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BUILT ENVIRONMENTS AND ‘DIRECT’ ENERGY CONSUMPTION – A CONCEPTUAL METHODOLOGY FRAMEWORK TO FACILITATE DELIVERY OF THE CLIMATE CHANGE ACT 2008

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Abstract

The generation of energy via fossil fuel burning results in carbon emissions. These emissions contribute to the climate change of our world, particularly in terms of global warming. On the contrary, energy has become blood of life for the existence and functioning of our built environments. In order to control carbon emissions, the UK has taken lead among many countries around the globe and especially in Europe by passing a bill for the Climate Change Act 2008 which legally binds the UK to at least 80% reduction of carbon emissions by 2050 and 34% by 2020 which is fast approaching. However, the review of literature and models to date has revealed that to help meet these legal carbon cut targets set by the Act, there is a lack of unified knowledge-base approaches that could integrate all energy-related aspects of buildings in terms of these issues: establishing 1990 base-level and current carbon footprint of a given building and then drawing comparisons between the two to set milestones; breakdown of the energy consumption amongst various energy-consuming items of the building; identification of appropriate high energy-consuming items in the building; maintenance and refurbishment; fabric and non-fabric; implications of relevant terminologies; cost-benefit analysis of energy-saving technologies and pay-back time in connection to meeting aforesaid legal carbon cut targets. On the basis of identified knowledge gaps and attempting to bridge them, this paper develops and presents such an unified framework of a conceptual methodology that outlines fundamentals of a whole-system procedure while catering for all the aforesaid issues.

Key words: built environment, carbon footprint, climate change

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