



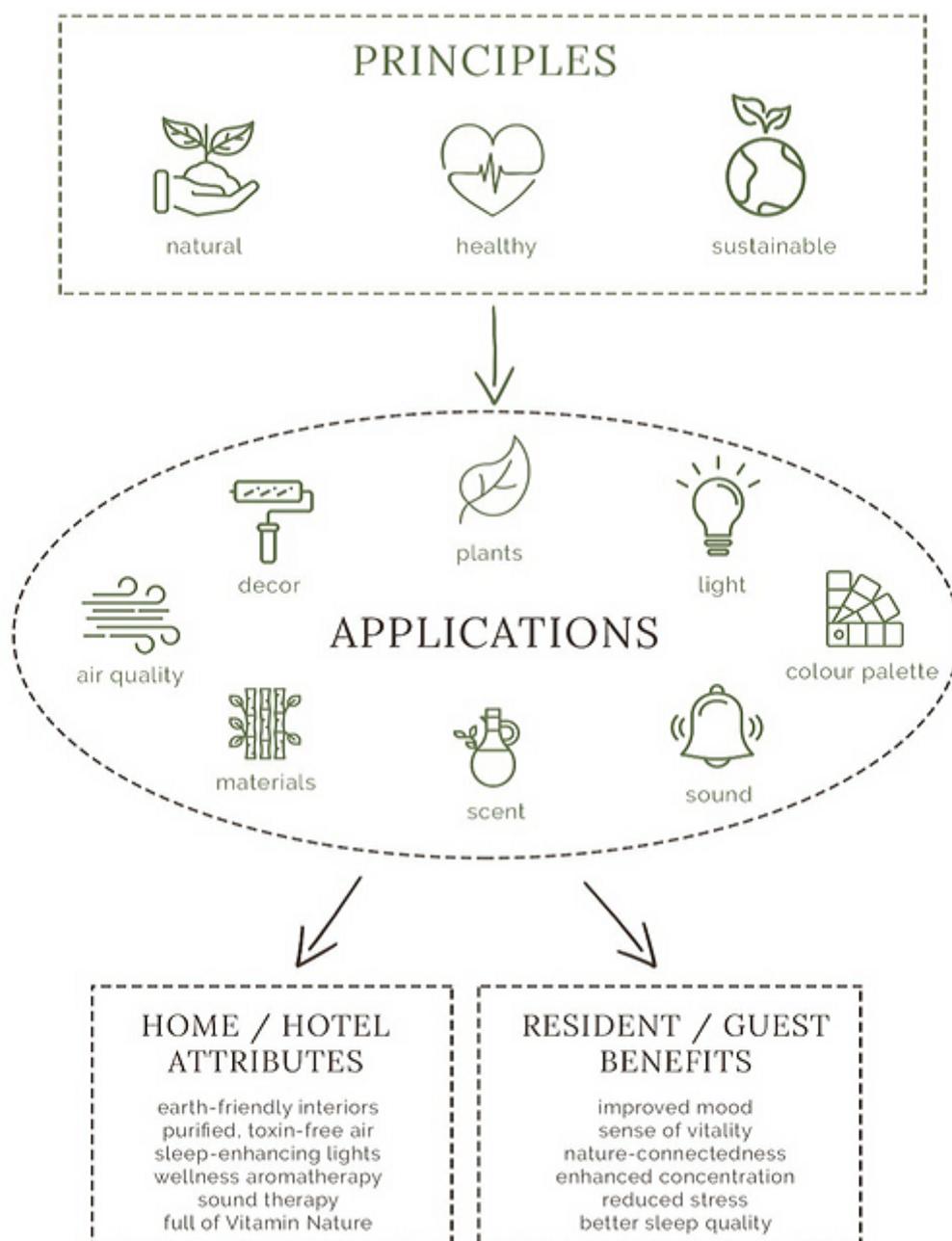
BENEFITS OF BIOPHILIC DESIGN IN HOMES & HOTELS

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Biophilic design is a way to respectfully harness the restorative, energizing properties of Mother Nature for physical and mental health benefits, so where better to implement this approach than in the intimacy of a home or hotel room, where we sleep, bathe and share space with loved ones?

We start with the three 'principles' of healthy, natural and sustainable design then deliver them through eight biophilic design 'applications' for a range of product attributes and user benefits, whether it be a home or hotel room (see diagram below).

Read on to discover how we do it and the science behind this approach, with illustrative case studies of our own Casa Biofilico and the 1 Hotel in Miami.



1. DEFINITION

Have you ever noticed that sense of calm that washes over you while sitting on a beach watching the waves roll in, or how revitalized you feel after taking a hike through the forest?

What if one could recreate these sensations within a home or hotel room to ensure its inhabitants experience similarly positive sensations? Welcome to the world of biophilic design...

What is Biophilia?

We define biophilia as the innate human love of or need for a close connection with nature and other forms of natural life.

When applied to modern lifestyles, 'biophilic living' resembles less a primal, hunter-gatherer lifestyle and is more about the respectful integration of nature into our everyday lives for our own health and that of the planet.

This can be done through the design of the spaces such as our homes and offices but also the products we put on our skin and the food we put in our stomachs.

What is Biophilic Design?

The last two centuries have seen a massive process of urbanization and industrialization as entire populations transition from natural to heavily built, urban environments with limited access to greenery, open spaces and wildlife. This represents a fundamental disconnect from our evolutionary past.

Biophilic design is therefore an inherently modern response to this historically novel rupture away from our previous levels of nature-connectedness. It attempts to reunite indoor and outdoor worlds through the sensitive use of natural materials, shapes, colors, scents and sounds in architecture and interiors.

This is mostly an organic philosophy although the sensitive use of technology can also be deployed to achieve similar ends, especially when there is a wellness benefit involved, for example in air purification.

Naturally Multi-sensory

The key to maximizing the impact of biophilic design is adopting a cohesive, multi-sensory approach. It is about crafting an 'experience' just as much as an aesthetic.

By way of example, a home with limited natural light, harsh halogen ceiling bulbs, furniture made of toxic materials, noise pollution from outside, poor air quality due to the traffic below and the type of inorganic cleaning materials in use will ultimately have a negative impact on its residents and guests mental and physical wellbeing.

A large format mural of an inspiring forest scene is, we would argue, preferable to a plain white wall every time however to have tangible impact on the experience in a home or hotel room, we have to go big and we have to think wider than visuals alone.

Superior examples of biophilic design therefore avoid all risk of dissonance between the visual, sonic, tactile and olfactory by aligning behind a consistent, natural approach.

Think of diffusing forest aromatherapy in the bathroom; opting for an acoustic world music playlist in the evening; organic linen sheets and natural fibre mattresses in the bedroom; a dining room with tactile wood, leather and cork details, circadian lighting designed to improve sleeping patterns and replicate natural sunlight in the morning...

Author Richard Louv coined the term 'nature deficit disorder' in his book of 2005 entitled 'Last Child in the Woods'. He then went on to write 'Vitamin N - the essential guide to a nature-rich life', with the 'N' standing for Nature obviously!



2. RESEARCH

Health benefits of nature murals

Wallpapers and murals can be a great way to infuse a room with color, create a focal point, or change a room's ambience, but a wall covering can also have a positive impact on mood, making it a functional design feature.

A 1993 study by Dr. Roger Ulrich ([link](#)) focused on biophilic design applied to various settings, one of which was a windowless, hospital emergency room. They traded blank walls and artificial furnishings for a design that aimed to connect people with nature through potted plants, furnishings made from natural materials, and a colorful wall mural of plants and animals in a Savannah-like setting.

The result? A significant decrease in stress and aggressive behavior among patients. Not only did the results of this study give us a glimpse of the power of a connection with nature, it showed that the positive impact can also be present when nature is indirect or merely representational.



Another study by Professor Roger Ulrich at Chalmers University of Technology in Sweden showed that patients with windows looking onto nature required 8.5% less recovery time than those facing brick walls. How's that for a health benefit?

Aromatherapy & Improved Sleep

A [meta-analysis of 12 studies \(link\)](#) using a random-effects model revealed that the use of aromatherapy was effective in improving sleep quality in 95% of cases with inhalation proving more effective as an application than massage therapy.

The study concluded that readily available aromatherapy treatments do indeed appear to be effective and promote sleep. However, more research may need to be done to develop specific guidelines for how to use aromatherapy to achieve the desired effect.

Aromatherapy & Reduced Anxiety

A [randomized controlled trial \(link\)](#) focused on women undergoing an image-guided breast biopsy, exploring the use of aromatherapy scents compared to a placebo in a randomized, controlled study.

Anxiety was self-reported before and after the biopsy by 87 women using the Spielberger State Anxiety Inventory Scale. A statistically significant reduction in anxiety was shown through the use of lavender-sandalwood aromatherapy compared with the placebo group.



“Nature is always right outside our door as a reference and touch point. We should use it far more than we do.”

- Maggie Macnab, designer

Vitamin Nature Room @ The Wardian

In January 2018 we were asked by leading residential property developer EcoWorld Ballymore to undertake a research project at its flagship Wardian London development to explore the impact of indoor environments maximized for Vitamin Nature on psychological wellbeing. Their Wardian apartments will feature biophilic design for its powerful wellness benefits in the home.

A waterfront greenhouse full of air purifying plants and an abundance of natural light was given an added boost of goodness through circadian lighting for the dark winter afternoons, pine forest aromatherapy, mindfulness books, our own acoustic music and nature sound playlists, a dehumidifier to boost air quality and improve thermal comfort and a range of other design details.

Over 100 visitors attended the space during the three-week research project, each of them completing a questionnaire upon arrival and departure. Coordinated by a team of experts from the University of Essex, the data explored stress levels, anxiety, negative mood state and nature-connectedness (a sign of vitality). [See full research results here \(link\)](#).

74%

felt improvement
in mood

83%

felt more productive

87%

felt more creative

87%

felt lower stress
levels



3. APPLICATIONS

Implementing Biophilic Design

01 Let There Be Life!

Luscious indoor plants add personality to any space and come with an array of health and wellness benefits to supercharge an interior with a double dose of 'Vitamin Nature'. This can be as simple as a few large 'ZZ' or Sansevieria plants in natural terracotta pots or as expansive as a vertical garden wall.. and everything in between. Why stop there though when there are terrariums and even aquascapes with living fish available as other creative ways to bring the outside world in?



In 1989, the NASA Clean Air Study ([link](#)) found that the power of plants went far beyond absorbing carbon dioxide and releasing oxygen; many filter harmful chemicals from the air, such as benzene, formaldehyde, and trichloroethylene—all commonly found in everyday objects such as furniture, paint and building material.

02 Purify the Air

Keep lungs happy and healthy by deploying an air purifier as a way to boost the impact of your collection of air-purifying plants, especially in spaces with high usage such as your bedroom - that's around 8hrs a night, every night of your daily air intake!

A good air purifier with an HEPA filter will help restore indoor air to something close to its natural state (the focus of all biophilic design) by removing pollutants that off-gas from furniture or, more likely, drift in from outside through windows and doors.

Incorporating plants and preserved moss helps but alone they will struggle to deliver the results required in heavily polluted urban areas. As a rule 6-8 plants per 25m2 is a good average but if the space allows, add more!



03 Indirect Biophilia

When plants and other living elements are not feasible, look to what is termed 'indirect biophilia'. Photos, murals, and illustrations of nature, animals, and plants are a great way to ground your space in nature, plus these strategies have proven stress-reducing properties too when they suggest prospect and refuge especially.

Studies have shown [\(link\)](#) that even indirect biophilia—using elements that are merely representational—still holds an arsenal of benefits similar to direct biophilia.

04 Eco Materials

The materials you choose for an interior space will not only influence the final ambiance but also impact the users' health and wellness but reducing harmful toxins present in the home or hotel room.

Opting for materials that are natural and sustainable will help ensure that both a room's users and the planet stay healthy. Good materials to consider include FSC wood, bamboo, linen, cork, and ceramic.

Using organic materials not only gives a natural aesthetic, it also removes the risk of harmful chemicals finding their way into your home or hotel room such as those regularly found in building materials, flooring and furniture—think benzene, formaldehyde, and trichloroethylene.



05 Light It Up

Implementing a circadian lighting system that follows the body's natural rhythm can help improve both productivity by day and sleep by night for residents and hotel guests alike.

Lighting can essentially be used to skew relaxation or energy in your favor, it's just a matter of using the right hue at the right time.

Fill your space with natural light whenever possible, especially first thing in the morning, but when the sun's rays aren't available, deploy a lighting system that offers blue-white tones in the middle of the day, accompanied by warmer, more amber tones at sunrise and sunset.

06 Mimic Nature's Voice

Possibly one of the most soothing things about being immersed in nature is the soft chorus of birds, running water and the rustling of trees that accompanies us, from an evolutionary perspective these are signs of all being well in the world. A twig breaking or water splashing on the other hand might signal danger on the horizon.

The good news is that you can easily recreate these positive sensations in a home or hotel room using nature sound playlists that are now readily available. It is a small detail but one that has an undeniable impact on the client experience.

Remember too, by taking control of what is heard in any given space we are also removing the risk of dissonant sounds creeping in, or masking unwanted sounds that may cause low level stress in other words, such as traffic noise outside.



07 Harness Nature's Aromas

The subtle use of diffusers and scented candles can make a world of difference to a bathroom, bedroom or living room.

Keep it clean with organic wax and high quality essential oils such as forest inspired pine and cedar wood at bathtime, the citrus tang of lemon and bergamot in the morning, or the herbal goodness of peppermint and rosemary during the day to aid in mental clarity.

08 A Neutral Palette

An interior's color scheme is arguably one of the biggest influencers of mood and is certainly the one that most people will connect with first upon arrival. While bright tones can suggest energy, neutrals will help homes and hotel rooms feel grounded in nature.

Assuming most spaces will start with something close to a blank canvas, we simply add an extra layer of detail on top of that by using natural materials that come 'pre-loaded' with their own palette of browns, beiges, and greens.

Still looking for a pop of color? Try a splash of sunshine yellow or a bright sky blue as a way to mix things up.

CASE STUDY:

CASA BIOFILICO, BARCELONA

This home incorporates an array of elements inspired by and akin to nature to give it a clean, contemporary aesthetic that fully leverages the aesthetic and functional health benefits of biophilic design.

As you tour through this home, you will find that it not only ticks off the key elements of biophilic design, it also incorporates deliberate touches of wabi-sabi—another effective way to embrace nature courtesy of a Japanese aesthetic tradition (see box below).



What is wabi-sabi?

A Japanese aesthetic that derives from imperfection and transience. Characteristics of the wabi-sabi include asymmetry, roughness, simplicity, modesty and an appreciation of the integrity of natural objects and craftsmanship.

A Biophilic Arrival

The entrance hall features a South African landscape photograph with a row of handsome cows warmly greeting each new house guest, a Danish side table from the 1960s and a jellyfish-like Artemide table lamp next to a rotating collection of pot plants that help fill what would otherwise be a 'dark' corner.

Nature-Inspired Living Area

A living room filled with natural light plays host to a corner filled with air-purifying plants such as Sansevierias and ficus plants, offset by a bespoke piece of floral wall art and a series of botanical leaf paintings above a vintage Danish sideboard in teak wood.

More vintage furniture in the shape of four Danish, H.W. Klein dining chairs with teak frames and natural fibre seats that pick up on the color palette of the ceramic tile flooring beneath, as well as a classic leather armchair.

Wellness lighting systems are set to an automatic timer to recreate sunlight each morning and then fade out slowly after sunset in order not to disrupt the body clock.



Eco-Friendly Kitchen

An all-white kitchen is kitted out with a curated coffee & tea set-up featuring ceramic Japanese mugs, a professional burr grinder, copper V60 filter cone, coffee scale and slow-pouring kettle.

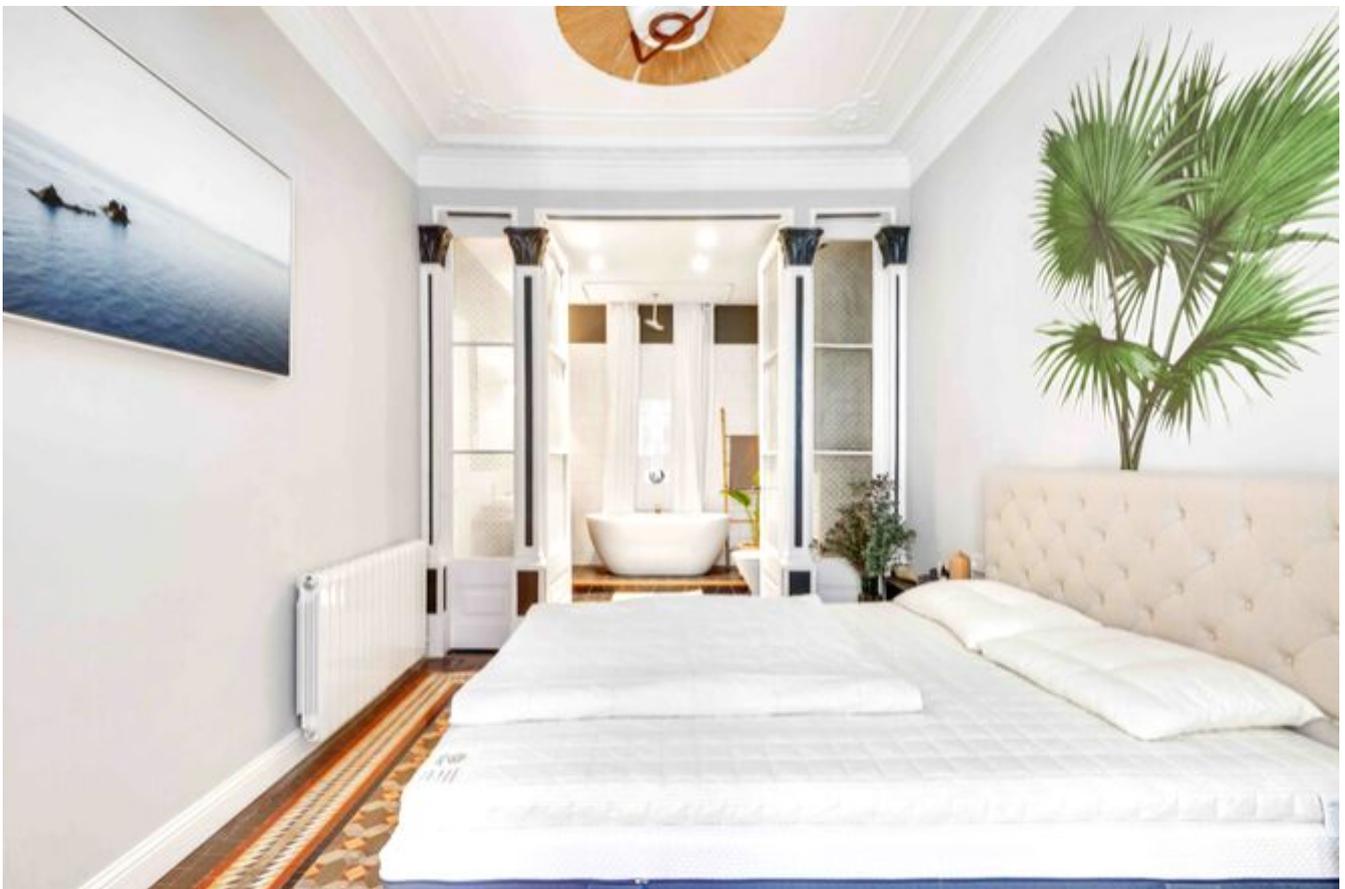
All-natural cleaning brushes in various shapes and sizes are accompanied by eco-friendly cleaning liquids in a refillable aluminum bottle and, why not, a young Monstera plant for a touch of green.

Healthy Bedroom

The master bedroom has an eco-rubber flake mattress topper and pillows as well as a natural wool all-season duvet by CocoMat, the natural bedding experts. These are matched with sustainable, organic linen bed sheets by Libeco from Belgium.

A commissioned botanical drawing above the bed by artist Anna Farba sits opposite a calming seascape by photographer Tim Hall while a bedside aromatherapy corner has a eucalyptus bouquet and a range of various sleep-enhancing essential oils ready to drop into the diffuser an hour before bedtime.

A Philips HUE bedside lamp keeps the mood gentle in the mornings and evenings, no matter the season.



Zen Bathroom

The main bathroom has a large tub used for magnesium salt baths for relieving sore muscles, natural soap products, a 'Biophilia' photo print by Christopher Marley, a Monstera leaf display, smart-scale for checking heart rate and body mass each morning, as well as candles, magnesium salts and natural room scents to create a haven of organic health and wellbeing.



Organic Dining Area

A teak dining table plays host to organic linen table mats and napkins by Libeco from Belgium, ceramic plates with a rough wabi-sabi finish by Muubs, crystal water tumblers by Royal Doulton and an amorphous Alvar Aalto glass vase from Iitala.

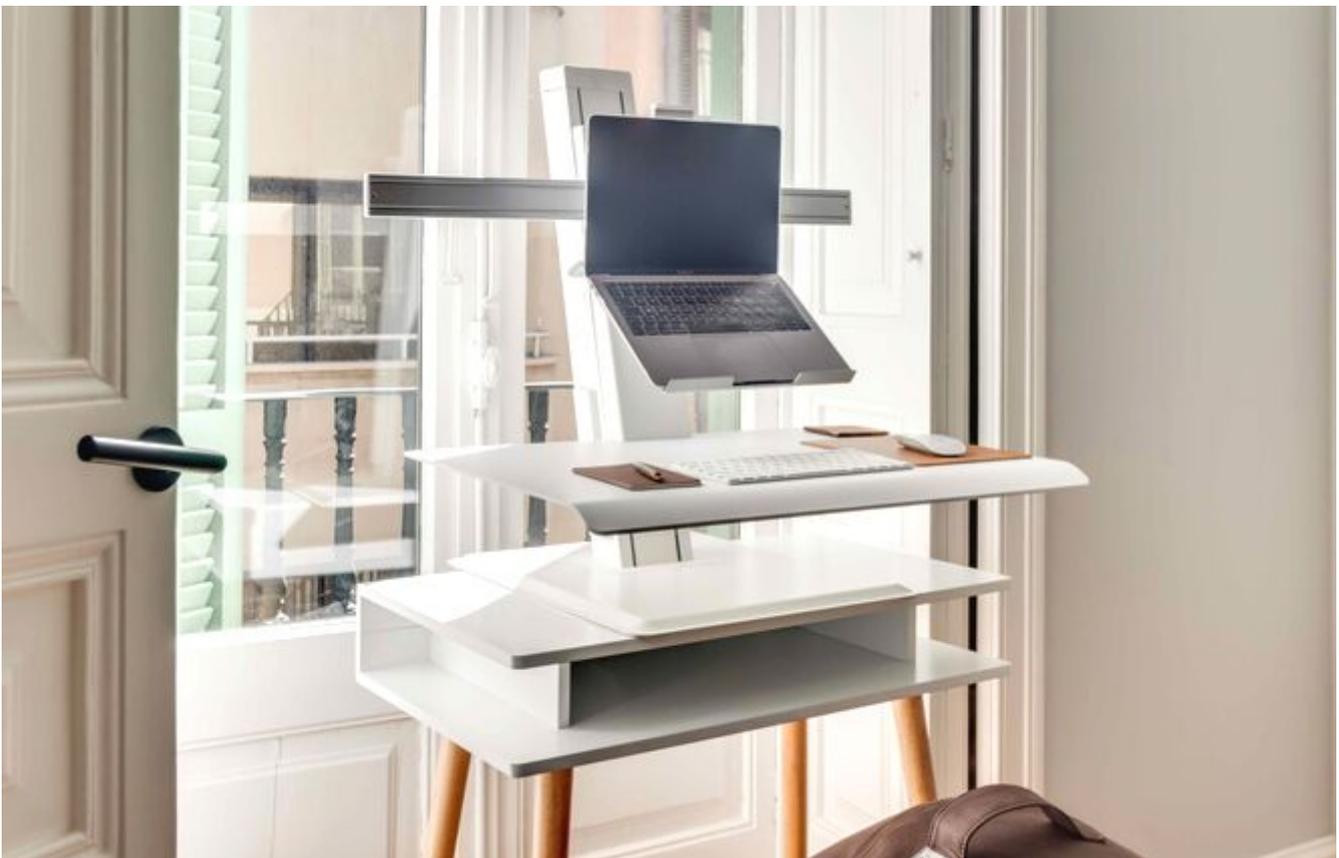
“The ultimate design is little different from the natural world.”

- Kenji Ekuan, industrial designer



Active Design Home Office

A second bedroom has a HumanScale Quickstand Eco standing desk combined with a mobility ball for flexible working positions, both standing and sitting. The aim here is to promote a reduction in time spent sitting still and more 'movement snacks' while working. Positioned directly next to the windows for exposure to natural light, the room also has a Dyson air purifier and a Sonos sound system pumping acoustic music playlists to create a multi-sensory space designed for productivity and creativity.



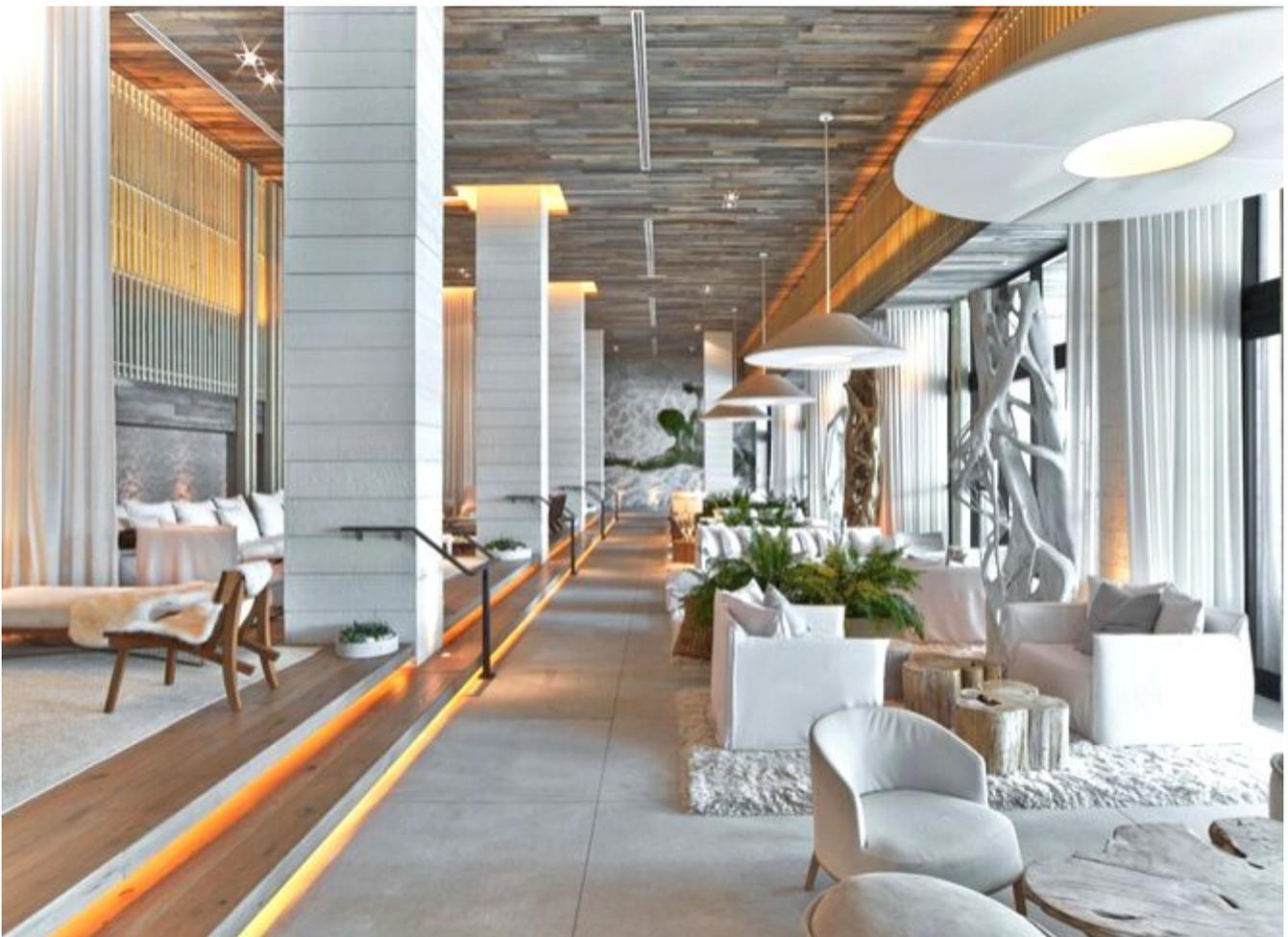
CASE STUDY: 1 HOTEL, MIAMI

The 1 Hotels group look to have taken the concept of a nature-inspired urban hotel concept and knocked it right out of the ballpark, leaving the competition standing.

Founder Barry Sternlicht, previously Chairman and CEO of Starwood Hotels & Resorts, has pushed the sustainable luxury theme to its limits, breaking new ground in the process. There's just nothing else quite like this out there at the moment.

The South Beach property is overflowing with living walls in reception and pearlescent white Teslas ferrying in guests from the airport, while the double-height main lobby area is a symphony of tonal neutrals from beach shell white to coffee table oak.

It somehow manages to tick all the boxes of a five-star hotel while sticking by its sustainable mantra and avoiding any obvious signs of snobbery, despite sitting well above the US\$500 per night price category.





All bedrooms have high-grade water filters on every tap, hemp-blend mattresses, eco-friendly toiletries, lots of natural light, living plants, aromatherapy and reclaimed wood.

The restaurant uses organic ingredients and there is a brilliant little health cafe on the ground floor selling juices, smoothies, salads and gluten-free pastries. All around lie petrified wood tables, linen drapes, hanging plants, whitewashed timber and soft beige carpets, helping unify concept, design and product in one.





SUMMARY

Biophilic design is an approachable method that can be utilized on any budget and in any interior. Whether you decide to explore this concept on a small scale by incorporating a few potted plants or plan your entire home design solely using biophilic elements, this sustainable practice that will greatly benefit not only your home, but your health and well-being.

To discuss how we can help you design your interior space email us at design@biofilico.com

