

## Misconceptions about green walls

### *“Green walls damage the facade”*

In the construction of green walls is the wall structure protected from moisture and root penetration. Only when climbing plants rest directly on brick walls they can cause damage.

### *“Green walls need extensive maintenance”*

When a green wall is introduced the system initially needs frequent adjustments to irrigation and lighting. After the first six months, the plants are likely to have adapted to the new environment. By then, upkeep may be scaled down to be monthly, bi-monthly or even three months apart.

### *“They are only implemented for aesthetics”*

The building fabric is greatly influenced by fluctuating temperatures, which causes the materials to expand and contract and results with cracks and deterioration. By the implementing of green exterior walls, the building is protected against changes in the temperature but also from heavy rain and UV radiation.



## About DREEAM

DREEAM (Demonstration of an integrated Renovation approach for Energy Efficiency At the Multi building scale) aims to show that renovating at a larger scale opens the opportunity for better integration of renewable energy and is generally more cost-effective. The project demonstrates a multi-building and single owner renovation approach that can achieve a 75% reduction of total energy demand.

The DREEAM approach is implemented on pilot sites in the UK, Germany and Italy. These demonstration sites are to validate the DREEAM method in different climate, cultural and institutional configurations.



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## The impacts of green structures

Plants effects both us and the environment. They improve our mental and physical health, and air quality. Less well known is the effects of plants on the building fabric. The green living walls reduce the heating and cooling loads, and improves the thermal comfort of the building.

## What is a living green wall?

Based on the recent gain in popularity of green walls, it's easy to think that the concept is new. However, green walls have been around for close to a century. The term *living green walls* refers to panels of plants, vertically grown without the use of soil, on structures that are either attached to walls or free-standing. The wall structure is also referred to as vertical gardens, green walls, living walls or Eco walls.



## The three types of green walls

The three main types of green walls are as following:

- Panel systems - the plants in this structure is pre-grown into the construction. They are suited for both in- or outdoor use.
- Tray systems - pre-grown plants are installed into trays, that allows for a great variety of plants to be inserted into the wall. They are used mostly indoors.
- Freestanding walls - the location and type of plants in this structure is easily interchangeable, and allows for large variety of appearance and use of the wall.

### *Interior green living walls*

The implementation of vertical gardens indoors is often made to create a unique and decorative environment, but it has also several other benefits, that ranges from improvements of our mental and physical health to positive effects on the air quality. In offices, restaurants and receptions, the living walls create a unique element that is shown to help boost creativity and workplace morale.

## Benefits of green living walls

The reintroduction of green structures into urban areas has proved to have considerable positive impacts on the environment, public health and economy. The most significant benefits are:

### *Reduction of noise levels*

The plants block high-frequency sounds, while the supporting structure reduces the low-frequency noise. Therefore, green structures are used to reduce noise levels on freeways. The implementation of green structures in urban areas will reduce the noise that has become a part of our everyday life.

### *Improvement of air quality*

The plants actively remove carbon dioxide and other toxic pollutants from the air and emits oxygen. Studies have shown that the introduction of green structures improves the air quality in urban areas up to 40 %.

### *Reduction of energy consumption*

One effect of the increased urbanization is that cities have become significantly warmer compared to rural areas. The higher temperature demands a higher energy consumption for cooling that adds to emissions and air pollution. The green walls act to reduce these problems as they provide shade and cools the air, and reflects rather than store solar energy. During the winter, the plants insulate and reduce the need for heating.

### *Improvement of appearance*

As our cities are grows denser, we become and more deprived of the beauty of nature. The implementation of a green wall adds colour and texture that significantly improve the appearance of a building in a way that will never grow out of style.



### Example: Musée du Quai Branly

One famous example of a green living wall is that of Musée du Quai Branly (MQB), in Paris. The museum features indigenous art, cultures, and civilizations from all around the world, yet its most noticeable feature is the 200 m long by 12 m tall vertical garden.

The Eco wall presents a range of species from the world's main temperature zones — mainly from the northern hemisphere, but also from Chile and South Africa.

