White Paper Series on Sustainable Hospitality

NATURE-BASED SOLUTIONS FOR URBAN HOTEL REAL ESTATE

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"*Just because a project is in the heart of the city does not mean it needs to be devoid of nature - if anything that is all the more reason to weave it in!*"

Bill Bensley, Founder of BENSLEY

1. INTRODUCTION

The 2021 World Economic Global Risk Report listed 'climate action failure' as the top risk in regards to impact since 2013 [1] and biodiversity loss in the top 5 risks, both in terms of impact and likelihood [2] Climate change, in particular, is considered a threat multiplier for biodiversity [3] and a 40% drop in natural capital per person has already been reported over the past two decades [4]. The natural capital is systematically being depleted but at same time, nature and its ecosystem services are at the center of the hospitality business proposition from food and beverage offers to guests' enjoyment of natural landscape at the destination. However, nature is not only a 'capital' component available to hotels, but a source of solutions to mitigate and adapt to climate change and protect biodiversity while ensuring human well-being [5]. In this paper, we argue that hotels are uniquely positioned to tackle both climate and biodiversity via their facilities.

2. NATURE-BASED SOLUTIONS

One important but underestimated method to address global challenges is by implementing Natural-based Solutions (NbS). The European Commission defines NbS as "solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience" [6]. NbS are activities or actions that are specifically designed to protect, restore or enhance nature and natural features in landscapes, seascapes and urban ecosystems resulting in shared benefits [7, 8, 9]. The topic of NbS is broadly discussed in academic and research circles and it is also being implemented by some governments, organisations (e.g. [10]) and businesses as a wide and fast adoption is possible [11]. Our goal is to

look at the application of NbS within the hotel real estate sector zooming in on the environmental, social and financial benefits.

3. NATURE-BASED SOLUTIONS IN URBAN ENVIRONMENTS

In the urban built-environment, NbS can play a decisive role in tacking both inhabitants and community well-being as well as supporting a rich and diverse biodiversity. Among all various nature-based solutions existing for different purposes, sustainable drainage system (SuDS), street trees, green roofs, green walls, urban parks and green spaces are particularly applicable to the urban building sector [12]. Cities around the globe have tackled urban island heat effects by actively supporting a green cover replacement or green plot ratio for urban construction, with Singapore leading the way. The basic idea is for the land taken away through construction of buildings to be replaced with greenery within the construction whether via a green rooftop, green intermediary spaces or green walls [13]. Hotel buildings such as the Parkroyal Collection Pickering and the Oasia Hotel Downtown, both in Singapore, designed by the Singapore-based architecture company WOHA are examples of extensive green cover replacement in urban setting.

In integrating NbS into urban setting, three areas of implementation have been identified which are (1) materials, (2) systems and (3) sites [15] (See Figure 1).

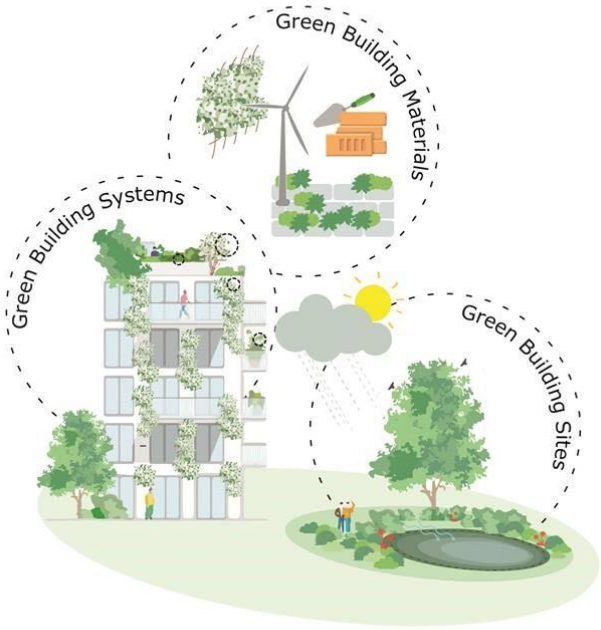

Figure 1: Three scales of NBS implementation in the built environment: green building materials, systems for the greening of buildings, and green urban sites. Illustration: Dimitra Theochari (unauthorized use is not permitted). [14]

(1) Green building materials are used in the construction process as raw or processed materials. Considering the overall impact of the construction sector in terms of carbon emissions, landfill waste, water and air pollution, the dual focus of green building materials is a reduced or net-zero embodied carbon and increased reusability [16].

(2) Green building systems include green roofs, green walls, intermediary green spaces or similar building-integrated natural features resulting in a multitude of benefits as discussed in section [17].

(3) Green building sites are areas next to buildings with a potential to enhance biodiversity and its ecosystem services as well as providing green space to urban dwellers and city visitors [18].

With a building stock of more than 500,000 hotels worldwide and a strong pipeline, decarbonization is a major retrofitting endeavor, NbS is an important ally in tackling the many environment challenges while contributing to overall human well-being [19].

4. ENVIRONMENTAL AND FINANCIAL BENEFITS

Research results show that buildings making use of living walls, rooftop gardens and rewilding landscapes are able to:

(1) **reduce the summer heat gain** and cooling demand [20] while
(2) **reduce urban heat island effect** [21]
(3) **improve air quality**, **absorbing pollutants** [22]
(4) **improve water management** [23]
(5) **reduce noise pollution** [24] while
(6) **increase thermal comfort** [25]
(7) **reduce energy costs** [26]

In greater detail, hotels can greatly benefit from green walls and green roofing, conserving energy by insulating the building envelope, with data showing that a green wall can reduce the temperature of walls up to 20 Celsius in the summer [27]. This additional insulation translates into reduced heating or cooling demands and decreased energy costs. Research conducted by Winch et al. [28] for the IGNITION project estimated that the usage of living walls translated into a 15% reduction of energy required for cooling and installation of green roofs results in 6.7% of energy saved. Moreover, green rooftops are better protected from solar radiation, air temperature fluctuations, and air pollution with their lifespan almost doubled [29, 30]. In terms of landscaping, low-rise hotel buildings can greatly reduce the summer heat gain and cooling demand by planting deciduous shade trees. Noise pollution is reduced as well because NbS are able to reflect and absorb acoustic sound energy, making it less harmful for the surrounding wildlife [31]. Additionally, research shows that urban areas in the UK are a significant source of floral resource diversity for insects with 85% of the nectar sources attributed to residential gardens further supporting the importance of greening urban spaces [32].

There is growing evidence of the benefits of NbS outweighing the cost of implementation [33]. As already stated, using NbS reduces a building's exposure to external factors and therefore, increases the lifespan of the building infrastructure. Evidence points out that a green roof extends the lifespan of the roof by an average of 23 years compared to a conventional roof [34]. Additionally, results from the IGNITION project show that, green walls, trees, green spaces adjacent to a property and a green roof all translated into increased value of real estate [35]. For example, it is estimated that property value is increased by 2.5% and land value by 2% if a green façade is applied, while planting street trees may enhance property value by 4.7% and green spaces near the building by 9.5% [36]. Additionally, recent study concluded that consumers show a greater willingness-to-pay (WTP) for accessible green roofs [37]. While the research focused on the WTP of tenants on rent value (up to

5% per month of the rent value for accessible green rooftop) this is of particular relevance to hotel owners and operators. The implication of greening the urban hotel environment offers opportunities to owners and operators in a post-pandemic era as discussed in the following chapter.

5. INDIVIDIAL AND COMMUNITY BENEFITS & OPPORTUNITY

Although NbS have clear environmental and financial benefits, NbS impact guest and employees alike as well as communities where hotel buildings are located. Integrating green spaces in urban areas will result in healthier communities inside and outside the building [38]. Green façades are found to positively affect physiological and psychological well-being and provide more comfort, relaxation, cheerfulness and vigor feelings compared to plain building walls [39]. Research has shown that the use of nature elements in a hotel minimizes employees' burnout and increases work engagement satisfaction [40, 41]. An increase in employees' productivity [42] and employee retention have also resulted from increased use of NbS in buildings [43].

In fact, recent studies have shown that nature *deprivation* has negative repercussions. This disengagement from nature has a name: nature-deficit disorder [44]. Nature-deficit disorder has taken a new level of importance in light of the 2020 Great Lockdown [45]. Similarly, the so-called restoration theory of Kaplan [46] is another approach to explaining why certain types of natural environments are effective in stress reduction and restoration from fatigue. People recover best from the stresses of daily life in environments where their minds are drawn by involuntary interest which the natural environment supplies in abundance [47]. Evidence shows that people suffering from mental fatigue are soothed by natural elements such as trees, plants, flowers, animals and birds [48]. As populations become increasingly urbanized, well documented evidence pointing to the beneficial effects of nature on health and wellbeing is rising up across many destinations. Recently, the results of a survey of more than 1000 travelers on the motivation factors for taking an expedition holiday in Patagonia showed that connection to nature is by far the main driver [49]. Entrepreneurs can distinguish themselves in the market by re-imagining and customizing the guest environment with hospitality facilities and memorable experience taking center stage. It is no longer enough to craft a beautiful building or space that people will enjoy; today's hospitality concepts should focus on people's reaction to the natural surroundings. It is about merging *biophilia* and the hospitality experience and putting more nature in the hotels. NbS in the hospitality industry have a role to play in bridging humans and nature as a preventive means in individual wellbeing.

6. CONCLUSION

In a recent article published in Nature, the authors argue that "projects that manage, protect and restore ecosystems are widely viewed as win–win strategies for addressing two of this century's biggest global challenges: climate change and biodiversity loss" [50]. One of the key management aspects of NbS moving forward is the quantifying of nature's impact. Considering the value of nature to the hospitality processes, recording, monetizing and accounting for natural capital and

integrating the outcome into the decision-making processes is crucial. Without the natural capital component weighing into the decision-making process, the industry may still favour cost-cutting measures and underinvestment in medium and long-term projects at the detriment to sustainability-related product, service and facilities development.

Author's Note:

For access to industry's best practices, advice and recommendations for implementation of nature-based solutions, visit the *Hospitality Net World Panel on Sustainability* in the Hospitality Industry dedicated to the topic:

The solutions nature provides: how can hotels contribute and benefit?

For environmental, social and financial costs and benefits of nature-based solutions, visit the recent report from the *UK Green Building Council* (UKGBC) on the IGNITION project:

Access: https://www.ukgbc.org/wp-content/uploads/2020/08/Nature-based-solutions-to-the-climate-emergency.pdf

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