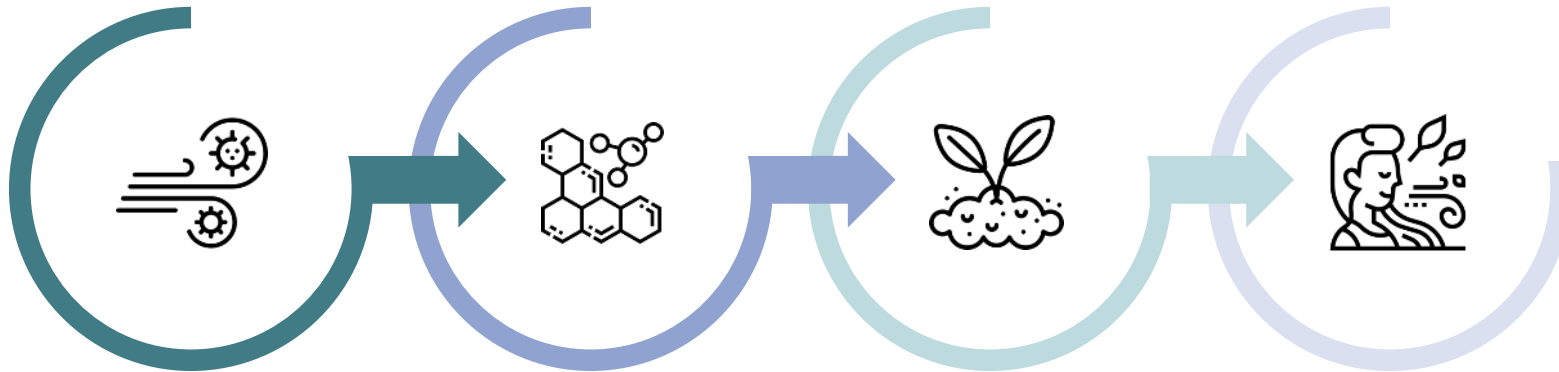
The components resulting from this transformation can then be absorbed by moss as nutrients.

2

On the moss a film of microorganisms can be found. These bacteria decompose the pollutants that accumulate on the surface.

4

In this way a sustainable improvement in air quality can be achieved, which is comparable to technical solutions.



*Average observed
filtration efficiencies:*

- *PM* 10: 19±7%,*
- *PM* 2.5: 15±5%*
- *PM* 1: 11±5%*

**Particulate Matter, further info [here](#)*

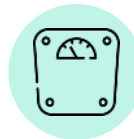
HIDDEN CHAMPION – MOSS



no fertilizer



little maintenance



light-weight



perennial



low-energy



natural beauty

MOSS



Pseudoscleropodium Purum

Matt forming, low demanding species that grows on both calcium rich and calcium poor substrates. Relatively high light demanding.



Brachythecium Rutabulum

Matt forming, low demanding species that grows on a large variety of substrates. Medium light demanding.



Hypnum Cupressiforme

Matt forming, low demanding species that grows on a large variety of substrates. Medium light demanding.



Pleurozium Schreberi

Matt forming, low demanding species that grows on a large variety of substrates. Medium light demanding.



Osmosis water is preferred at a pH value between 5.7-7.0
Complete exchange of the water every two weeks



Approx. 7000 lux/m2.



Any base substrate ceramic, plywood etc. in combination with Hygrolon / Epiweb

SUPPLIER & PARTNER ECOSYSTEM

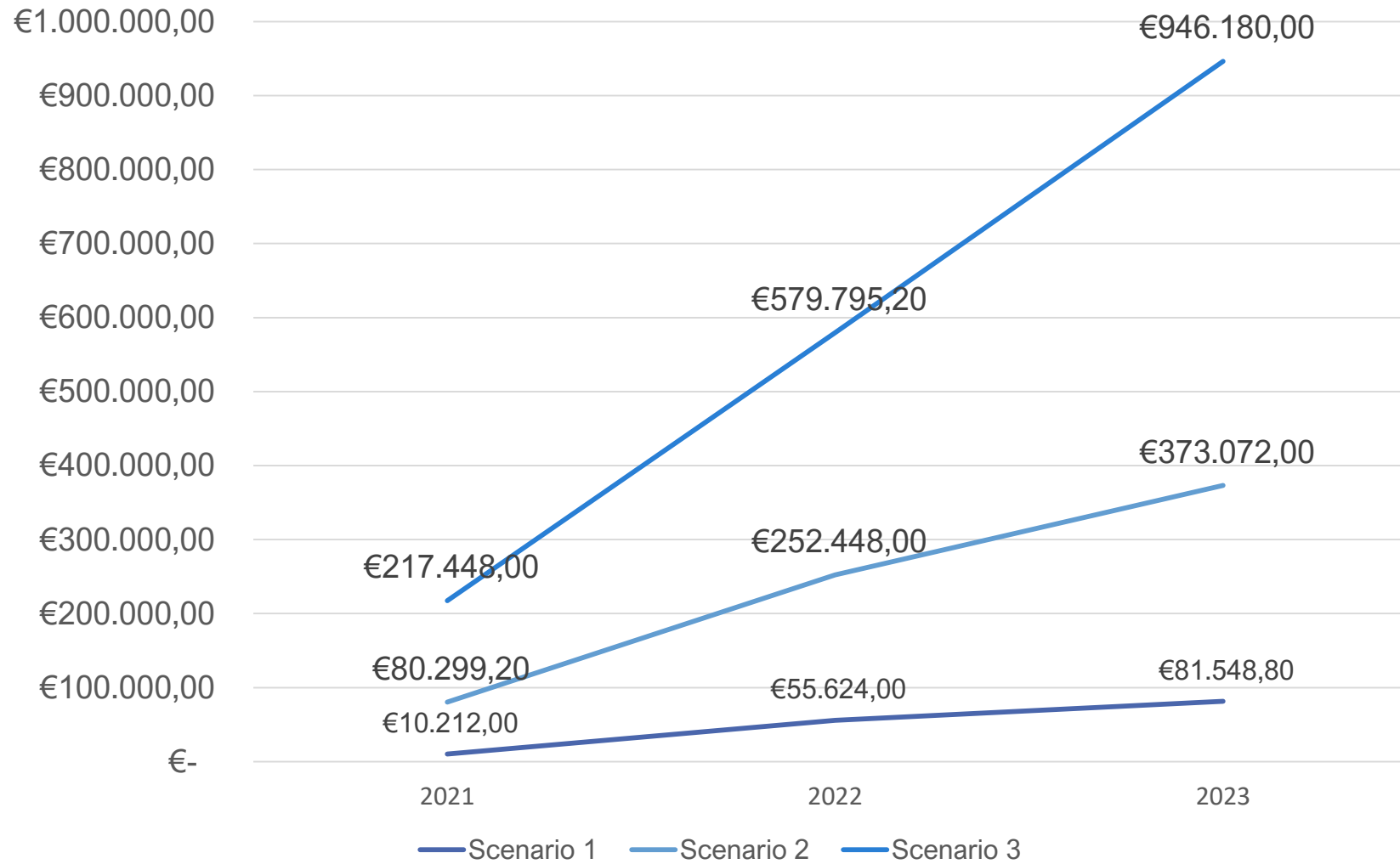




FINANCIAL PLAN

PROJECTIONS

ESTIMATED PROFITS



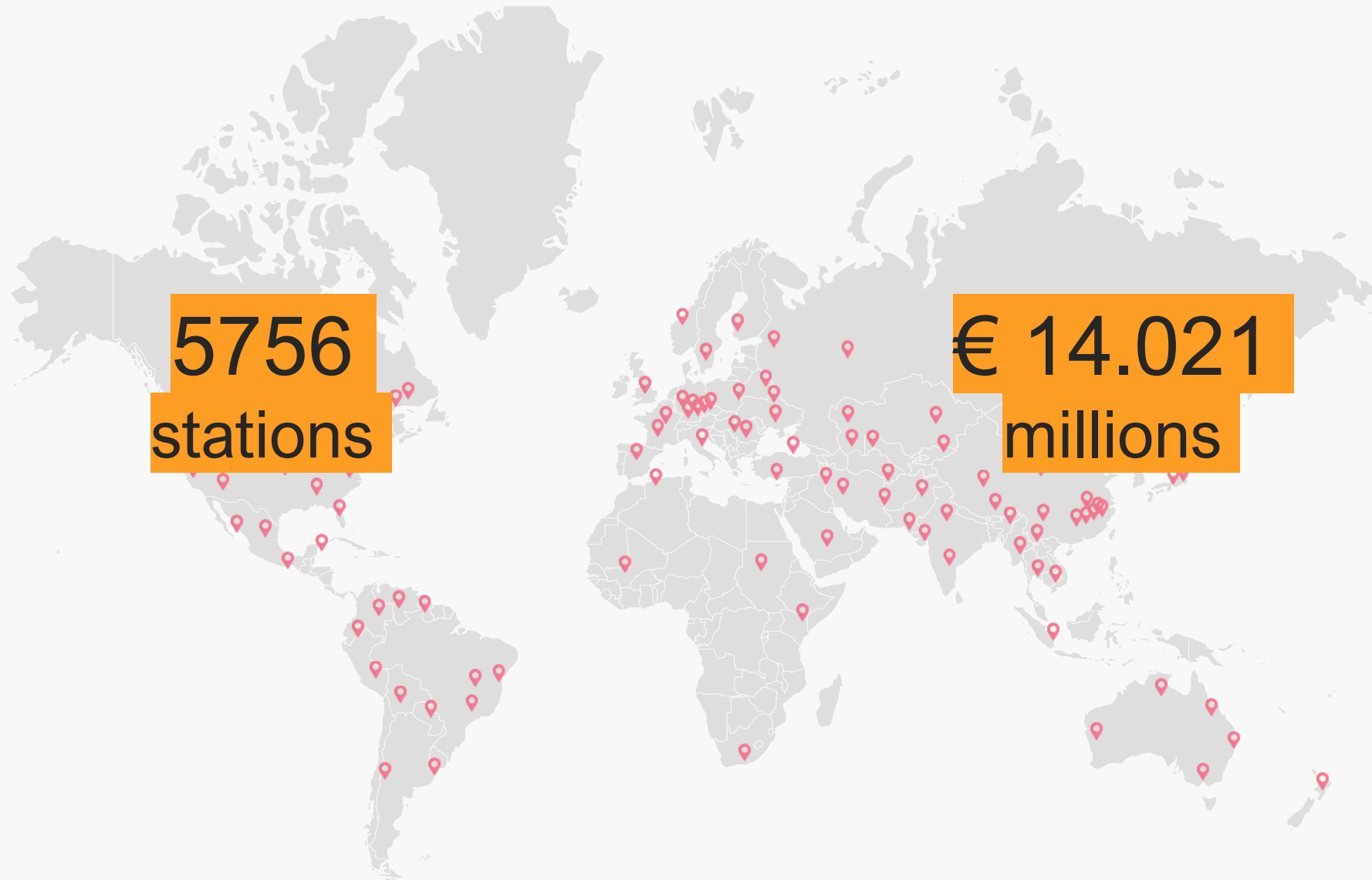
PROJECTIONS

	Cities	Tracks	aeroSQAIRs	Total Number	Revenue	Total Costs	Profit
Worst 1	1	6	5	30	€ 299.700,00	€ 289.488,00	€ 10.212,00
Worst 2	2	6	5	60	€ 599.400,00	€ 543.776,00	€ 55.624,00
Worst 3	2	6	6	72	€ 719.280,00	€ 637.731,20	€ 81.548,80
Realistic 1	1	8	6	48	€ 479.520,00	€ 399.220,80	€ 80.299,20
Realistic 2	2	10	6	120	€ 1.198.800,00	€ 946.352,00	€ 252.448,00
Realistic 3	3	10	6	180	€ 1.798.200,00	€ 1.425.128,00	€ 373.072,00
Best 1	2	10	6	120	€ 1.198.800,00	€ 981.352,00	€ 217.448,00
Best 2	4	12	6	288	€ 2.877.120,00	€ 2.297.324,80	€ 579.795,20
Best 3	5	15	6	450	€ 4.495.500,00	€ 3.549.320,00	€ 946.180,00



MARKET ANALYSIS

GLOBAL OPPORTUNITY



MARKET POTENTIAL

	DESCRIPTION	MARKET	MARKET SIZE	EXPLANATIONS & ASSUMPTIONS
<p>TAM</p> <p>SAM</p> <p>SOM</p> <p>(time horizon: 3-5 years)</p>	TOTAL ADDRESSABLE MARKET value of the entire market; total possible demand for our product	Global subway clean air market <i>(full market potential)</i>	5756 stations <i>(EUR 14,22 bn)</i>	⁵⁷⁵⁶ number of underground stations worldwide in 2019 EUR 14,22 billion market value of global clean air programme Source: Current Status, Challenges and Resilient Response to Air Pollution in Urban Subway
	SERVICEABLE ADDRESSABLE MARKET portion of the TAM that we can actually reach with our product	European subway clean air market <i>(geographical focus)</i>	2122 stations <i>(EUR 6,41 bn)</i>	²¹²² number of European underground stations in 2019 EUR 6,41 billion market value of European clean air programme Source: Current Status, Challenges and Resilient Response to Air Pollution in Urban Subway
	SERVICEABLE OBTAINABLE MARKET portion of the SAM that we aim to acquire with our product; short-term target	Serviceable Obtainable European subway clean air market <i>(share of market)</i>	254 stations	²¹²² (SAM) $\times 0,8$ (estimated number of metro operators/cities for whom our product is of interest) $\times 0,15$ (target of 15% market share; based on estimated number of metro operators/cities, that do not have any solution implemented so far and that are presumably willing to purchase our solution)

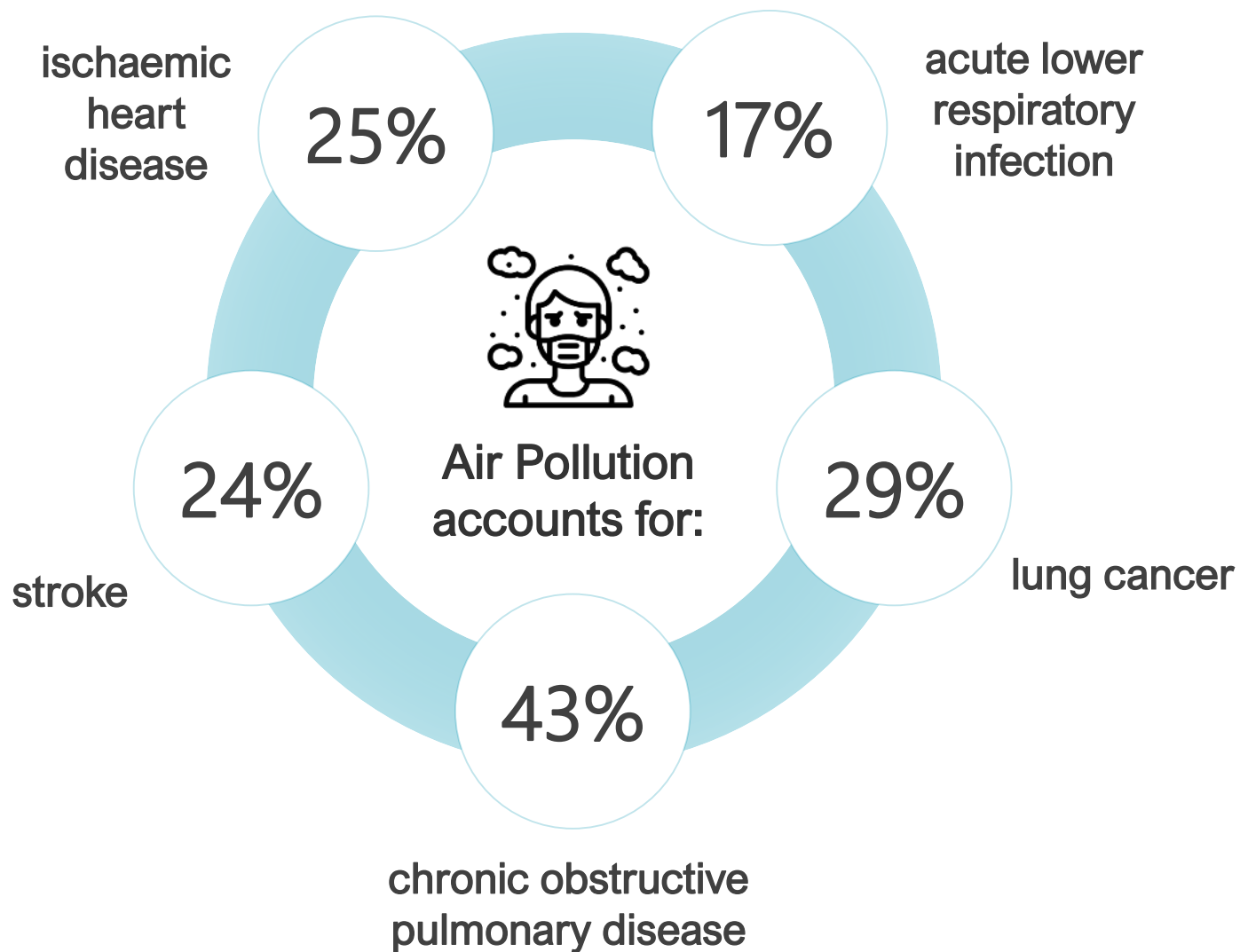
EUR 15,24m

based on average revenues of EUR 150,000.- per station station and a 40% gross profit margin, we are looking at a potential market value of EUR 38,1 million and respective profit of 15,24 million



PROBLEM

HEALTH EFFECTS



Projected Economic Costs (2015 to 2060)

Healthcare costs:

€ 18bn → € 150bn

Working days lost:

€ 1,2bn → € 3,7bn

SUBWAY AIR POLLUTION – STATUS QUO

The fact that air pollution in cities is a major problem has long been known. What many people do not know, however, is that not only the air outside in road traffic but also the air inside contains a lot of harmful substances. In some underground stations, air contaminant values are measured that are multiple times higher than those in city traffic.

Table 1. Statistics on air quality of subway in different regions in the world.



Region	Pollutants	Average Concentrations ($\mu\text{g}/\text{m}^3$)	Number of Samples	Number of Standard Compliant (WHO)	Compliance Rate (WHO)	Number of Standard Compliant (KMOE)	Compliance Rate (KMOE)
Asia	PM _{2.5}	96.09	8	1	12.50%	3	37.50%
	PM ₁₀	127.14	7	2	28.57%	3	42.86%
Europe	PM _{2.5}	83.56	9	1	11.11%	2	22.22%
	PM ₁₀	197.40	10	1	10.00%	2	20.00%
America	PM _{2.5}	45.55	4	1	25.00%	2	50.00%
	PM ₁₀	102.00	2	0	0.00%	1	50.00%
Total	PM _{2.5}	81.09	21	3	14.29%	7	33.33%
	PM ₁₀	161.47	19	3	15.79%	6	31.58%

Source: The WHO and KMOE standard for particulate matter (PM) compliance calculation are shown in Table A1 in Appendix A. The selected cities for calculation in each region are shown in Table A2 in Appendix A. The average concentration for each region is the arithmetic average concentration of all selected cities in each region, the PM compliance rate is obtained by comparing selected cities with air quality standards, all PM data of selected cities are from Xu and Hao's contribution on world report [6].

Key take-away

Worldwide, 85% of metro stations do not meet the WHO air quality standards.

Air pollution in subways is a global challenge, but also a global opportunity.

 HARVARD UNIVERSITY 

COVID-19 PM_{2.5}

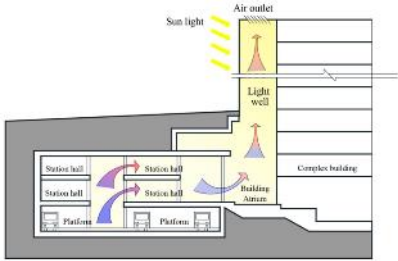
A national study on long-term exposure to air pollution and COVID-19 mortality in the United States

Exposure to air pollution and COVID-19 mortality in the United States
(Updated April 5, 2020)

Results: In this recent study it was found that an increase of only 1 $\mu\text{g}/\text{m}^3$ in PM_{2.5} is associated with a 15% increase in the COVID-19 death rate, 95% confidence interval (CI) (5%, 25%).



COMPETITOR ANALYSIS



Integrated Ventilation

built-in ventilation systems in subways, which mainly contribute to improving air quality through exchange of air



Chemical Air Filters

installations that remove fine dust and other pollutants from the air through a chemical filtration process



MANN + HUMMEL



Mechanical Air Filters

mechanical systems (e.g. screen door systems) aim to improve the air quality for passengers by means of spatial separation



FER SIL



Green-Tech Solution

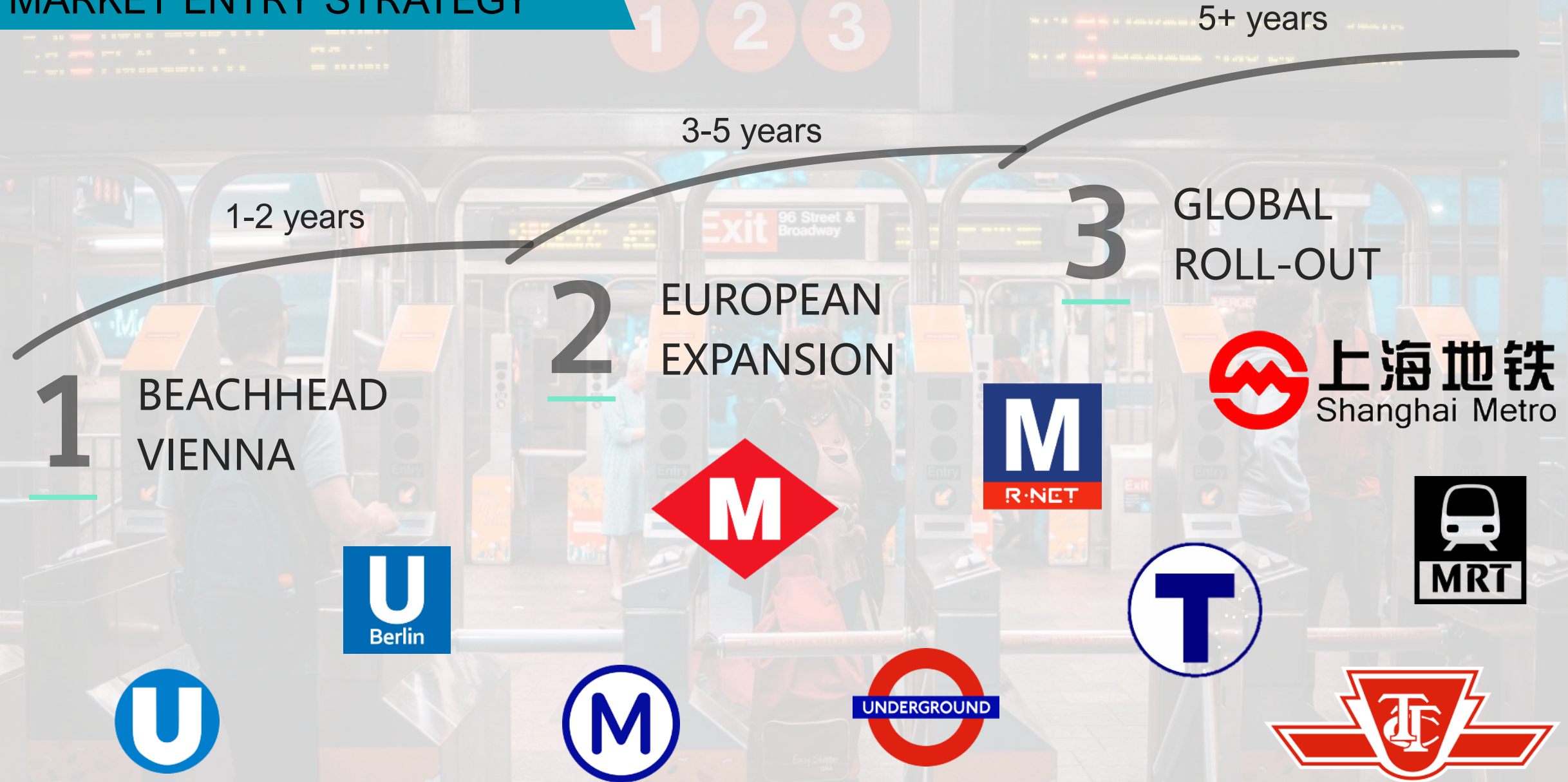
this approach takes advantage of the natural filtering properties of plants and reduces air pollutants through absorption and decomposition processes





MARKET ENTRY STRATEGY

MARKET ENTRY STRATEGY





TEAM

TEAM

Nastia Martinet



BIOLOGY



specialization in environmental sciences and engineering

work experience in integration of biodiversity in construction projects & urban agriculture

Patrick N. Frank



BUSINESS



professional experience in project management, HR, eCommerce and compliance for corporates

part of student initiative for sustainable development in economy, society and environment

Chloé Sachot



BIOLOGY



specialization in agricultural engineering

work experience in indoor vertical farming and within the department of green spaces & environment, in the plant science and technology department

Harsh Vora



ARCHITECTURE



work experience in urban design department

expertise in material science, virtual simulations and urban design

Esther Hummel



BUSINESS



work experience in innovation consulting, project management & business development

access to Austrian start-up ecosystem through AustrianStartups

Bharath Lakshmesh



ARCHITECTURE



professional experience as junior architect

expertise in 3D modelling and interior design

*“Our Vision is to increase life-quality
in cities by reintegrating
nature into the urban
environment.”*

*“Ensure healthy
lives and promote
well-being for all at
all ages”*

3 GOOD HEALTH
AND WELL-BEING



*“Build resilient infrastructure,
promote inclusive and
sustainable industrialization
and foster innovation”*

9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



*“Make cities and human
settlements inclusive,
safe, resilient and
sustainable”*

11 SUSTAINABLE CITIES
AND COMMUNITIES



*“Take urgent
action to combat
climate change
and its impacts”*

13 CLIMATE
ACTION



Contact



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