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**NATURE BASED
SOLUTIONS
SUMMIT** URBAN
EDITION

MAY 23rd-24th 2024 - SUPER BOCK ARENA
PORTO - PORTUGAL

Book of abstracts of Nature Based Solutions Summit - Urban Edition 2024

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Exploring Challenges and Opportunities of Nature-Based Solutions for Urban Agriculture within Buildings

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Urban centers, teeming with increase population density, rely on their rural and peri-urban counterparts for food provision. However, this conventional linear food system gives rise to environmental challenges, such as an elevated carbon footprint due to extensive transportation networks and the accumulation of waste from excessive packaging materials. Promoting Urban Agriculture (UA) within buildings, coupled with Nature-Based Solutions (NbS), holds significant promise for revolutionizing urban food systems and fostering the development of more resilient and sustainable cities, particularly in densely populated urban areas such as Macao. Indeed, Macao relies on mainland China for its fresh fruits and vegetable supply which results in shortages of fresh food when cross-border activities are restricted. This study conducted a comprehensive literature review to identify the technologies, environmental and social impacts, as well as the main challenges and barriers for the public acceptance of UA in buildings. The primary findings from the literature review reveal that the most prevalent NbS for UA within buildings include indoor hydroponics, rooftop farming, and greenhouses. These solutions contribute to significantly decrease the carbon footprint, while promoting food security, healthier dietary choices and reducing reliance on imported or processed foods. Moreover, UA helps mitigating the urban heat island effect by providing shade and cooling the surrounding environment and improving air quality, creating more comfortable and sustainable urban living environments. However, UA in buildings encounters several challenges, including high energy consumption, generation of consumable waste from building farming facilities, restrictions on crop selection, and limitations imposed by building orientation for facade farming. Recognizing and addressing these challenges is paramount to develop tailored sustainable agricultural systems in buildings. Such initiatives have the potential to significantly benefit communities in densely populated cities. To grasp the full potential of UA in buildings, policymakers and stakeholders need to collaborate closely in tackling the accompanying challenges.

Keywords: Building-integrated agriculture; food production; urban agriculture; nature-based solutions