Multi-Criteria Decision Analysis - Projects presentations
Tuesday 23.7.2024 4:30 – 6:00 pm, Thielallee 73, 010

Multi-Criteria Decision Analysis for in site selection of solar photovoltaic cells in Berlin by Yanqing Luo, Jan Philipps, Katharina Bromby

In today's world, the drive for sustainable development and the search for new green energy solutions are paramount, and Berlin is no exception. The city has taken significant steps towards promoting solar energy by enacting laws such as the Masterplan SolarCity. Additionally, since 2023, all new buildings in Berlin are required to install solar panels. Despite these efforts, solar power contributes less than 1% to Berlin's total energy production as of 2022, indicating a substantial opportunity for growth. To capitalize on this potential, our project focuses on evaluating five potential rooftops in Berlin for the installation of solar photovoltaic cells. These rooftops are owned by private companies, the state, and state-owned companies. We employed Multi-Criteria Decision Aiding methods to assess these locations. Specifically, we applied the MACBETH and ELECTRE III methods to evaluate and compare these alternatives, assuming the same type of photovoltaic system for all locations.

An Application of Multi-Criteria Decision Analysis for assessing Quality of University Websites in Berlin by Leander Kammermeier, Moustafa Ghaddar and Jan Globocnik

This project applies Multi-Criteria Decision Analysis (MCDA) to evaluate the quality of university websites in Berlin, Germany. The motivation stems from personal experiences and the observation that university websites often suffer from poor usability and security issues. The study addresses a research gap, as few studies have applied MCDA to assess university websites, and those that do, focus primarily on technical parameters. This project considers a broader range of criteria, including the helpfulness, navigability, accessibility, performance and security of the given websites.The analysis involves the public universities in Berlin: Technische Universität Berlin (TU Berlin), Freie Universität Berlin (FU Berlin), Humboldt-Universität zu Berlin (HU Berlin), Universität der Künste Berlin (UdK Berlin), and Charité – Universitätsmedizin Berlin. Tools such as Google Lighthouse, Shodan and the CVE database by mitre.org are used to measure the performance and security. In addition, a qualitative survey, which measures the helpfulness and navigability is held and evaluated. By employing these tools and criteria, the project aims to provide a comprehensive evaluation of the websites, offering insights that can help improve their usability, security, and overall quality, thus benefiting students, faculty, and other stakeholders.

New Green Spaces for Berlin by Michael Albert, Navar Schüler, Philipp Sommerfeldt

Our project aims to identify and evaluate new locations for green spaces in Berlin using Multi-Criteria Decision Analysis (MCDA). With the growing urban population and the associated environmental pressures, strategically planning urban green spaces is essential to improve residents' quality of life and promote urban biodiversity. The project integrates Geographic Information Systems with MCDA to assess relevant criteria such as population density, air quality, existing green spaces, socioeconomic factors, and urban development. By applying various MCDA methods, including MACBETH and ELECTRE III, potential sites are prioritized. The results provide a solid foundation for urban planning and decision-making to establish sustainable and demand-driven green spaces in Berlin.