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Small-scale Bioclimatic Prosthesis: A strategy for adaptive social housing based on local spontaneous and socio-environmental patterns in transitional spaces.

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Abstract

In Latin America, there is a huge existing housing stock that no meets the minimum requirements for thermal comfort and energy efficiency, built before relatively recent thermal regulations. The scarcity of climate adaptive possibilities and the lack of design in the transitional spaces that these buildings create is identified as a common pattern throughout the sub-continental region. This leads to a lack of adaptation, thermal stress, uncomfortable spaces, and high energy consumption. Firewood and other fossil fuels as kerosene are massively demanded.

Consequently, CO_2 emissions and pollution, especially in winter, is having a huge impact on health. Nevertheless, it is estimated that the number of recoverable dwellings in these areas is 21 million units[1], which presents a huge potential impact of implementing bioclimatic adaptations into the housing stock. Energy poverty alleviation is crucial as well.

Intermediate spaces relevance and potential of this public/private interstitial areas in the definition of a dual function thereof need to be recognized; firstly as the main determinant on the comfort and energy demands of these spaces and also as a dynamic and adjustable field with a huge potential to increase the complexity of these socio-spatial boundaries. Dweller´s self-built spontaneous adaptations are very common in Latin American housing contexts[2]. Following this logic, the development of appropriable spatial strategies, environmentally and socially adapted to create resilience are required urgently. Furthermore, transitional spaces could offer an affordable way to progressively adapt existing housing stock for better indoor/outdoor conditions. Therefore, to develop the idea of a flexible, low cost, progressive and easily replicable components to rehabilitate this large amount of social housing is proposed, conceiving a concept to provide systematic integration and combination of spatial and easily self-built bioclimatic solutions.

[1] 21 million units (UN-Habitat 2016).

[2] Stiphany, K.M., & Ward, P. (2019). Autogestão in an era of mass social housing: The case of Brazil's Minha Casa Minha Vida-Entidades Programme. International Journal of Housing Policy, 19 (3), 311–336. doi:10.1080/19491247.2018.1540739 [Taylor & Francis Online]