HSLU Lucerne University of Applied Sciences and Arts

Engineering and Architecture
BSc. Energy and Environmental Systems Engineering
Bachelor-Thesis

Towards Sustainable Event Planning: A Case Study on Carbon Reduction Strategies for Small-Scale Exhibition

Student: Weronika Kusmierczyk

Practice Partner: Lucerne University of Applied Sciences and Architecture HSLU

1. Background, Challenge & Objectives

In the context of the expanding MICE industry (Meetings, Incentives, Conferences, and Exhibitions), addressing sustainability is crucial due to its impact on company culture and service delivery. However, the industry's linear approach to event preparation leads to significant waste and energy consumption. Therefore, this project focuses on reducing the carbon footprint of a Bachelor Thesis (BAT) exhibition. The objective is to propose effective solutions based on the exhibition's Life Cycle Assessment (LCA) findings to minimize its environmental impact.

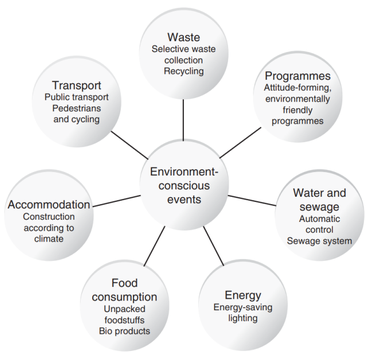

Figure 1: The most important services of environment-conscious events

Figure 2: Bachelor Thesis Exhibition at HSLU

2. Methodology / Materials

Methodology

Figure 3: Methodology Flow Chart

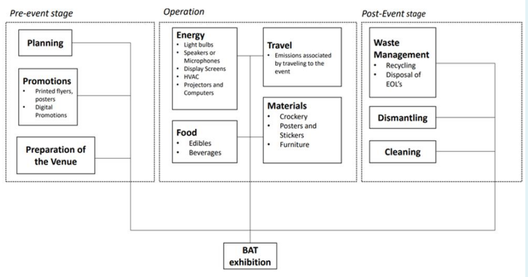

Figure 4: System Boundaries

Materials / Data / Tools

The data for this analysis was gathered from scientific literature, industry norms and reports, case studies, and the BAT Exhibition itself. These sources provided diverse and reliable information for the analysis.

SimaPro Software (version 9.5.0.0) was used for Life Cycle Assessment (LCA). It is widely recognized and enables evaluation of environmental impact for products and processes.

The analysis integrated the Ecoinvent Database within SimaPro software. This comprehensive database offers environmental data for various materials, processes, and activities.

Assumptions and estimations were made based on industry norms and reliable resources to fill data gaps and enhance accuracy.

3. Results / Solution / Recommendations

The LCA of the BAT Exhibition at HSLU revealed significant environmental implications, with energy consumption, transportation, and waste generation identified as key contributors to the event's environmental footprint.

Implementation of innovative solutions, such as transitioning to a virtual event format and adopting sustainable waste management practices, demonstrated substantial potential for reducing the event's environmental impact and setting a precedent for sustainability in the MICE industry.

The study provides practical guidelines for small-scale events, highlighting sustainable practices in travel, waste management, venue selection, food and beverage choices, collaboration, and knowledge sharing, offering a pathway towards minimizing environmental impact and promoting responsible resource management in event planning

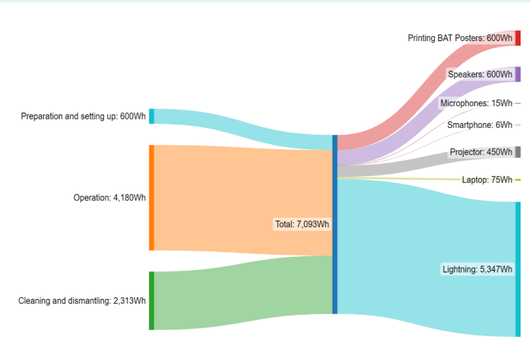

Figure 5: Energy Flow Diagram

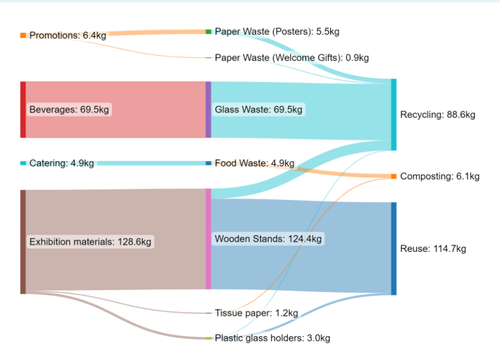

Figure 6: Material Flow Diagram

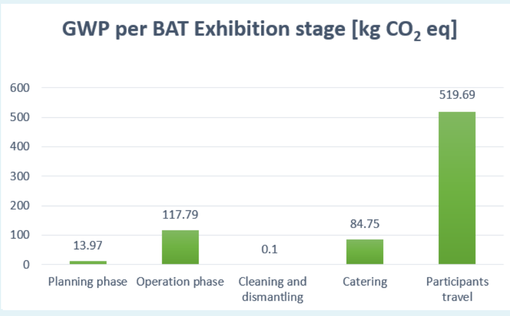

Figure 7: GWP of the BAT Exhibition

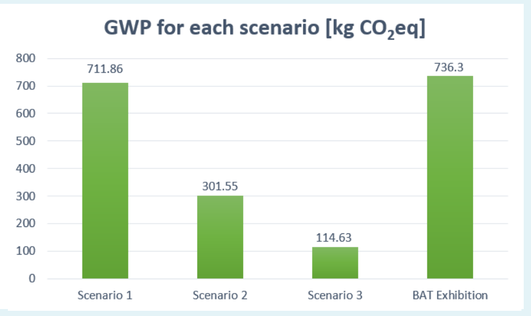

Figure 8: GWP of three reduction scenarios

4. Discussion, Conclusions & Outlook

Discussion
The methodology used in this study, despite limitations in data availability and reliance on secondary sources, provided valuable insights into the environmental implications of the Bachelor Thesis Exhibition.

Conclusions
The results offer guidance for future event planning and highlight the importance of considering sustainable alternatives to reduce energy consumption, waste generation, and transportation emissions.

Outlook
Future projects should focus on improving data quality, engaging stakeholders, refining methodologies, optimizing resources, conducting comparative analyses, and continuously striving for improvement in order to develop sustainable practices in the MICE industry.

Literature

Hischier, R., & Hilty, L. (2002). Environmental impacts of an international conference. Environmental impact assessment review, 22, 543-557

Neugebauer, S., Bolz, M., Mankaa, R., & Traverso, M. (2020). How sustainable are sustainability conferences? – Comprehensive Life Cycle Assessment of an international conference series in Europe. Journal of Cleaner Production, 242, 118516.

https://doi.org/10.1016/j.jclepro.2019.118516

Supervisors: Dr. Anastasia Stamatiou, Judit Tomás Verde, Macarena San Martin Ruiz

External expert: Manuel Lorenz

9 June, 2023
FS23

FH Zentralschweiz