



ON OUR WAY TOWARDS A CIRCULAR TU/E CAMPUS



Sustainability is a strategic priority at TU/e. In the dimension of Campus Operations, circularity is one of the five strategic sustainability goals. TU/e is now on its way to managing the extensive Real Estate portfolio in a circular manner, aligning with the nationwide program 'Netherlands Circular by 2050'. The policy for circular construction provides guidelines and rules for new construction, renovation, demolition and maintenance projects of all buildings on campus. This is how TU/e is taking its next steps toward a circular and future-proof campus.

The 3 Themes of Circular Construction

Circular construction was already on the radar of the Real Estate department before the policy was drafted. In several projects, circularity has already been applied, and from there, examined how it can be given a prominent role in the construction process. These insights have been incorporated into the new policy in 3 themes: Environmental Impact, Material Usage and Value Preservation. In the following, we would like to take you through what we have already accomplished within these 3 themes and how we are moving forward with them.

Environmental Impact

Choosing the type of material and the environmental impact of this material is an important part of circular construction. The preservation of our cultural heritage on campus aligns well with the ambition to minimize the environmental impact of materials. Atlas (2018) is a great example of this: the entire structure was reused, including the steel façade structure, reducing the need for new materials. This is one of the reasons why we prefer renovation over demolition and new construction, and this practice has also been applied to the case of the

Metaforum (2012), Matrix (2018), Neuron (2021), and Gemini (currently under renovation) reconstruction. In addition, we also want to minimize CO₂ emissions from new materials and store CO₂ emissions in our buildings by using renewable materials.

Photo: In Neuron, a wooden structure was chosen in the atrium, which stores CO₂. Sustainable materials and vintage furniture parts were also selected for the furniture. (Photo Jannes Linders)



Material Usage

Before a building is demolished or renovated, we explore its circular possibilities: For instance, can the building be disassembled in a way that allows us to reuse the materials? This prevents unnecessary incineration or landfilling. In 2020, instead of being demolished, the Pavilion on campus was dismantled carefully. It was one of the four demonstration projects of the international Horizon-2020 program 'ReCreate' to enable the reuse of prefabricated concrete. Many materials, such as frames, floors, ceiling planks, and beam wood, were also reused in other projects. In the future, we have committed to increasing reuse in demolition and renovation to minimize construction waste.

When we need new materials for new buildings or renovation, we go for reused or renewable materials as much as possible. To ensure that materials can be recycled and reused in the future, we choose healthy, non-toxic materials. In many renovations, reuse is now being limited by the presence of toxic substances such as asbestos and chromium-6. We want to prevent this in the future by setting increasingly strict requirements for this. In the interior of buildings, for example the custom-made furniture in Atlas (2018) and Neuron (2021), we have already been working with strict requirements regarding toxic substances for some time.



Photo: Dismantling of the pavilion's windows, which are reused at Skatehal Area 51 in Eindhoven. (Photo Bart van Overbeeke)

Value preservation

Circular construction is about preserving existing value toward the future. This involves the ability of buildings to be disassembled and their adaptability in being reassembled. Higher adaptive capacity leads to more flexible use, easier maintenance and more circular possibilities at the end of life. Flexibility was already incorporated in the first TU/e buildings from the 1950s and 1960s: the buildings were designed for general use with a fixed size system that remain easy to adapt when user needs change. A great example of this is the Atlas

building, renovated in 2018 to become the most sustainable education building in the world. We will continue to prioritize this flexibility in the future, with even more attention to how we can disassemble and reassemble buildings.

Photo: In Atlas, the built-in flexibility of the original design was well utilized during the renovation: every odd-numbered floor has a steel structure that is easy to remove, allowing for the creation of large open spaces that promote connection. (Photo Jannes Linders)



Learn more about sustainability within the Eindhoven University of Technology (TU/e):

www.tue.nl/sustainability

You can also follow our Sustainability Team on LinkedIn for updates and information about all sustainability initiatives by visiting <https://nl.linkedin.com/in/sustainability-team-tue>



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