

Master's Thesis:

Circular economy policies in the automotive sector

Background

Currently, a car's most significant share of greenhouse gas emissions stems from fuel combustion during the use phase. Hence, switching from internal combustion engines to electric vehicles is essential to decarbonize the automotive sector. Electric vehicles have lower emissions overall, but the embedded emissions in the materials used to produce the car will become the largest share of emissions. Therefore, fully decarbonizing the automotive sector requires additional approaches on top of electrification – such as circular economy strategies.

Research Challenge

Traditionally, policymakers have targeted the emissions in the car use phase – for instance, the CO₂ emission performance standards for cars and vans in the European Union and the zero-emission vehicle program in California. Unclear, however, is how the policy landscape will change with a rising share of electric vehicles. Policymakers may consider more topics such as supply chain impacts, resource consumption, and circular economy. The goal of this master's thesis is to review existing and analyze novel policies.

Your Tasks

- Review existing sustainability policies in the automotive sector,
- Review circular economy strategies in the automotive sector,
- Use qualitative and/or quantitative methods to develop and assess the impact of novel circular economy policies in the automotive sector.

Requirements

- Excellent student with an (interdisciplinary) background in engineering, management, environmental sciences, or other relevant disciplines,
- Enrolled at TUM School of Life Sciences, TUM School of Management, or TUM Campus Straubing,
- Strong interest in sustainability, circular economy, and public policy,
- Familiarity with sustainability assessment tools such as Life Cycle Assessment and Material Flow Analysis,
- Fluency in English.

Please send your application with a short motivation letter, your CV, and a transcript of records to mattia.maeder@tum.de by 02.03.2025 at the latest. Applications will be reviewed on a rolling basis. If you have any further questions, please use the contact information below.

Contact

Mattia Maeder, M.Sc.
Chair of Circular Economy and Sustainability Assessment
Am Essigberg 3
94315 Straubing
mattia.maeder@tum.de