



COPENHAGEN

DRIVE TO THRIVE: REDUCING AIR POLLUTION IN THE ISLAND OF AMAGER - COPENHAGEN, DENMARK

In response to air quality concerns, along with the recognized need to enliven public space and promote more social interaction in developing area of Ørestad, a local NGO launched a one-year study of air quality on the island of Amager. The project underscored the importance of a data-driven approach that involves heavy stakeholder engagement as a way to build awareness and buy-in to critical issues such as air quality.

Facts and figures

Local Government Name

Copenhagen

Population

667,074 (2022) [1]

Total area

92.42 km² (2022) [1]

GHG inventory available since

2005, last public update 2020 [2]

GHG emissions indicator

760.656 tCO₂e

Introduction

In Copenhagen, Denmark, local non-profit organization Miljøpunkt Amager (MPA) implemented a public space intervention project, called the Thrive Zone Amager, to reduce citizens' exposure to air pollution in the city. During the one-year study of air quality in the developing area of Ørestad (on the island of Amager), MPA and partners created inviting urban spaces that would encourage more locals to make use of public space while reducing exposure to airborne pollutants. The multi-pronged public/private initiative was made possible through a combination of:

- Ongoing community engagement
- Expert advise of urban sustainability players such as Gehl Architects, Urban Digital, Backsatter, Studio Profondo and the Danish Technological Institute (TI)
- Climate data from open sources, including Google Air-View
- Analytical tools, such as Maptionnaire
- Financial support from the ICLEI Action Fund

The community and its challenges

Described by residents of Copenhagen as a place where the “urban jungle meets Savannah,” Ørestad boasts world-class buildings such as the iconic “8 House” – all against the backdrop of Amager Nature Park with its fields, forests, marshes and wetlands. Despite its proximity to nature, the growing appeal of the area (driven in part by new residential projects and an influx of new residents) has contributed to a spike in vehicular traffic on some of the main thoroughfares. This has in turn elevated air pollution counts that locals are exposed to – including some roads which are adjacent to schools and day-care facilities.

The approach

Engaging local stakeholders from the outset, *Thrive Zone Amager* was created both to address these challenges and in recognition

of the fact that close proximity to high traffic areas with poorer air quality is an issue numerous cities around the world are grappling with. The overarching goals of the initiative were to: establish guidelines for the design of public space that helped to reduce citizen exposure to harmful air pollution; create public space prototypes (in this case the domes and green walls) that serve as real world labs for air quality measurement; use these installations to encourage greater use of public space; and lastly to measure outcomes through a carefully planned, data-driven process in order to make projects such as this one more replicable in other parts of Copenhagen as well as virtually any other city experiencing similar problems.

Commenting on the upfront parameters that were put in place for the project, Alis-Daniela Torres, Senior Officer of Sustainable Resources, Climate and Resilience at ICLEI Europe observes that “the project was designed for replication... with a data-driven approach to where to implement the interventions and then also, with the idea of designing temporary installations that could either be recycled or moved somewhere else,” after the initiative wound down.



8 House, Ørestad. ©JensPeter

Zoning In on Air Quality Issues

In response to air quality concerns along with the recognized need to enliven public space and promote more social interaction, Miljøpunkt Amager launched *Thrive Zone Amager* at the end of 2020. Local stakeholder and public participation were a top of mind priority from the outset, including using online community engagement tool Maptionnaire to conduct a survey of residents of Islands Brygge as well as the Ørestad district. The survey, designed to learn how members of the public moved within the community and used public space, was actively promoted via local news feeds and social media (primarily Facebook and Instagram), yielding almost 800 responses – with the underlying goal of gaining a better understanding of the role public space has on everyday lives.

Public workshops were also conducted, in partnership with local landowner association GFS Ørestad as a way to draw attention to air quality issues while encouraging residents to participate in the Ørestad Maptionnaire survey. Similarly, a professional community workshop was held to engage professionals (including planners) across city departments in order to spotlight the impact of air pollution on citizen lives together with strategies for traffic and pedestrian movement.

Preliminary research included using Google Air View to cross reference air quality conditions vis-à-vis the residents' use of roads and public space, with the mindset that recommendations could be made towards



Google Street View car, fitted with advanced air quality measuring. ©Utrecht University

encouraging them to choose less busy/less polluted routes when and where possible. Additionally, to identify prospective locations that would likely remain high traffic areas (especially during commute times when people are in more of a hurry/less likely to take longer routes even though they may have better air quality).

Based on this analysis, *Thrive Zone Amager* decided on the strategic placement of a five-metre diameter polycarbonate dome complete with chairs and plants on greenspace separating residential buildings; a similarly constructed 3.5 metre dome; and a third space consisting of a green plant wall which also had seating and a small sandbox for children.



Polycarbonate dome complete with chairs and plants on greenspace separating residential buildings. ©Miljøpunkt Amager

Sensors were then installed at these sites and testing was done to detect the presence of PM 2.5 (fine particulate matter measuring 2.5 microns or less) both outside and within the domes and on either side of the green wall, to determine to what extent they helped to provide safer and more welcoming public spaces close to high traffic areas. As residents convened in these areas, further analysis was also conducted by Gehl Architects, leveraging its Public Life app to analyze social interaction at these sites.

Finding Ways To Clear The Air

The pilots began in August 2021 and an immediate revelation thanks to the uniqueness of these structures was that they were perceived as a fun attraction to visit, photograph and spend time in. Although they were in higher traffic areas, the use of plant material at all three sites helped to impart a sense of calm in a nature-rich setting.

In terms of measuring air quality at the sites and determining to what extent the installations help to reduce exposure to pollution, readings by the Danish Technological Institute (TI) showed that the domes lowered exposure to PM 2.5 by 12 percent and ultrafine particles by 13 percent while the green wall dropped exposure by 4 percent. According to *Thrive Zone Amager* expert advisor, Rasmus Reeh, they have also deployed thicker green walls “one could expect even higher positive impacts” in terms of reducing pollution exposure.

In addition to demonstrating that installations such as these can help to reduce the concentration of air pollutants, they also became an attraction if not a regular place to visit for passers by because they were aesthetically pleasing. They also helped to amplify public discussion surrounding what

Torres describes as “the marrying of better air quality, healthy public space and places that bring people back to the streets.”

In addition to demonstrating that installations such as these can help to reduce the concentration of air pollutants, they also became an attraction if not a regular place to visit for passers by because they were aesthetically pleasing. They also helped to amplify public discussion surrounding what Torres describes as “the marrying of better air quality, healthy public space and places that bring people back to the streets.”

Overall, the stakeholder engagement process proved to be highly successful – including wrap up meetings to solicit input on how both local residents and professionals felt about the project. The feedback was so positive, that GF Ørestad City subsequently decided to manage and keep the large dome, which remained in its original location and the smaller dome was moved to a nearby community. While the green wall was deconstructed, in the spirit of sustainability and circularity, the plants were redistributed among community members.



Green wall and playground at green space by residential area. ©Priscilla Castro

Lessons Learned

As emphasized by Torres, *Thrive Zone Amager* served to underscore the importance of a data-driven approach that involved heavy stakeholder engagement as a way to build awareness and buy-in to critical issues such as air quality.

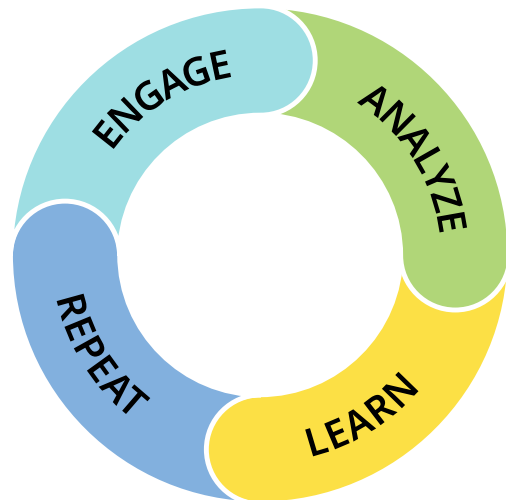
“One of the more important messages we helped to transmit was it’s important not only to protect citizens from pollution... but also... to value healthy public spaces.”

Alis-Daniela Torres
Senior Officer, Sustainable Resources,
Climate and Resilience, ICLEI Europe

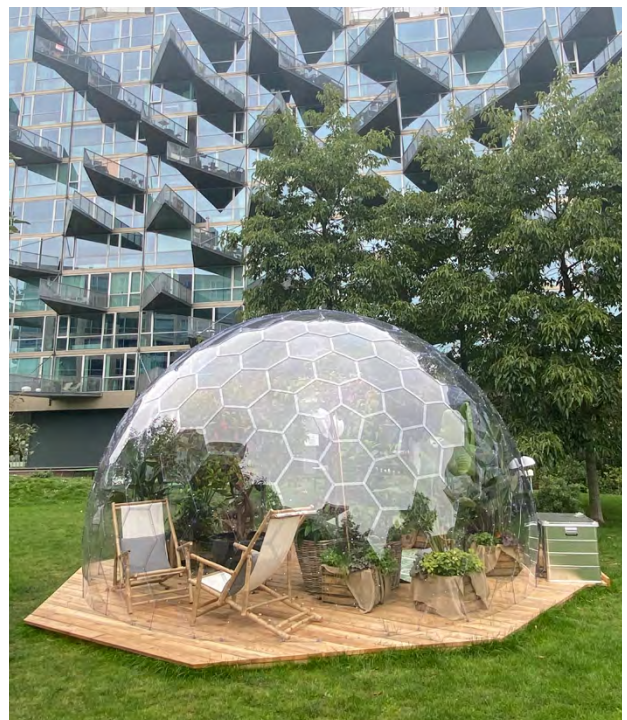
She also acknowledged that in contrast to past initiatives driven solely by municipalities, the mix of grass roots organizations, public and professional stakeholders, and private partners with a shared interest in literally clearing the air was a game changer.

“We now know these projects can be implemented fast and they truly are replicable and anyone can access the data produced by this initiative so that community leaders virtually anywhere can learn from these findings should they wish to embark on similar initiatives where they live.”

Torres highlighted that despite the modest size of this project, it has the potential to positively influence new public space intervention projects either planned or currently underway among ICLEI members alone.



Lessons and methods learned from the Thrive Zone Amager project. ©ICLEI



Polycarbonate dome complete with chairs and plants. ©Priscilla Castro

References

[1] CDP-ICLEI Track.

[2] Copenhagen Municipality - 2021: CO2 accounting for 2020. Available at: https://kk.sites.itera.dk/apps/kk_pub2/index.asp?mode=detalje&id=2309

About the Action Fund

The Action Fund is an initiative led by ICLEI with support from Google.org, to boost environmental projects in selected cities in Europe, Mexico and South America. The grant aims at empowering civil society organisations, academic institutions and nonprofit research institutes, leading data-driven climate action efforts to reduce citywide emissions.

Authors and collaborators

Mark Douglas Wessel, Sustainable Community Builder

Alis-Daniela Torres, ICLEI Europe

Priscilla Castro, ICLEI Europe

Everica Rivera, ICLEI World Secretariat

Design

Olga Tokareva, ICLEI World Secretariat

COPYRIGHT

© 2022 ICLEI - Local Governments for Sustainability e.V. All rights reserved. The ICLEI World Secretariat holds the copyright of this publication, including text, analyses, logos and layout designs. Requests to reproduce or to quote material in part or in full should be sent to carbonn@iclei.org. ICLEI encourages use and dissemination of this case study, and permission to reproduce this material without modification will usually be permitted without charge for non-commercial use.

ICLEI - Local Governments for Sustainability is a global network of more than 2500 local and regional governments committed to sustainable urban development. Active in 125+ countries, we influence sustainability policy and drive local action for low emission, nature-based, equitable, resilient and circular development. Our Members and team of experts work together through peer exchange, partnerships and capacity building to create systemic change for urban sustainability.

Contact Us

Kaiser-Friedrich-Str. 7

53113 Bonn | Germany

Tel. +49-228 / 97 62 99-00

