Improving Market Conditions for Climate Efficient Timber Buildings by Identifying Actual Life-Cycle-Costs

The construction industry is the source for approximately 40% of the global CO_2 emissions. In order to reduce the climate impact of the industry, the use of timber has proven to be an efficient alternative to conventional building materials. Even though the climate benefits of using timber are undeniable, there are still issues that are preventing a wider use of timber.

Costs relating to timber buildings have proven to be one of the greatest obstacles. To date there is a limited knowledge of the actual costs in realized projects. Without this understanding, risk-aversive developers or contractors, are either resorting to conventional building materials or placing an unproportioned cost margin on timber solutions. Timber buildings however have the potential to be cost efficient especially when looking at the whole lifecycle. Being a light-weight material, fast and easy to assemble, timber can among others make construction processes more efficient.

This research project aims at identifying the critical lifecycle phases and relating costs, based on real Scandinavian cases. We want our clients and developers to be able to make well-founded decisions based on real data and real risks. The focus in this project will be on the building structure, as this often constitutes the major part of the building CO_2 footprint, and hereby the largest potential for CO_2 reductions. We have chosen 3 timber buildings with different typology, construction method and scale in order to get the greatest coverage as possible. We will analyse an office building in Norway, a student housing in Sweden and a school building in Denmark.

This project is a research project to be executed by COWI and Arkitema experts in a close collaboration with academia, market organizations and timber building industry in Scandinavia. Our established contacts to academia (Chalmers University of Technology) will ensure the validity and relevance of our study.

The overall aim of this project is to promote the green transition of the construction industry. By using timber, we will come a long way and this project aims at removing one of the existing obstacles for a wider use of timber in buildings across Scandinavia. The project will be executed in an estimated 14 months between November 2020 and December 2021. The results of the research project will be shared broadly with clients and across the Scandinavian construction industry.