

## Circular Economy Maturity Models: A Systematic Literature Review

**Authors :** Dennis Kreutzer, Sarah Müller-Abdelrazeq, Ingrid Isenhardt

**Abstract :** Resource scarcity, energy transition and the planned climate neutrality pose enormous challenges for manufacturing companies. In order to achieve these goals and a holistic sustainable development, the European Union has listed the circular economy as part of the Circular Economy Action Plan. In addition to a reduction in resource consumption, reduced emissions of greenhouse gases and a reduced volume of waste, the principles of the circular economy also offer enormous economic potential for companies, such as the generation of new circular business models. However, many manufacturing companies, especially small and medium-sized enterprises, do not have the necessary capacity to plan their transformation. They need support and strategies on the path to circular transformation, because this change affects not only production but also the entire company. Maturity models offer an approach, as they enable companies to determine the current status of their transformation processes. In addition, companies can use the models to identify transformation strategies and thus promote the transformation process. While maturity models are established in other areas, e.g. IT or project management, only a few circular economy maturity models can be found in the scientific literature. The aim of this paper is to analyse the identified maturity models of the circular economy through a systematic literature review (SLR) and, besides other aspects, to check their completeness as well as their quality. Since the terms "maturity model" and "readiness model" are often used to assess the transformation process, this paper considers both types of models to provide a more comprehensive result. For this purpose, circular economy maturity models at the company (micro) level were identified from the literature, compared, and analysed with regard to their theoretical and methodological structure. A specific focus was placed, on the one hand, on the analysis of the business units considered in the respective models and, on the other hand, on the underlying metrics and indicators in order to determine the individual maturity level of the entire company. The results of the literature review show, for instance, a significant difference in the holism of their assessment framework. Only a few models include the entire company with supporting areas outside the value-creating core process, e.g. strategy and vision. Additionally, there are large differences in the number and type of indicators as well as their metrics. For example, most models often use subjective indicators and very few objective indicators in their surveys. It was also found that there are rarely well-founded thresholds between the levels. Based on the generated results, concrete ideas and proposals for a research agenda in the field of circular economy maturity models are made.

**Keywords :** maturity model, circular economy, transformation, metric, assessment

**Conference Title :** ICCES 2023 : International Conference on Circular Economy Strategies

**Conference Location :** Paris, France

**Conference Dates :** June 22-23, 2023