



# BIOPHILIC DESIGN

GUIDE ▪ 2023

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Biophilic design is a design approach that seeks to connect building users more closely to nature, creating spaces that are inspiring, relaxing and enhancing people's wellbeing. Biophilia is the human innate connection with nature and many research studies carried out in the last years demonstrate measurable, positive impacts of biophilic design on people's health and wellbeing: it can reduce stress, enhance creativity and improve the overall comfort inside spaces. As the world population keeps migrating into cities and living more and more indoors, this design approach becomes fundamental to preserve our well-being, especially in space where we tend to spend many consecutive hours.

The Biophilic design aims to include natural elements inside buildings to bring us closer to nature: plants and water, natural sounds and scents, use of natural materials as wood and stone, and, last but not least, daylight. Lots of research studies proved that daylight helps us enormously to stay in touch with the natural course of the day, improves our wellbeing and overall

health status and plays a fundamental role for our circadian rhythm. In most cases natural lighting needs to be integrated with artificial lighting, in order to ensure visual comfort and visual performance where needed, creating specific moods and atmospheres or light spatial distributions. In a biophilic approach, lighting design has two main goals: providing users with lighting options that stimulate the eye by creating visually interesting atmospheres to trigger a positive psychological or physiological response, and to help maintain the circadian system functioning.

Together with the maximization of daylight, one of the most used and effective strategies of biophilic design, is integrating plants inside the space. It is proved that being surround by greenery can improve both our health and our mood, but also plants themselves need to stay healthy. And here lighting design can help again: a careful planning of daylight and artificial lighting can keep both people and plants healthy and thriving.

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## 01 Capita Spring – BIG and Carlo Ratti Associate

The new skyscraper designed by BIG and Carlo Ratti Associati in the heart of Singapore is characterized by a wide use of greenery inside the space and a careful planning of daylight, with the goal to connect the building with the city and with nature. The core of the project is the so-called Green Oasis: a 35m high open-air garden designed as working area, relaxation lounge, exercise area or for special events. The Green Oasis integrates the natural elements vertically to grant the users access to a great green space, recreating the typical plant hierarchy of tropical rainforests. The plants species were selected and positioned depending on their daylight requirements, to provide them with the right amount and type of light.

CapitaSpring, Image by Finbarr Fallon

Image credits:

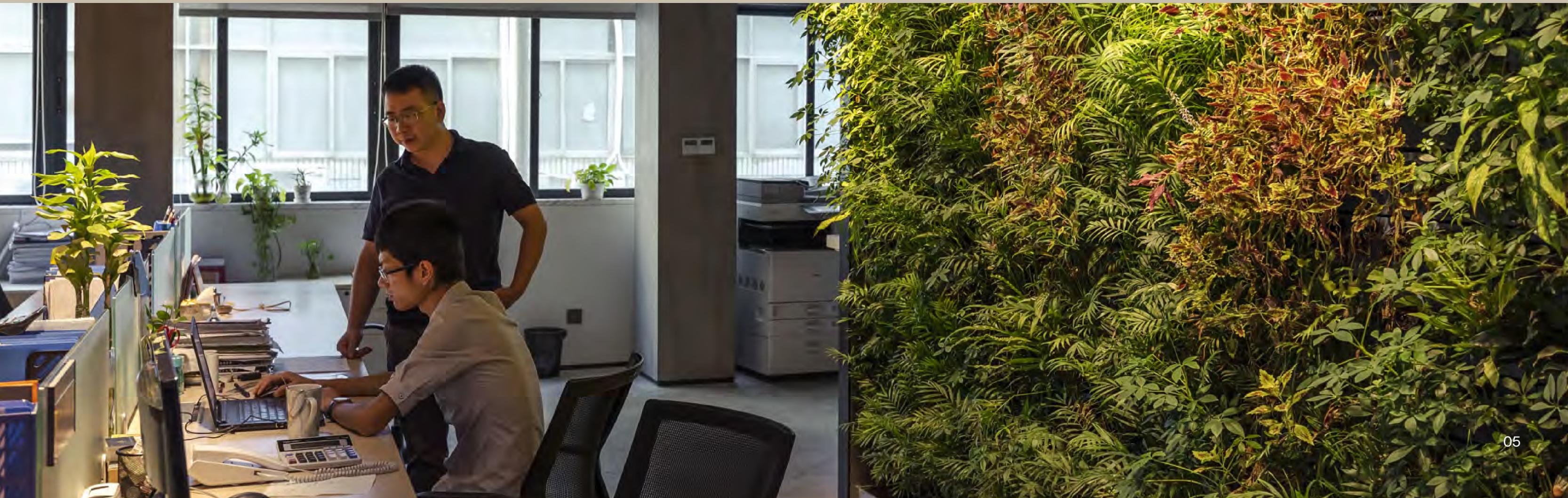


## 02 Quiguang Technology Co. Office - Erco

The project for the Quiguang Technology Office sees the integration of green walls inside the working space, to improve the connection of employees with nature and increase their level of wellbeing. Green walls have been widely used in recent office or public projects as a biophilic design strategy, but the lighting conditions of the space are a critical factor to maintain the plants health and minimize maintenance. For this project, the lighting manufacturer Erco illuminated the green walls with wide beam projectors, in order to create a uniform lighting effect on the plants and highlight the leaves colours and textures.

Image credits:

Quiguang Technology Office, Image by Erco





### 03 Second Home LA Office – SelgasCano Architects

The Second Home coworking space in Los Angeles, designed by the architecture studio Selgas Cano, carried out the biophilic approach in a new original way: instead of bringing plants inside the office, they brought the office out in the garden. The project consists of 60 pavilions with glass walls surrounded by plants, trees and animals. The glass facade maximizes the use of the daylight inside the space, whilst the only artificial lighting needed consists of a few pendant luminaires to provide task lighting on desks. The transparent walls allow a 360° view of the plants in the surrounding garden, giving the feeling of working in the middle of nature.

SelgasCano. Image by Iwan Baan

Image credits:



## 04 Royal Danish Library Aarhus – Arkitema and Erco

The renovation of the Royal Library of Denmark in Aarhus was carried out by architecture firm Arkitema and won the prestigious RENOVER price for the best Danish renovation project for 2020. The focus of the building is now the Library Garden with its 52-meter sofa curving through the space, defining the contours of a big plants pot with trees and groundcover plants. Another biophilic design element is a round fountain, helping visitors to be relaxed by hearing the sound of water. Daylighting coming from the linear skylights is integrated by rows of spotlights supplied by Erco, providing enough lighting for the plants and a nice visual focus for the green seating island.

Royal Danish Library Aarhus, Image by Johan Elm

Image credits:





## 05 Amazon Spheres Headquarters Seattle

The new Amazon offices in Seattle, the Spheres, designed by NBBJ and Site workshop, have been designed as a building in a garden and a garden in a building. They contains about 400 plants species between trees, green walls, bushes and climbing plants and t the fully glazed outer surfaces allows natural light to flood the space. Various types of luminaires, supplied by BEGA, were planned in different areas of the building: diffuse pendant globes installed at different heights to highlight a more organic and natural arrangement; flood lights on green walls and green columns; recessed downlights to highlight the paths between the plants.



Image credits:

Amazon Spheres Headquarters Seattle, Image by Lucas Jackson



09

## 06 Naman Retreat Pure Spa - MIA Design Studio

In this Spa project, designed by MIA Design Studio, plants become protagonists of the building, creating an “oasis of tranquillity”. The vertical landscape on the façade, together with the lamellas structures, filter the strong tropical sunlight into a nice play of light and shadows, working also as a passive shading system. In the interiors, hanging plants create the impression of walls, at the same time keeping a feeling of openness, whilst lotus ponds run from indoor areas to the inner courtyard. With this arrangement of plants and natural lighting visitors are connected to nature and feel a sense of serenity within the sheltered space.



Naman Pure Spa, Image by MIA Design Studio

Image credits:





Image credits:

Changi Airport Group

## 07 Jewel Changi Singapore Airport

For the new area of the Singapore Airport, the Jewel, Safdie Architects aimed to design a multipurpose space, bringing together the concept of a shopping mall and of an urban park. To achieve this result the building was designed as a huge dome covering a central park with countless trees, plants and a waterfall, connected with both the retail floors and the terminal buildings. This project represents the first attempt of merging leisure activities, natural landscape and airport facilities, with the goal of creating a new travelling experience: travellers will no longer experience waiting at the airport as a tedious necessity of the journey, but as another tourist experience.



## 08 Mr Green Office – MIA Studio

Mr.Green's Office, Image by Hiroyuki Oki

Image credits:

Goal of this project was creating an outdoor office, in a city like Ho Chi Minh, in Vietnam, that is more and more filled by concrete buildings and losing its green spaces. The project consists indeed in another concrete building, but with furniture and architectural elements realised with natural materials, creating a dynamic, vital and inspiring space for the employees and a more sustainable way to work and live. A deep study of plants lighting was carried out to define how to ensure a healthy growth of the plants inside the space: luminous ceilings creating a soft diffuse light effect and additional spotlights were designed to work with the daylighting coming from the curtain walls and ensure the best lighting conditions for both plants and the space users.



09 One Heddon Street – Barr Gazetas



The London Architect Practice Barr Gazetas has designed these new office space in London with the intention of building a space for creativity with a specific focus on users' wellness and comfort. Fundamental to this goal is the presence of plants within the space: big green walls in the reception area and many planters across the floors, together with the use of natural materials, help creating a calm and pleasant space for the employees, improving mood and reducing stress. In addition to daylighting, provided by glass walls planned for all office floors, diffuse ceiling luminaires and surface mounted spotlights contribute to the proper illumination of the plants across the various rooms.

One Heddon Street, Image by The Crown Estate

Image credits:



## 10 Stepping Park House - VTN Architects

For the project of this amazing house, VTN Architects focused on designing a space where the park and the indoor space integrate each other. At the centre of the house VTN planned a large void with a skylight to bring as much natural light indoors as possible and to allow a natural ventilation of the space. On the other hand, the facade is covered by ivy, which creates a natural shield against direct sunlight and maintains the space fresh by providing shadow, whilst small trees and plant pots across the space create so-called “pockets of park”, that seek to recreate the environment of a forest.





## *11* Indoor Eden Poetizer's office in Prague - Tomáš Císař and Johana Sedláčková Vamberská

For this office space the two designers Tomáš Císař und Johana Sedláčková Vamberská wanted to create a wild jungle pavilion, as interpretation of the concept of wild intuitive thinking. The small pavilion consists of a small greenhouse with more than 170 plants and it was designed as a space for informal gatherings, relax and leisure. The pavilion and the plants decorating it are illuminated by spotlights on surface mounted tracks installed outside the pavilion's walls: the spotlights illuminate the plants from the outside and create a nice interplay of light and leaves shadow inside the space, enhancing the idea of a jungle.

Poetizer's office, image by BoysPlayNice.

Image credits:

12 Sberbank Offices Building – Evolution Design



The new Moscow headquarters of the Russian bank Sberbank were designed by the Swiss practice Evolution Design and the Russian practice T+T Architects. The whole space is flooded with natural daylight, whilst artificial lighting helps creating proper lighting arrangement for the offices and the meeting rooms and a pleasant atmosphere during the evening for the restaurants and the lounge areas. Green walls, green columns, hanging gardens and plant pots decorate the whole space, together with screens reproducing natural landscape images, and create a comfortable but also dynamic working environment where the employees' wellbeing is put first.

SBER Bank, Image by Peter Wuermli & Ilya Ivanov

Image credits:



## 13 Focus Finacial Partners – Ted Moudis Associates



Ted Moudis Associates

Image credits:

TMA Architects developed this office project in New York as a flexible and collaborative space, with an open plan distribution to allow a flexible way of working, with an accent on sustainability and wellness. The architects ensured maximum daylight in the space and planned glass partitions to allow natural light also in the rooms with no openings. To promote the users' wellbeing, many decorative green walls with integrated lighting have been designed in the open space, helping to create a dynamic and interesting working environment.

## 14 CitiBank Wealth Hub, Private Wealth Management Offices, Singapore

The project of the Citibank Wealth Hub in Singapore is a true “ode to nature” - it resembles much more modern greenhouse than a bank office. The offices are indeed four floors of tropical greenery, carefully designed by Ministry of Design and ICN Design. For this project the biophilic approach is not limited to the presence of natural light -ensured by both skylights and glass walls – and to the many plants across the space, but also sees an integrative management of daylight and artificial light: a smart lighting system controls the colour temperature of the artificial lighting, changing it from colder to warmer tones during the day to support to our circadian system.



## 15 Lightsphere Zürich Innovation Center Givaudan

The Zurich Innovation Center was designed by Bauart Architekten und Planer AG built as new research and product development center for the flavor and fragrance manufacturer Givaudan. Heart of the project is the central 12m high atrium, illuminated by two skylights and decorated by full height ornamental plants columns.

The lighting scheme of the project, designed by the swiss firm Lightsphere, involved also the development of a bespoke luminaire, developed by Monolicht, to illuminate the plants on the columns: after carrying out a scientific research to investigate the best lighting for ornamental plants, Lightsphere and Monolicht developed a custom luminaire able to provide the right light spectrum and the right light distribution to the plants, creating both a healthy lighting arrangement and a great decorative effect.

Lightsphere, Image by Filipa Peixeiro

Image credits:





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