https://doi.org/10.7250/CONECT.2026.076

EVALUATING SUSTAINABLE MOBILITY SOLUTIONS: A CASE STUDY OF A UNIVERSITY CAMPUS

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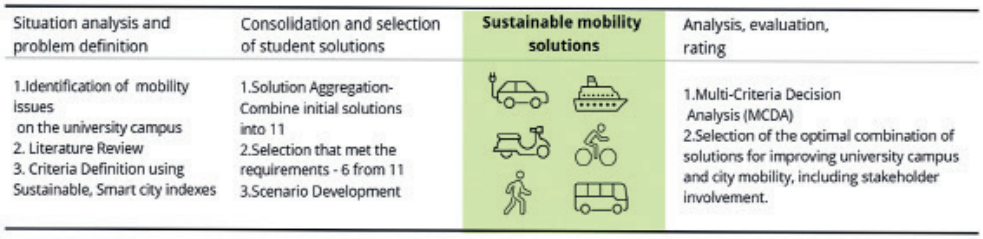
Abstract – The transport sector is one of the largest sources of emissions in Latvia, accounting for the 31.4 % of country's total greenhouse gas emissions (GHG). In addition, compared to other European countries, residents own a high proportion of old vehicles, which exacerbates the situation. Taking into account international urban development and mobility assessments, including the TomTom Traffic Index, IMD Smart City Index, and IESE Cities in Motion Index, Riga, as the capital of Latvia, demonstrates a positive development trend, but this is not reflected in the reduction of GHG. Time constraints, comfort, limited access to public transport, high dependence on private cars, and inefficient connections to other cities are just some of the barriers that prevent residents from switching to more environmentally friendly modes of transport. Behavioural change can be achieved through various incentives. From an urban planning perspective, the contextual significance of an area and the availability of infrastructure can either encourage or discourage certain behaviours. The university campus was chosen as the location for the case study due to its spatial characteristics. It is located on an island, which, due to limited traffic flow, creates access problems for both students and teaching staff, encouraging the use of private vehicles. Considering that a university is a place where new ideas are born and where a large number of innovators and early adopters may gather environmental engineering students were tasked with solving the above-mentioned problems by creating ideas that meet climate-neutrality requirements as part of their course. Of the initial 26 solutions, 11 were combined. Of these, 6 were selected that met the requirements. The solutions include: (1) Park&Flow suburban parking lot integration with the public water transport system; (2) Micro-mobility point accessibility and development; (3) Prioritizing pedestrians on the university campus and on the way to it; (4) Unmanned electric minibuses; (5) Restricting motor vehicle access, electrifying the vehicle fleet, and optimizing and greening parking spaces; (6) A system for motivating cyclists based on behavioural incentives. These were analysed using Multi-Criteria Decision Analysis, taking into account the criteria set out in the above literature review.

Keywords – Emission reduction; Framework for Assessing and Selecting Sustainable Mobility Solutions; mobility behaviour; Multi-Criteria Decision Analysis (MCDA); transportation planning; travel patterns; university campus incentives



Framework for Assessing and Selecting Sustainable Mobility Solutions