Aalto University
School of Engineering

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Environmental evaluation of green buildings

Title of the dissertation	How green building certificates fulfill the environmental goals in the buildings' life cycle
Contents of the dissertation	Buildings have three stages in their life cycle: pre-use (construction), use (operation) and end of life (EoL). During the main stages, pre-use and use, buildings use a large amount of energy and materials, which results in greenhouse gas (GHG) emissions. To limit the environmental impact of buildings while providing better indoor air quality, various types of green building certificates have been issued from 1998 onwards. This thesis used the literature in addition to original research to evaluate whether green building certificates have been successful in reaching their main goal of limiting environmental impact. It found that in the use stage of the buildings, green building certificates have been successful in higher levels of the certificates (more stringent requirements), but in lower levels, the success is questionable. In the pre-use stage, there is a need for improvements in the certificates, especially regarding low-carbon materials. Wood, as a low-carbon material, can be considered as an option for future building construction. Not only does it have lower GHG emissions than concrete and steel, but it also has the potential to store carbon for a long time. With sustainable forest management and practical planning, the switch to wooden buildings is an intelligent solution for climate change.
Field of the dissertation	Real Estate Business
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