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Environmental controls in heritage buildings: The case study of "Baixa Pombalina's" units in Lisbon

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"Baixa Pombalina", the downtown and historic district of Lisbon is one of the most important pieces of urbanism and architecture ever built in Portugal and is at present time a UNESCO World Heritage nominates those buildings were built after the great earthquake of 1755, for housing, commercial and services functions. And they constitute a rational and functional approach for health and comfort to their residents, translating the state-of-the-art of architecture at the time, through the use of lighting and natural ventilation. In this research study, buildings of "Baixa" are observed as a scenario where residents of 21st Century live in spatial and built structures of 18th Century. This paper is about environmental controls within current thermal and lighting performance of "Baixa Pombalina" buildings. It analyses the efficacy of those buildings from the passive design point of view as well as the habits of its occupants in controlling and regulating the devices available in "Baixa" buildings at present time. A questionnaire model was developed to study bioclimatic performance of offices and residences selected in "Baixa". And field work involved a survey where workers of fifteen offices and residents of five houses have participated. Results demonstrate that in buildings of Baixa, controls are used less interactively during winter season and more interactively during summer season. Results indicate that in the Lisbon climate, it is mainly during the summer season that controls have a major role in thermal performance of these in heritage buildings.

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The effect of biodiesel production on the CO₂ emissions and area harvested for oilseeds

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This study investigated the impacts of biodiesel produced from oilseeds on global CO_2 emissions as well as the United States oilseeds area harvested and yields. Oilseeds mainly include soybean, maize, sunflower seed, rapeseeds and sugarcane. Three scenarios were defined: First scenario evaluated the effect of percent changes in the US biodiesel production by 2011 based on 2001. The second one addressed the same impacts when both the US and the EU produce biodiesel and the third one reported historical changes in US biodiesel production. GATP-BIO model was utilized to develop the scenarios and analyze the results. The model divided each country's land endowment into 18 Argo Ecological Zones (AEZs) and the whole world into 18 trading regions and 21 industries. Findings showed that as a result of the US and the EU biodiesel production, CO_2 emissions were decreased in the US and the EU. Additionally the world's total CO_2 emissions were reduced by 0.13% mainly due to reduction in household diesel consumption. It was found that considering AEZs is critical for the economic and land coverage analysis. Finally, the US tax credit policy was found to be efficient in biodiesel productions.

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