# ASSESSMENT FRAMEWORK FOR ALTERNATIVE BUSINESS MODELS OF BUILDING-INTEGRATED AGRICULTURE (BIA) IN EUROPEAN CITIES – THE CASE OF LISBON

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## ABSTRACT

Since both food systems and buildings have significant environmental impacts, their integration could lead to a reduced aggregate impact. In that sense, Building Integrated Agriculture (BIA) consists of the application of high-performance hydroponic greenhouse methods adapted for use on top of or in buildings, using renewable energy sources and efficient water and waste management cycles. This approach of producing food closer to where it is consumed has aroused an increasing interest over the last years since it can considerably decrease fossil fuel consumption, improve food security, provide jobs locally, cut transportation costs and enhance energy efficiency in buildings.

Whereas urban farming is a practice that has existed for a long time, BIA is very recent. Over the past few years, some urban greenhouses have been emerging in large North American cities such as New York and Montreal, started by companies that promote a trend of environmentally friendly food, grown in highly efficient installations on top of buildings. However, due to the numerous legal requirements, high costs, complex food systems and diverse constraints that are inherent to cities, large greenhouses with automated and intensive processes could have difficulties finding a place in the urban space.

As it is still a relatively embryonic area, very few studies have been conducted to assess the barriers, potentialities and impacts of implementing BIA in urban areas. On the other hand, European cities are different from American cities –in terms of morphology (scales, urban fabric typologies, population densities, buildings and blocks sizes, etc.), climatic conditions, urban metabolism, food supply chains, etc.– and thus require a proper assessment. In order to fill the existing gap, this work aims at developing an assessment framework for alternative Business Models of BIA implementation in European cities, through the case of Lisbon.