

## Journal Articles Review Assignment

### APA Citation:

Hasik, V., Ororbia, M., Warn, G. P., & Bilec, M. M. (2019). Whole building life cycle environmental impacts and costs: A sensitivity study of design and service decisions. *Building and Environment*, 163, 106316.

### Intended Audience:

Energy and Building is an international journal publishing articles with explicit links to energy use in buildings. The aim is to present new research results, and new proven practice aimed at reducing the energy needs of a building and improving indoor environment quality.

### **Whole building life cycle environmental impacts and costs: A sensitivity study of design and service decisions**

As we known, the energy performance plays a role in construction design. How to reducing the energy and water demand is always the first goal for many new building design and construction. For example, energy performance has the largest weight in the breakdown of Leadership in Energy and Environmental Design (LEED) score standard, regardless the different building types. According to this article, it quantifies assessment of different aspects of sustainability and resilience during early building design. It mixed several developed methods such as life cycle assessment (LCA), life costing costing and energy modeling. In this way, It aims the how different energy sources types and individual designed impact on the energy performance.

There are some factors considered well in this article. Firstly, the broader established for LCA scope is rational. Broader consideration is a very important aspect for LCA study, it not only ensure researches to focus on the goal but also help to interpret the interaction between the different phase easier. In addition, the units and uncertainty always be troublesome in the LCA research. Many database have different units format so unit converting between different aspect is needed. Therefore, it is more likely to avoid some errors with a reasonable boarder consideration. Secondly, integrate design during early design is very necessary. For example, building scales, regional scales and water service are considered, which provides a comprehensive view that how different energy sources impact performance. As the result, individual design and different stories of building are the top two influential factors for the energy design. On the other side, pride-based electricity also plays a role in the energy evaluation study, such as the electricity price cross locations.

In my opinion, it provides a great idea how to setup my research scope with a reasonable LCA boarder consideration. Secondly, wastewater aspect also should be considered in the future since it could impact the environment. On the other hand, a validating database of LCA may be a interesting topic. Although, the results depend strongly on the different locations due the market, climate and society, it do provide a better solution to deal with complex environmental problem and simply it so that help us to focus on some real matters.

