Radical Sustainable Innovation of office buildings

The recent development of technologies, processes and methods of sustainable building has enabled an unprecedented quantum leap in the available solutions. These possibilities could be interpreted as radical, yet they appear at a time as results of a long emergent development. The aim of this paper is to critically scrutinize, theoretically and empirically, whether radical innovation is occurring in sustainable building and what the implication are. The theoretical framework is based on concepts of radical innovation, inventions and sustainability. Radical sustainable innovation (RSI) should be characterized by high degrees of newness in the entire life cycle. RSI should offer significant enhancements of known benefits, entirely new benefits, or substantial cost reductions, leading to the transformation of existing markets, the creation of sustainable growth, and global sustainability. Thus, if buildings were RSI, it would be a shift in paradigm of how buildings are designed, build and used. Serious limitations on these notions are addressed. Buildings are large complex products realised through complex processes and with a long lifecycle. It appears impossible that an entire building should/could be radically new. How to evaluate radicality is a major challenge. It is tentatively proposed, to use standards for sustainable office buildings. Standards are developed to accelerate the sustainable development but has to some extent come to constrain possibilities of radical innovation. As the criteria of newness is incorporated in standards, going beyond them, could be viewed as radical. Empirically a selection of international cases of office buildings with very high scores of BREEAM, LEED and DGNB are examined. Six selected cases were analysed more in detail, one of them, GeelensCounterflow's Headquarters, being the most outstanding. This handful of office buildings have reached remarkable higher level of sustainability than contemporary building regulations. There is indeed a gap between these few buildings and the majority, making them more radical, yet due to weak social sustainability, they are not evaluated as radical innovation.