Embodied Energy and Urban Infrastructure: Mitigating Impact of Climate Change

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Abstract

Urban growth demands sustainable residential, commercial, heritage, and transit infrastructure. Urban planning requires local knowledge, data, horizon year selection, and land use flexibility. Urban designers prioritise architecture, local resources, public input, and affordability. From extraction and refinement to marketing and disposal, embodied energy is defined as the sum of energy inputs (fuels/power, materials, human resources, etc.). Better amenities use more energy, whereas sustainability lowers embodied energy. Green development would never get 'Greener', rather go less red. Brownfield development revitalises abandoned factories, military locations, transportation infrastructure, Go-Downs, etc.

Keywords: sustainable brownfield development, built environment, embodied energy, cumulative energy demand, embodied carbon, net zero, green infrastructure

1 Introduction

According to the International Energy Agency's (IEA) latest study, World Energy Outlook, "Green" initiatives are obligatory. Unless we act now, we will be doomed forever.

Everyone must act "Green". Bridge and structural engineers must join this group. "Becoming green" has many aspects, but this session will focus on the environmental weight our profession creates while meeting societal demands and our efforts to mitigate the risks. The article will examine environmental impact.

The "Green" movement is based on two societal issues: human-caused global warming (AGW) and environmentally responsible economic growth. They're prone to ambiguity since they're looking ahead. It'll be tough ahead. Both perspectives have similarities and differences. We must address both challenges simultaneously; we cannot ignore one. "Green" represents our future hope.

As a concept, "Green" is something that researchers are trying to pin down so that differences in "Greenness" can be established. Due of the seemingly unlimited number of possible outcomes, this is still an ongoing work.

In light of this, the paper aims to provide a qualitative viewpoint on the notion, although one that is supported by variable quantification. It is accepted that diverse techniques result in distinct comprehensions of the magnitude and scope of application and the sort of energy embodied.

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