Timber: A Material with High Potential

The current state of the timber industry in the building industry

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Thirty years ago, the timber industry took significant hits. Unbridled logging in the tropics was halted, and the use of tropical timber came under severe pressure. Large amounts of damage were reported due to poor use of softwood in residential construction, wood preservation was seen as environmentally damaging, and widespread subsidence was observed in buildings on wooden foundation piles. The latter resulted in the disappearance of the entire industry that produced wooden piles. Fortunately, the timber industry was able to ride on the initiatives of the environmental movement and the Dutch and European governments, which sought to curb forest demolition and encourage sustainable timber production. The wood sector itself set up quality systems to ensure that wood construction is done properly, and wood modification gained momentum in the 1990's. A technique that has since become an alternative to wood preservation.

This all affected timber construction in the Netherlands because only a few percent of the built environment is made of wood. "Timber is often seen as artisanal and as an easily processed raw material." Both of these things are wrong and cause stagnation. First, wood is highly variable and can only be processed with sufficient knowledge. There are more than 50,000 tree species and about 600 wood species in the world that can vary considerably in quality, and thus, specific knowledge is needed to make high-quality timber products. Because timber is such an accessible material, many engineers overestimate themselves in this, resulting in a short lifespan and giving timber a bad image. On the contrary, the modern timber industry is a professional sector that, with its high-tech processes, is able to deliver high-quality products, such as a cheese platter.

Figure 1: Timber as consumable material.

This applies to facade carpentry and timber structures but also for use in the civil engineering sector. Think of bridges, sheet pile walls, and timber pile foundations. In all these cases, the (specific) properties of the material must be taken into account in the design, production, and installation. In addition to the wide variation in timber, the material reacts strongly to water, making it not form-stable and allowing it to rot. These properties are not only negative but can also be seen as advantages of timber. Its moisture behavior makes it easy to achieve a pleasant indoor climate in a wooden home and the fact that wood rots indicates that it is completely biodegradable. Wood is clean at the waste stage, and it is produced in forests where it can also be seen as a by-product of a well-managed forest. This makes timber one of the few truly circular building materials and the building material that has by far the least impact on the environment.

The problem, however, is that this is not a universal thought. This year's February 17th issue of Trouw, for example, incorrectly states that a plastic bag is more sustainable than one made of wood fiber. The concrete and steel industry often uses terms which are not specified and hollow, such as green steel and fully circular concrete. Looking further, these turn out to be empty terms. The producers are not concerned with less environmental impact; they are concerned with a better environmental image. Judges have already called out several companies to account for this. In the Netherlands, there is the National Environmental Database (NMD). However, in this system, the expected environmental benefit of wood does not stand out. The NMD is a wonderful system but very unstable.

It already starts by calculating the environmental costs caused by the construction and demolition of a building, the so-called MPG-score (Milieu Prestatie Gebouw). All building components that are subject to the building code must be included. This seems clear; however, it is not. Just think of a suspended ceiling or the tiling of a bathroom. This means that two calculations of the same building can differ greatly from each other. Furthermore, the basis of a building's environmental calculation, the product environmental calculation (EPD), is far from objective. For highly environmentally damaging materials, an advance in the future is made, and emissions made through reuse and recycling are simply brushed off; a system error.

Furthermore, the National Environmental Database is not set up for regrowable materials, such as timber. Material usage is weighted negatively, and this may also apply in the future to land use, which in the case of timber production should actually be positive: the use of timber stimulates forestation and good forest management. Moreover, the calculations are far too complex and thus inaccessible. This blocks the improvements for these calculations that are needed. Potentially, there are opportunities to calculate the environmental impact with the National Environmental Database properly. However, the system must become more robust and realistic. Resulting, the environmental burden is expected to increase for all materials, sharply for polluting raw materials and limited for regrowable raw materials. And then, the great environmental advantage of wood does pop out.

Figure 2: Trees and buildings together.

Despite all these constraints, there is an increasing demand for timber construction, and the timber industry will need to expand. By the way, something that also applies to the industry that reuses timber. Because this requires expertise and there is no room for cowboys, time is needed to build this up, and I hope that is achievable. ◄

Figures:

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Figure 3: Steal and timber production.