

CARBON FOOTPRINT OF THE TALLEST TIMBER BUILDING

Abstract

Treet, which meaning in Norwegian is "tree", with 14 floors is the tallest timber structure building in the world. It is located nearby the city center of Bergen, the second largest city of Norway.

A few years now, the human tendency becomes increasingly committed to energy efficiency and control of CO2 emissions produced by their activities. Especially those in the construction industry, an industry that has always been linked to a major environmental impact with negative character.

With this project will calculate the amount of CO2 emission is saving using wood as a main material, in comparison with the traditional concrete/steel structure (performed in parallel by a fellow). Also identify what this CO2 emission saving means, if it includes the material transport to the construction place, the construction and the emission during its use. To do this I will use a tool that starts becoming more frequently used in the world of construction, the Environmental Product Declaration (EPD) system.



Methodology

1. Determinate the scope of the study, de inventory and limits of the assess.
2. Calculate the amount of wood inside the Treet building.
3. Calculate the total emission of CO2, using the Environmental Products Declaration (EPD).
4. Compare and discuss the results of both cases.

Conclusion

The environmental concern has been increasing, and the construction industry is getting more involved. The EPD system of Life cycle assessment is an excellent tool to be informed about the Greenhouse Gas emissions, specifically on CO2 emissions.

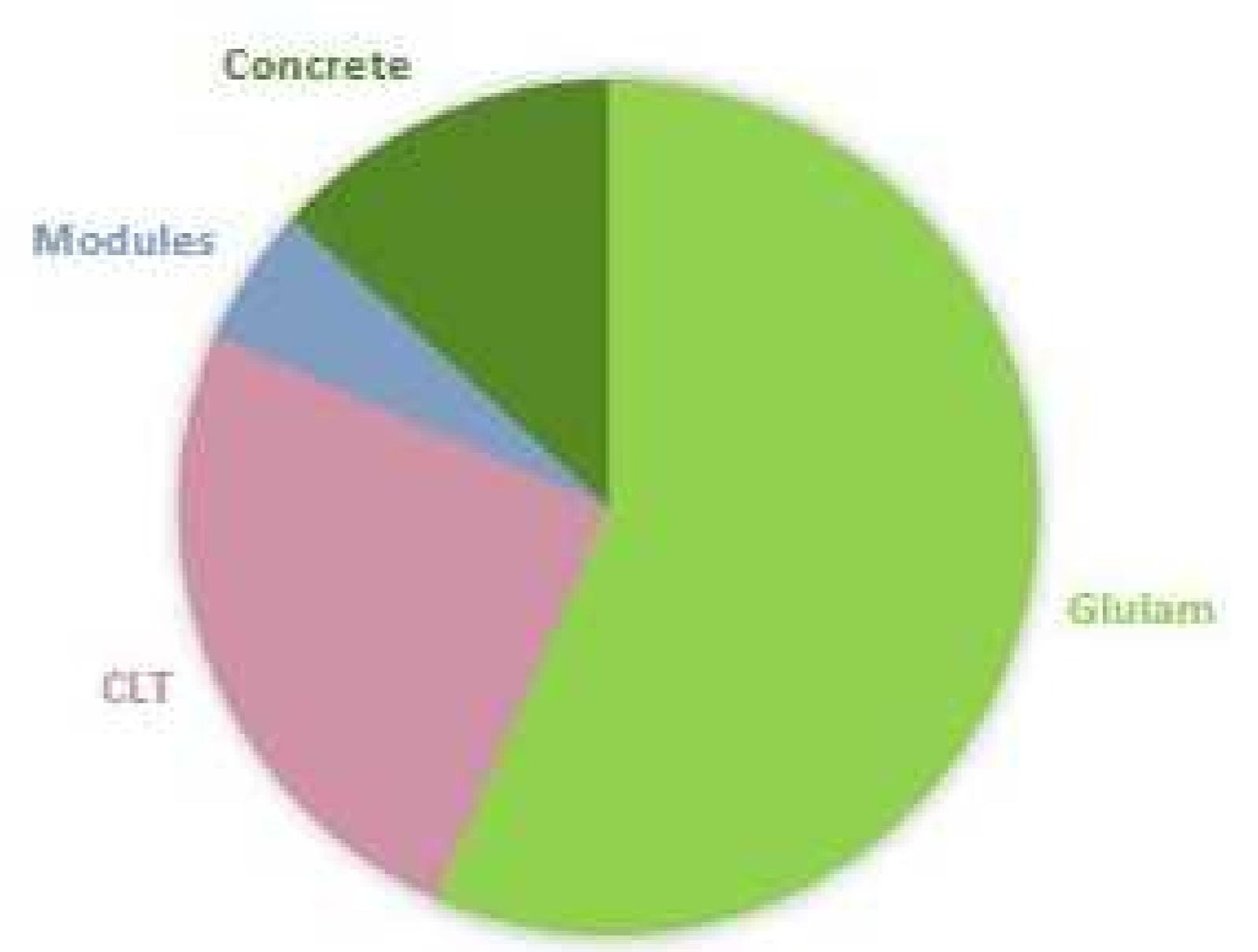
Construction industry tends to be more sustainable, and the reintroducing of the wood as a structural element instead to the concrete/steel traditional framework is a real alternative, this building is a prove of the structural properties. Wood as a biomass, it's a highly sustainable material as the results shows, with a negative carbon footprint in comparison with the concrete/steel hypothesis. Treet building is a great example of a sustainable high-rise building. We can also find other properties in this material such as, better isolation due to the thermal inertia and a warm good appearance, which makes it a serious complete alternative when trying to find a Near Zero Emission Building.

| Kg CO ₂ equiv | CO2 TREET | transport included |
|--------------------------|--------------------|--------------------|
| CLT | -216.029,41 | -139.430,10 |
| Glulam | -373.189,44 | -315.688,72 |
| Modules | 19,47 | 29.121,17 |
| Concrete | | 73.421,18 |
| Total | -589.199,38 | -352.576,47 |

Carbon footprint assessment of the Treet building.



M3 per material in the Treet and the Concrete model.



Kg CO2 equiv per material, in Treet building.