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 4 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 4 themes: Reuse Residual Materials, Environmental Impact & Material Usage, Healthy Materials, and Adaptive Capacity. In the following, we would like to take you through what we have already accomplished within these 4 themes and how we are moving forward with them.

#### Reuse residual materials

Before a building is demolished or renovated, we explore its circular possibilities. For instance, the use of prefab concrete is a way to enable the reuse of prefabricated concrete. If possible, we try to find ways to enable the reuse of other materials, such as beams, floors, ceiling planks, and windows. Where these were not designed for reuse, we explore its circular possibilities: For instance, in the Metaforum (2012), Matrix (2018), Neuron (2021), and Gemini (currently under renovation) reconstruction, where the pavilion on campus was dismantled carefully. It was one of the few demonstration projects of the national Horizon-2020 program ‘ReCreate’ to enable the reuse of prefab concrete. Many materials, such as beams, floors, ceiling planks, and windows were already reused in other projects. In the future, we have committed to increasing the ambition and requirement to reuse construction waste.

#### Material Usage & Impact

Choosing the type of material and the environmental impact of that 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 cases of the Metaforum (2012), Matrix (2018), and Neuron (currently under renovation) reconstructions.

On top of that, we need new materials, we reuse the raw or renewable materials as much as possible.

#### Healthy Materials

The use of healthy, non-toxic materials is important for the wellbeing of a building’s users. Moreover, it is essential for the future circularity and sustainability of materials. In many renovations, users want to be limited by the presence of less toxic substances, such as adhesives and disinfectants. We want to prevent that the future building will set unnecessarily strict requirements for this. For instance, in the atrium of Atlas (2018) and Neuron (2021), we have already been working with strict requirements regarding toxic substances for some time.

#### Adaptive Capacity

Circular construction also involves the ability of buildings to be disassembled and their adaptability, in being reimagined, higher. Adaptive capacity leads to more flexible use, easier maintenance and more circular possibilities at the end of life. Flexibility was already a prominent role in the construction process. These insights have been incorporated into the new policy in 4 themes: Reuse Residual Materials, Environmental Impact & Material Usage, Healthy Materials, and Adaptive Capacity. In the following, we would like to take you through what we have already accomplished within these 4 themes and how we are moving forward with them.

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