

Biophyllia

in Strata/Commercial Development



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A low-angle, upward-looking photograph of a dense forest. Numerous tall, slender tree trunks rise vertically from the forest floor towards the sky, creating a strong sense of height and scale. Sunlight filters through the canopy, creating a hazy, ethereal atmosphere. In the lower center of the frame, a person wearing a red jacket and dark pants is walking across a large, moss-covered fallen log. The person's presence provides a sense of scale to the massive trees.

What we want



What we got!

Status quo for most people



What we got!

90%

of time spend indoors



What we want

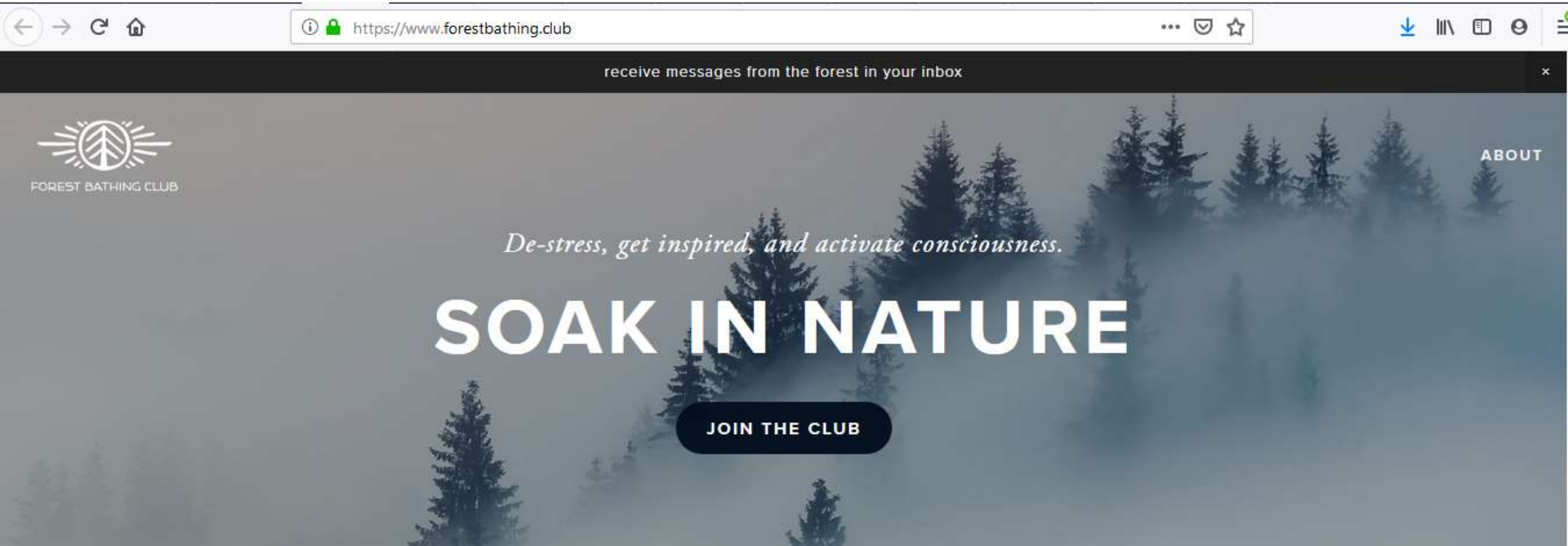
less than 1%

of time spend in true Nature

We need the build environment to strike a better balance

In fact
we are already so decoupled from
Nature that doctors now prescribe

FOREST BATHING



What is Biophilia?

BIOPHILIA AS A CONCEPT



The concept of biophilia implies that humans hold a biological need for connection with nature on physical, mental, and social levels and this connection affects our personal well-being, productivity, and societal relationships. – *Sheeps Meadow*, 2004

Bio

connected with life and living things

philia

denoting fondness, especially an abnormal love for a specified thing

loosely translated as
Love of Nature

Biophilia is real



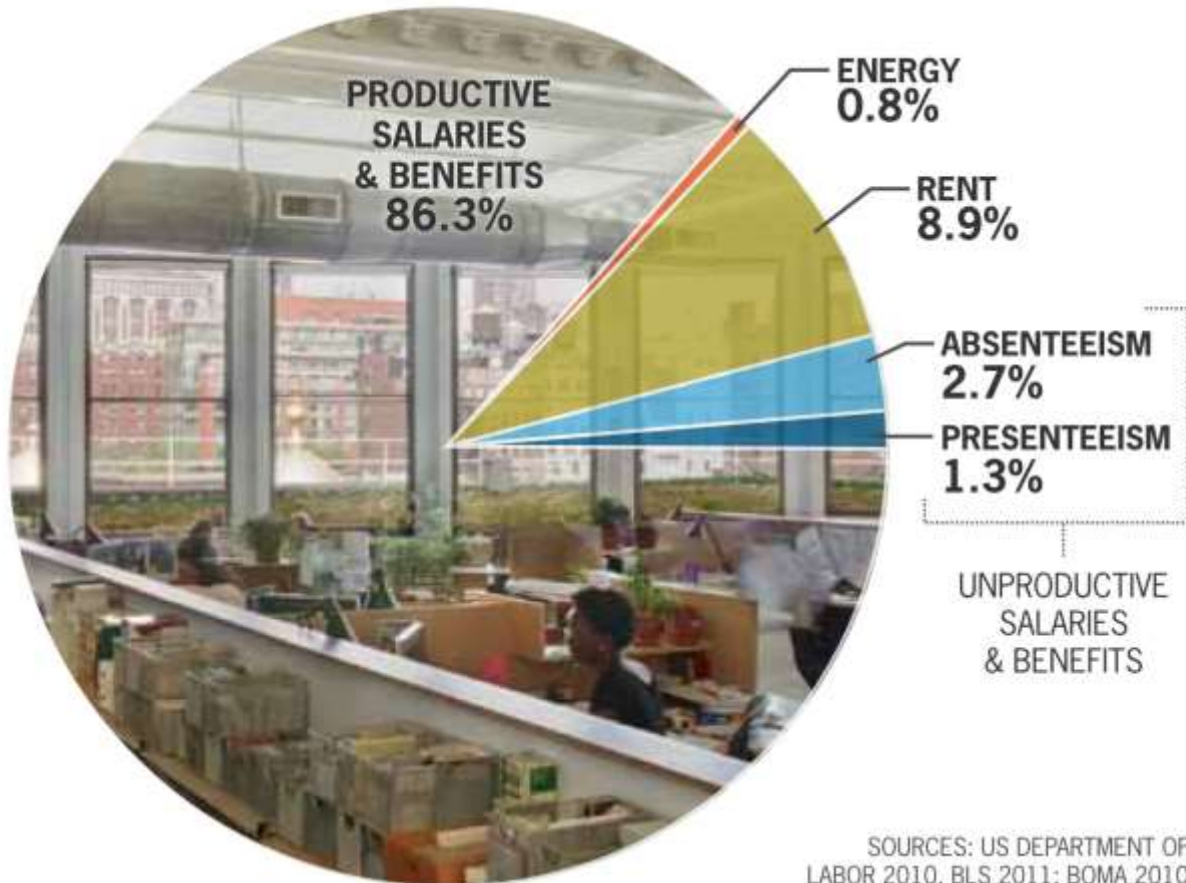
- **“What is the most attractive office space?”**
Along the façade with a view out
- **When asked to “Draw your favorite place”**
96% of the kids drew an outdoor location
- **20% more self-discipline**
for teenage girls with greenery outside their home

Biophilia & Economic Sen\$e



There's great economic value in the positive effects of biophilic design on well-being, stress reduction and enhanced learning

Biophilia & Economic Sen\$e



BIOPHILIA CAN RE-ENGAGE LOSSES FROM UNPRODUCTIVE OPERATING COSTS

More than 90% of a company's operating costs are linked to human resources, and **financial losses due to absenteeism and presenteeism account for 4%**. Commercial spaces that give occupants access to nature serve as a release to outside stresses, and tend to cause less environmental stress themselves. It makes fiscal sense for companies to try to eliminate environmental stress that cost them thousands of dollars per year in employee costs.

SOURCES: US DEPARTMENT OF LABOR 2010; BLS 2011; BOMA 2010

Graphics credit: Catie Ryan for Terrapin Bright Green

There's great economic value in the positive effects of biophilic design on well-being, stress reduction and enhanced learning

Unproductive 66 days per year!

Amount of time that average Malaysian worker is either absent or suffering from presenteeism

NB. The UK figure is only 30 days per year

**MOST EMPLOYERS DO NOT REALISE THAT
HEALTH IS WEALTH...**



**EMPLOYEES UNDER-PERFORMING IN POOR WORKING ENVIRONMENT DESPITE
81% OF COST ARE GOING TO SALARIES**

Biophilia & Economic Sen\$e

Biophilic retrofit of call center (Sacramento, US)

- Employees with a view to the outside could take 6-7% more calls than employees without a view
- The call center was retrofitted to give everybody a view out (more office space, different seating arrangement, operable windows)
- Cost: USD 1000 per employee
Savings: USD 2990 per employee
Payback time: **4 months**



Biophilia & Economic Sen\$e

Improved student learning

Windowless class
room test scores
dropped by
17%

CHILDREN
PROGRESSED
THROUGH SCHOOL
CURRICULA

20-26%

FASTER WHEN
LEARNING IN

DAYLIT

ENVIRONMENTS

Biophilia & Economic Sen\$e

Hospitals patients recover faster

HEALING VIEWS



Photo courtesy of G. Brändle, Agroscope

Patients with a view to nature, instead of a nondescript wall, are more likely to experience hospital stays that are 8.5% shorter, with fewer negative observational comments from nurses, and significantly fewer strong, post-surgical analgesics.
– Ulrich, 1984

**Patients can discharge
8.5% faster from hospital**



Khoo Teck Puat Hospital
(Singapore)

Biophilia & Economic Sen\$e

Retail spaces



Retail customers judge businesses surrounded by nature and natural features to be worthy of prices up to 25% higher than businesses with no access to nature. – Albee Square, Brooklyn, NY, 2010

- Customers were willing to pay more for products when sold in a green retail setting:
 - +20% higher for convenient shopping (e.g. sandwich)
 - +25% higher for general shopping (e.g. jacket, watch)
- For a retail store chain in California with 73-stores, skylights were installed and sales increased by 40%



Biophilia & Economic Sen\$e

Significant increase in property value

PEOPLE WILL PAY

58%

MORE FOR A
PROPERTY WITH A
VIEW TO WATER

OR

127%

MORE FOR A
**LAKEFRONT
PROPERTY**



Photo courtesy of Cook+Fox Architects

Examples of Biophilia



Fallingwater
by Frank Lloyd Wright



Kampung House
(Vernacular Malaysian Architecture)

Example of Biophilia (Malaysia)



Photo by Lin Ho

Paramit – factory in the forest

Architect: Design Unit

ESD: IEN Consultants

Project performance: Measured 40% energy savings. High

occupant satisfaction. More info: <http://ien.com.my/projects/paramit.html>

Nominee for "Best New Building of the World 2018"

RIBA International Prize

Example of Biophilia (Malaysia)



Photo by Lin Ho

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Example of Biophilia (Malaysia)



Anonymous survey 2019:

90% preferred the new factory
to the old factory

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Example of Biophilia (Malaysia)

Repies to anonymous survey question "What do you like about the building?":

- 1) Its the best place i worked.. The greenery around the factory is simply amazing.. It give us a peaceful feeling..
- 2) Very green, light and healthy
- 3) Give a balance and serene feel (able to reduce stress). Work place = 2nd HOME
- 4) I like the environment of this building that have been surround by tress. Comfortable. Outstanding from others building.
- 5) The beauty of the natural, de-stress while working

Paramit – factory in the forest

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Example of Biophilia (Malaysia)



.... instead of being stuck in traffic

Commute in nature along river in Kuala Lumpur

New WELL Certification

with credits for Biophilia (qualitative & quantitative)



International Insights

NEW TREND: HEALTHY BUILDINGS

"We shape our buildings, and afterwards our buildings shape us" These words, uttered by Winston Churchill during his speech at the House of Commons in 1943, are the very essence of a new trend that has emerged for buildings globally and in the Asian region.



With over 500 registered projects in over 30 countries, covering more than 100 million sqft, one third of which is located in Asia, the WELL Building Standard is making

being? The answer is no, only partially, and unlike WELL typically not as predominantly mandatory requirements. Most of the existing green building

by the immense financial logic of the WELL building standard. With attractive ROIs related to overall health care cost savings, worker productivity increases and reduced sick days and intangible benefits such as improved sales from better customer experience and increased work value produced by employees, the WELL building standard provides a great business case - one that in this region has been picked up very quickly by China, where WELL certification is highest outside of the US.

The WELL Standard addresses seven

a year and costing nations like Indonesia an estimated RM160billion [\$35 billion] in economic losses.

For most people living in cities, 90% of our time is spent indoors - be it at our workplace, home or even in the car stuck in traffic. Unfortunately for a lot of people, while being stuck in the office to avoid bad outdoor air pollution might sound like a good idea, the comfort of being indoors can be nothing but an illusion as concentrations of some pollutant indicators can be 2 to 5 times higher indoors compared to outdoors. In fact, we have had to launch the term "Sick

as studies issued under the Population Health Management Journal shows that eating unhealthily can be linked to a 66% increased risk of productivity loss. And Malaysia is the fattest nation in Asia with 42% of the population being overweight and 14% obese, in part because more than half of Malaysians have been reported to practice inactive lifestyles (defined as weekly exercise amounting to less than 150 minutes).

The WELL Building Standard looks at creating wellbeing at the workplace by setting forth preconditions that call for building owners to make available

About The Contributor



Sheena is in the process of joining the WELL Faculty while working as a green building consultant at G24 Consultants



Gregers is the managing director of G24 Consultants, the pioneering green building consultancy in Malaysia.

Let's do a WELL calculation example in the Malaysian context using our own office as an example, where 81% of our company's monthly expenditure goes to staff salaries, while other expenses (15%) and rental (4%) account for the rest of the expenses. From the employer's perspective, and under the assumption that by following the WELL standard, the absenteeism and presentism can

Article in Property Insight magazine (December 2017 issue)

Biophylic Masterplanning

People and Nature First

Keep as much of the existing trees and plants as possible

Design with existing terrain

Design for human comfort in between and around buildings

Computational Analysis

- Street level shadows (morning & evening)

- Exposure on buildings

- Wind analysis

- Gradient analysis

Allow activities to take place

Alternative transportation

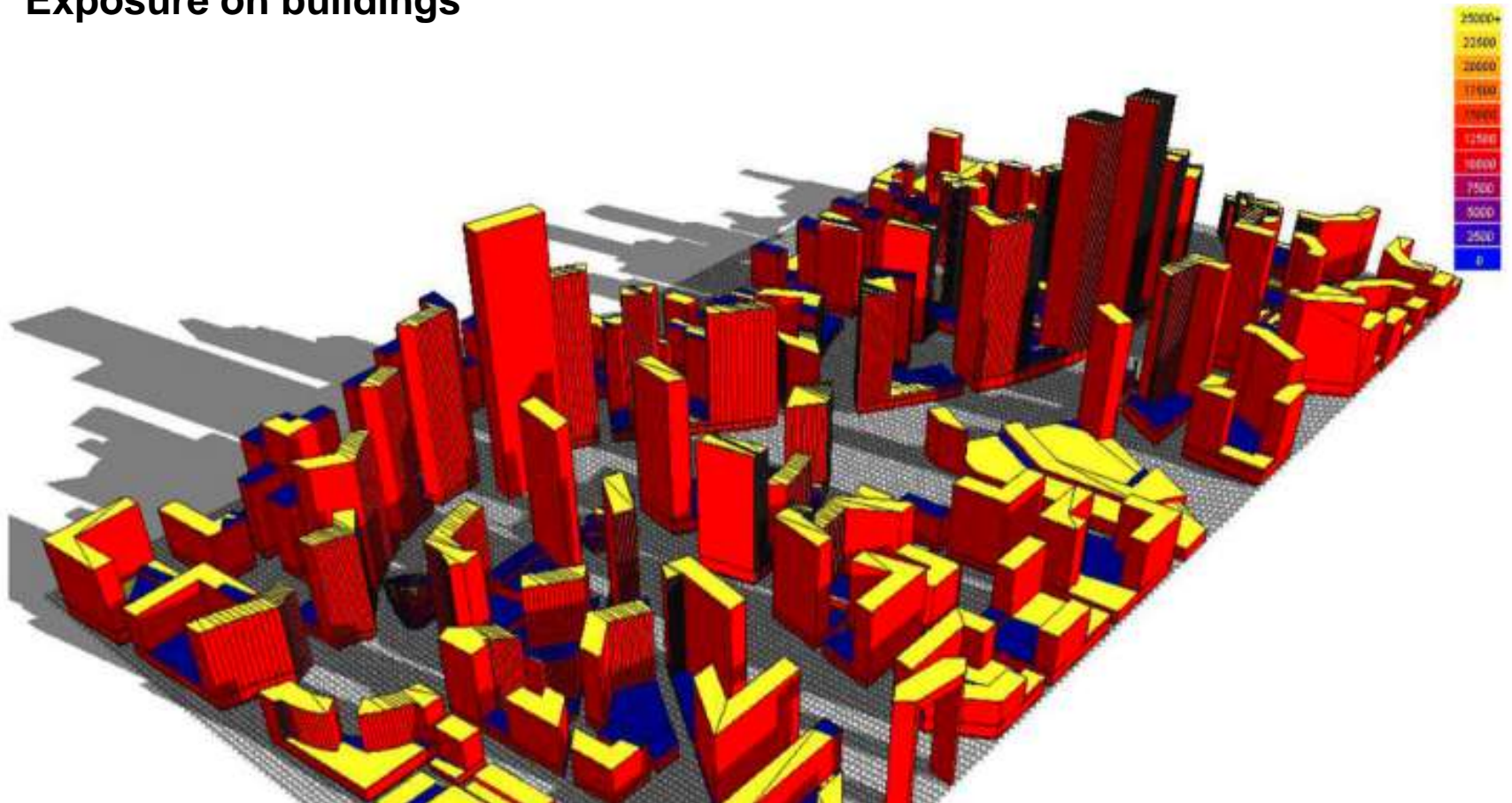
Image
removed
(as per ODE's request)

Biophylic Masterplanning

Do the trial and error on the computer, not in real life

SOLAR RADIATION impact:

- **Street level shadows** (morning & evening)
- **Exposure on buildings**



Biophylic Masterplanning

Do the trial and error on the computer, not in real life



USING CFD SIMULATIONS TO IMPROVE PEDESTRIAN COMFORT IN THE BUILT ENVIRONMENT

OPTIMIZE Pedestrian Comfort:

- **Wind velocity** (enhance breeze)
- **Solar radiation** (reduce impact for commuters)
- **Noise protection** (against noisy highways)

17 slides
of biophilip masterplans
and 3D renders removed

(as per ODE's request)

Concluding remarks

- Humans are naturally drawn to nature
- Connect people with Nature
- Design with existing nature
- Biophilic design is important
- Biophilic design makes economic sense
- Provide alternative modes of transportation



Thank you

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