

Tax Shift for Circularity

As a major user of raw materials and producer of waste, the construction sector exerts great pressure on natural resources. A combination of increasing demand for raw materials, geopolitical tensions, exceeded planetary boundaries (Steffen et al., 2015) and rapid technological developments increase the urgency for circularity (SER, 2016). Circularity is however still far from evident in the construction sector. Currently in North-West Europe, only 1% of building elements are reused following their first application, (Gobbo et al., 2021). In the Netherlands specifically, targets to reach a fully circular economy by 2050 are not on their way of being met (Prins & Hanemaaijer, 2022).

The transition to a CE is a complex process requiring wide multi-level and multi-stakeholder engagement, which can be facilitated by appropriate policy interventions. As value retention processes in the CE require additional labour, the transition from a linear to a circular economy can be viewed as a transition from a capital-based economy to a labour economy. Consequently, a 'circular tax shift', based on an introduction of environmental taxation paired with a reduction of labour taxation, could be a powerful lever for public policy. Research by The Ex'tax Project has demonstrated that on a macro-economic level, this 'circular tax shift' can lead to improved socio-economic conditions, lower emissions and lower import dependency (Groothuis, 2021).

To assess the practical implications of the circular tax shift, it is relevant to see what the effects are on a micro scale level. The aim of this research was to assess the effect of this tax shift on the financial feasibility of circularity in the construction sector. The main research question was: 'What is the effect of a circular tax shift on the financial feasibility of circular construction, in relation to linear construction?' A micro-economic analysis has been applied on two circular construction case studies: the 'The Voice of Urban Nature' and 'Circuloco' pavilions that were built at the Floriade World Expo 2022. A linear and circular variant have been developed for both case studies, for which a life cycle costing (LCC) analysis has been conducted. LCC summarizes all costs associated with the life cycle of a product that are directly covered by one or more of the actors in that life cycle (Hunkeler et al., 2008). To determine the environmental impacts of the construction projects, a Life Cycle Assessment (LCA) has been applied. By identifying and quantifying material and energy flows throughout a product's life cycle, which consists of technological processes from raw materials extraction to the product's end-of-life processing, it avoids burden shifting from one environmental impact or life cycle stage to another (Hellweg & Milà i Canals, 2014). On the basis of the LCA and LCC analyses, environmental taxation and labour tax reduction were applied in scenarios that reflected different levels of the circular tax shift.

The results show that under the current taxation system, the total life cycle costs for the circular variants are 2,0 - 2,7% higher than for the linear variants, although the environmental impacts are lower by 38,7 - 52,7%. The effect of the tax shift is that the cost differences between the linear and circular variants decrease, and in two of the high level tax shift scenarios, the circular variant of the Circuloco pavilion becomes more financially feasible than the linear variant. This means that from the perspective of the project developer, the implementation of a circular tax shift does not necessarily impose higher development costs. Although the external validity is low, the results of the research imply that the suggested circular tax shift could create incentives to use secondary and biobased materials in construction. Additionally, the limitations of this research have confirmed some of the barriers to CE in construction that are identified in literature, such as a lack of information and data, and the short term focus.

The tax circular shift also implies many other effects, which are outside the scope of this research, but have been suggested as subjects for follow-up research.

References

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