BIOTOPE CITY VIENNA

Image: The Brick, SoraVie

REGREEN
NATURE-BASED SOLUTIONS

Adressed SDGs:

> OBJECTIVES

Like many other cities, Vienna has to tackle increased heat stress and air pollution as well as a growing population in many neighbourhoods. The local Biotope City Foundation wanted to support the city by creating a real Biotope City: this concept is based on the sum of flora, fauna, and humans, which understands dense cities as an extension of nature and not as something detached.

Biotope City Vienna is now one of the most remarkable projects of the International Building ExhibitionVienna 2022: it shows how urban greening can be used to adapt to climate change impacts such as heat stress whilst at the same time being affordable enough to offer social housing (²/3 of the flats).

> DESCRIPTION

Biotope City is the world's first official climate-resilient district, with an approximate area of 7 ha. It is located on the property of a former Coca-Cola company in the south of Vienna, Austria. The district offers 950 housing units of various shapes and sizes of which two thirds are affordable social housing. “Green for all” constituted an important pillar of the project from the very beginning to ensure all residents had access to good quality urban nature.

Another pillar of the district’s development is its climate-optimised design, which was made possible through the planning software GREENPASS: The orientation of the buildings was planned to provide optimal shading and wind circulation, supported by the abundance of green spaces (2.5 ha of green area on the ground and 11.1 ha leaf area), which cools down the air flows. Overall, native species of vegetation with different structural forms was prioritised. From the start of the project 10 metres high trees of 18-20 different species were planted. Their location was chosen wisely to provide the best shading performance. Several different types of nature-based solutions were installed throughout the district, including: large-scale green roofs, green facades, artificial wetlands, and water ponds for rainwater retention.

According to the GREENPASS analytical models, the wind stays in the district for around 2-3 minutes; in that time all the nature-based solutions cool down the wind flow through evapotranspiration and the shade-optimised architecture, reducing the air temperature by up to 2.2°C. Other benefits include the on average 33% decrease in water run-off and more than twice the average carbon sequestration on a typical heat day compared to the same area without these nature-based solutions.

Another important pillar in the re-design of the district was to promote a mixed and varied usability of the public space to increase the comfort of the residents. The idea was to create a lively zone through public communal areas with generous space for playing, sport, leisure, and urban gardening across all buildings. Private and communal areas such as roof gardens, pools, or greenhouses offer opportunities to meet and mingle that are highly appreciated by the residents.

From the start, a cooperative planning process was carried out by the architects' offices, specialist planners from various disciplines and municipal departments as well as representatives of the property developers and the district,

to discuss the requirements of the project and its future residents. At the end of this process, quality standards were defined and made a compulsory part of the contract between the city and property developers. The case was also supervised by two interdisciplinary R&D projects including social sustainability and neighbourhood management, ensuring residents facilitating their participation in the planning and maintenance stages through events, surveys, etc.

The simple architecture and the recycled construction materials used to build allowed the development project to save money and to invest it in high-quality green spaces. Nature-based solutions represent less than 2% (4 mio.€) of the total construction costs. In addition, they provide a saving of 250.000 € in comparison to conventional structures for the same purpose.

> CHALLENGES

There still is certain reticence in accepting that the way we have built cities so far is not sustainable. People benefit from being surrounded by nature where they live, which generated discussion amongst the many disciplines involved in developing this district. Many did not think that nature and cities could be combined and the lack of experts in certain areas of the planning and construction processes were sometimes felt.

> OPPORTUNITIES

Biotope City Vienna involved six developers, 8-9 architecture and two landscape architect offices. This transdisciplinary team was crucial for the project being successful. There were regular meetings with all the designers, planners, and architects every two to three months to align and support each other.

Administrative regulations often hinder making space for more urban greening and different nature-based solutions, but this was not an issue in this case. On the contrary, it positively affected the implementation of these types of actions since they were going to restore a previously neglected area of the city.

Another stroke of luck was the presence of knowledgeable individuals in this endeavour, who had a strong professional background, a vision and the power to implement it.

> LESSONS LEARNED

Quality control was key in this project as issues can emerge between the design and the construction phase. It is crucial to keep track and to ensure that information is not being lost between implementers and participants throughout the process.

It proved very useful to have a coordinator for the entire project team who kept an oversight of all involved. Often the department responsible for developing such a project does not engage with the maintenance department who is always thinking about saving maintenance costs.

Last but not least, municipalities and investors need to understand that the planning process should be recognised for its important role and be provided with the resources necessary to fulfil it: the built structure will last a hundred years, so taking time to properly plan everything is key.

> INSPIRATION FOR OTHERS

The practical "Biotope City Construction Guideline" is available free of cost for download and was written with the purpose of inspiring other cities to apply this concept. A transdisciplinary team with expertise in many different areas relevant for the construction of the project observed the whole process and explained its path towards success.

FURTHER INFORMATION

All fact sheets were produced from questionnaires and interviews conducted by the ICLEI team. Contact ICLEI Europe for more information or access Oppla: https://oppla.eu/casestudy/21373

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