

# Research in Venice creates indoor microclimates to connect plants, people and buildings

by Holly Chapman | 15 Apr 25 | International, Nature & Biodiversity, News | 0 comments



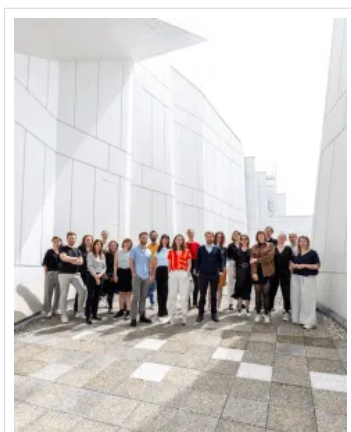
Credit: Building Biospheres 2025 © Bureau Bas Smets

The Belgian pavilion at the Venice Biennale will house a prototype ‘building biospheres’ for the next six months to produce a self-regulating indoor microclimate.

Commissioned by the Flanders Architecture Institute (FAi), landscape architect Bas Smets is working in collaboration with neurobiologist Stefano Mancuso on building biospheres, producing a new symbiosis between plants, people and buildings.

Their research into the climate crisis floats the question: what is the relationship between architecture and nature?

Buildings have previously been used as protection from the outdoor climate, separating indoor from outdoor conditions. Whilst most buildings have an artificial climate to feature its occupants’ needs, Smets and his team explore a future where architecture can involve building dynamic biospheres indoors as a way of living sustainably.



Credit: Flanders Architecture Institute © Dieter Daniels

Working with Smets, plant ecophysiologicalist Kathy Steppe of Ghent University and software developer Dirk De Pauw of Plant AnalytiX, worked from October 2024 to March 2025 on the prototype. Installing and monitoring subtropical trees indoors, the team produced a self-regulating indoor microclimate by activating irrigation, lighting and ventilation.

Smets hopes for architecture to “create a microclimate where plants and humans can live together.” He adds:

“The prototype in Venice allows us to test the possibility for plants to actively produce and control a building’s indoor climate.”

Alongside Mancuso and Smets, designers will develop new architecture where they say natural intelligence takes the lead. Elmes, Maud Gerard Goossens and Henri Uitterhaegen, Panta, Lisa Mandelartz and Steven Schenk will be coordinated by Lisa De Visscher, freelance architectural

consultant, and Petrus Kemme from FAi.

Dennis Pohl, director at FAi says:

“If we are to build a future that is truly sustainable, then natural intelligence must become the leading agent, shaping the way we live together. We have to design with our biosphere, not against it.”

Building biospheres will be featured in the 19th international architectural exhibition at the [Biennale Architettura 2025](#), Belgian pavilion, and will be open to visitors from 10 May to 23 November.

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