

Using more information to encourage biobased construction

Construction with normal materials such as cement and steel produces major CO₂ emissions, while biobased building materials like wood retain CO₂. Ignorance breeds contempt still applies to these materials and WUR wants to change that. ►

WUR

Problem: building with cement and steel causes a lot of CO₂ emissions and too little is known about wider applications of biobased construction.

T02 Solution: building with biobased construction materials that retain CO₂. WUR wants to increase the use of biobased building materials by actively sharing information about environmental performance, certification and availability through the Biobased Building Materials catalogue and the National Environmental Database (*Nationale Milieudatabase, NMD*).

Impact: architects and contractors are going to make more use of biobased materials because they are more aware of the environmental impact, and consequently fewer CO₂ emissions.

The majority of buildings worldwide are built of mainly concrete and steel. However, their production generates a lot of CO₂ and this leads to climate change. Instead, we can build with renewable biobased building materials: wood, thatch, cork, straw, loamy clay, clay, flax, cotton and coconut, for example. In addition to the advantage that biobased materials are renewable, these materials capture CO₂ in the building for longer periods, Arjen van Kampen explains. He is a Project Manager of biobased products at WUR.

Not used often until now

At present, biobased construction is not applied often in the Netherlands: about two percent of the buildings are made of wood and only 0.1 percent are made of other biobased materials. “Very little is still known within the building industry about the environmental performance of these materials”, says Van Kampen. The amount of biobased insulation materials, such as flax or hemp fibre instead of glass wool, has already increased somewhat in recent years. More requirements in the tender procedure of construction projects can accelerate their usage.

More knowledge

In order to raise awareness of these building materials, the research group created a Biobased Building Materials Catalogue, commissioned by the Ministry of Economic Affairs and Climate. It contains all the biobased building materials currently on the market, with practical applications. The catalogue was first published in 2012 and updated in 2019. The 2019 version has subsequently been downloaded 7,500 times from the website. So, it meets a need.

Calculate environmental performance

Architects and project developers can calculate the environmental performance of materials in a building using the National Environmental Database (NMD). “The database contains plenty of materials, especially many types of concrete, steel and glass wool, but only a few biobased materials”, says Van Kampen. So, he and his colleagues are working on the Biobased-in-NMD project, which aims to introduce 13 biobased building materials in the NMD, including a

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number of types of wood, lime hemp, mycelium, bamboo and wool. Another aim of the project is to develop a method to calculate the impact of CO₂ storage in the life cycle analysis of the NMD – that is the environmental impact of building materials throughout their service life. If these materials are incorporated in official databases and the CO₂ effect becomes clear, more architects will work with these materials, Van Kampen expects. “They are the ones who largely determine the materials of a building. So the possibilities to build with biobased materials need to become more widely known.”

Developing biobased materials

Nowadays, biobased building materials are often even more expensive than fossil and mineral variants, because they are only available on a small scale. He expects this to change in forthcoming years. He also coordinates WUR's activities in the field of biobased material development. “Our aim is to ensure that they are applied on a wider scale and more effectively.” Attention is also being paid to development of the production chain and certification. WUR is also working on new building products, such as biobased asphalt, cement recycling and biobased construction panels. ■

Biobased building materials catalogue:



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Follow-up: WUR invests in further knowledge accumulation.