New Challenges and Conditions for the Holistic Retrofitting of Commercial and Public Buildings

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Abstract

As we know, people spend 80% of their daily time in buildings, and under current conditions there is an increased demand for improved quality of the indoor environment.

This means in the first place, that the different actors, buyers and other beneficiaries will evaluate their decisions regarding purchases, entertainment, housing, work, etc. , taking into account the indoor conditions of buildings. After the pandemic, the demand for a higher quality of comfort and hygiene of the interior environment will be decisive in the preferences of its users, since their personal safety is affected. A consequence of this is that in the case of the renovation of commercial or public buildings, the opinion of its users, visitors, workers, owners, etc. must be considered in the planning and renovation process. Furthermore, the post-monitoring process must take into account the opinion of users regarding the perception of the quality of the interior comfort, to evaluate the efficiency and correct the operation of the energy and ventilation systems. Lastly, operating costs of buildings will be higher, however increase in sales and in the use of services may compensate for that.

It is evident to the population that the deterioration in the quality of the exterior and interior environment is due to both local and distant entities (both public and private). This results in the rational demand of users, that the weight of the financing of the energy and climate renewal must be shared by the different stakeholders responsible for this phenomenon. Thus, it is necessary to find the mechanisms to attract resources from those responsible. This can be solved by changes to state and municipality tax policy, or by financing from the institutions of the European Union.

The main stakeholders in a retrofitting process for public and commercial buildings (Lessor, Users, Investors, and Developers) will consider technical, energy, legal, and economic aspects of a holistic retrofitting solution that fit into their interest chain both from an individual and from their shared perspective.

Therefore, a value-driven process must be set up. In practice, stakeholders need to define and clearly state a common goal and retrofitting strategy, as well as to set up shared management for the design and implementation of the project. There must be a business case for the project that should include energy saving as well as, so-called co-impacts, such as the increased market value of the property. The main drivers of retrofitting public and commercial buildings typically include cost savings and improvement of the overall state of the building. Typical technical solutions are: energy efficiency improvement, reduction of energy demand, and reduction of building related emissions. However, today, the comfort level determined by indoor air quality and thermal comfort, and by the functional, aesthetical and environmental factors are also essential to consider. The implementation process developed by the EcoShopping* project can be considered as a model for achieving such a holistic retrofit implementation.

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Short biography

I graduated with a degree in Civil Engineering from the Chilean University for Technology (USACH today) as well as, one in Industrial Civil Engineering from TU Dresden. I conducted further studies at the Budapest University Technology and Economics, and the Central European University CEU).
I have worked in the field of energy efficiency and retrofitting since 1995, before then, I had worked as Director for Housing Development, at the National Corporation for Housing (CORVI) in Chile (1971-72), researcher at VÁTI (Office of Regional Development and Urban Planning in Hungary), specialized in Housing Policy, Analysis of Regional Development Processes and Infrastructure Development, as a consultant on the 1982-86 rehabilitation project of the historical centre of Santiago de Cuba. I was a member of the National Housing Policy Advisory Committee of Hungary (2002-10). Some of my projects from recent years included the coordination of the ECOShopping Project, which entailed the development of a holistic approach to financing, integrating top technologies and improving the indoor and outdoor environment quality of buildings, the GINOP supported „Umbrella Controlling" named R+D Digital System, which optimizes the indoor environment quality, as an instrument of BMS. In 2021, we finished the „UNIHARD" project, a new hardware system for monitoring and controlling energetical processes in buildings.