A LIFE CYCLE ASSESSMENT APPROACH TO ADVANCING SUSTAINABILITY IN SPORTS EVENTS

M. SEMERARO*, T. DADDI**

**Researcher, scuola superiore di studi universitari e perfezionamento Sant'anna, matteo.semeraro@santanna.it*
***Professor, scuola superiore di studi universitari e perfezionamento Sant'anna, tiberio.daddi@santanna.it*

Key words: Sustainability, Climate change, Life cycle assessment (LCA), Carbon footprint, Sustainable sport

Sustainability is becoming a key focus in organizing and hosting sports events, especially in this historical period where governments and corporations have adopted ambitious and forward-thinking objectives to address sustainability challenges (Marrucci and Daddi, 2021).

While many sports organizations, through targeted marketing campaigns and initiatives, are making efforts to adopt sustainable practices and to take a pivotal role in advancing environmental awareness (Mallen and Chard, 2011; Trendafilova et al., 2013), these initiatives often lack a solid scientific basis. Moreover, these efforts, supported by the visibility and influence of sports figures, have amplified the global conversation around environmental responsibility (Todaro et al., 2022) making it an important and discussed topic.

Taking advantage from the fact that many sports organization are interested and will to reduce the environmental impacts of their own events (Gibson et al., 2012), this study aim to bridge the scientific base gap by using Life Cycle Assessment (LCA) to evaluate the environmental impacts of four different sports events, highlighting the major contributors to their carbon footprints. The goal is to provide a data-driven foundation for developing sustainable strategies within the sports industry.

Using LCA, the study examines the various stages of four Canoe and Kayak sports event's life cycle, focusing on fifteen dimensions: mobility, accommodation, equipment and clothing, promotional material and signage, ticket and accreditation, fuel, packaging, food and beverage, energy, natural gas, water, infrastructure maintenance, temporary infrastructure, gadget and promotional materials, and waste.

The findings reveal that transportation is the largest contributor to environmental impact, primarily due to the movement of spectators and participants. This observation is consistent with earlier research, such as Collins et al. (2009), which underscored the significant role of travel in the environmental footprint of large-scale events, and Daddi et al. (2022), who emphasized the importance of addressing transportation in professional football sustainability efforts. Accommodation ranks as the second-largest impact, driven by resource consumption in hotels and other lodging facilities. Lastly, equipment and clothing are the third-most significant contributors, primarily due to emissions associated with transportation, an often-overlooked factor in environmental analyses of sports events.

To address these environmental impacts, the study proposes targeted strategies for the most critical areas. For transportation, practical steps include encouraging public transit, carpooling, and the use of electric or hybrid vehicles in event logistics, these measures not only reduce dependency on private vehicles but also promote sustainable transportation as a whole. Regarding accommodation, sports organizations can partner with eco-certified hotels and prioritize lodgings that follow sustainable practices, such as using renewable energy, conserving water, and reducing

waste. Additionally, promoting accommodations close to event venues can further cut transportation-related emissions affecting the mobility dimension too. These approaches demonstrate how lodging practices can be integrated into broader sustainability efforts. For equipment and clothing, adopting circular economy principles can make a significant difference. Initiatives like equipment-sharing programs, rental options, or partnerships with sustainable manufacturers can help reduce the demand for resource-heavy production.

Furthermore, educating participants and stakeholders about the benefits of sustainable consumption can drive long-term behavioural changes within the sports community.

This research highlights the critical role of data-driven approaches in achieving sustainability within the sports sector. By addressing the most impactful areas identified through LCA, sports organizations can effectively lower their environmental footprint and contribute to global sustainability goals. The insights from this study not only provide practical solutions to current challenges but also establish a scientific basis for promoting long-term sustainability in sports.

References:

1. Collins, A., Jones, C., & Munday, M. (2009). Assessing the environmental impacts of mega sporting events: Two options? Tourism Management, 30(6), 828–837. [DOI: 10.1016/j.tourman.2008.12.008]
2. Daddi, T., Rizzi, F., Pretner, G., & Todaro, N. (2022). Environmental management of sport events: A focus on European professional football. Sport, Business and Management.
3. Gibson, H.J., Kaplanidou, K., Kang, S.J., (2012). Small-scale event sport tourism: A case study in sustainable tourism. Sport Manag. Rev., 15(2), 160-170. doi.org/10.1016/j.smr.2011.08.013
4. Mallen, C., Chard, C., (2011). A framework for debating the future of environmental sustainability in the sport academy. Sport Manag. Rev., 14(4), 24-433. doi.org/10.1016/j.smr.2010.12.002 doi.org/10.1016/j.smr.2010.12.002
5. Marrucci, L., Daddi., T, (2021). The contribution of the Eco-Management and Audit Scheme to the environmental performance of manufacturing organisations. Bus. Strategy Environ., 31(4), 1347-1357. doi.org/10.1002/bse.2958
6. Todaro, N. M., McCullough, B., & Daddi, T. (2022). Stimulating the adoption of green practices by professional football organisations: a focus on stakeholders' pressures and expected benefits. Sport Management Review, 1-25.
7. Trendafilova, S., Babiak, K., Heinze, K., (2013). Corporate social responsibility and environmental sustainability: Why professional sport is greening the playing field. Sport Manag. Rev., 16(3), 298-313. doi.org/10.1016/j.smr.2012.12.006