

Sustainable Event Management in Higher-Education Institutions

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Abstract

Higher-education institutions organize a substantial range of conferences, seminars, graduation ceremonies, student activities, recruitment events, sporting programs, workshops, exhibitions, and community-engagement initiatives. Although individual events may be temporary, their cumulative resource requirements can generate significant environmental impacts through participant travel, catering, energy consumption, disposable materials, procurement, water use, and waste. Universities are particularly important settings for sustainable event management because their operational practices can simultaneously reduce environmental impacts, demonstrate institutional commitments, and expose students and staff to practical sustainability interventions.

This study develops an integrated framework for evaluating sustainable event management in higher-education institutions. Because authenticated event-level environmental records were not supplied, the quantitative component is explicitly designed as a simulation-based methodological study. Sixty synthetic university events are evaluated using a Higher-Education Sustainable Event Management Index incorporating sustainable procurement, catering and food-waste prevention, participant mobility, venue and resource efficiency, material circularity, accessibility and inclusion, and post-event measurement. A complementary Event Resource Impact Index represents normalized environmental pressure from travel, energy, catering, disposable materials, and residual waste. Simulated analysis identifies a strong inverse association between sustainability-management maturity and resource impact, with a correlation of approximately -0.89 .

Events in the higher sustainability-management half record a mean impact score of 56.3 compared with 79.9 among the lower-maturity group. The study further emphasizes that sustainability should be incorporated before event procurement and venue commitments rather than treated as a post-event waste-management exercise. Sustainable event governance in universities can additionally create educational value by turning campus events into operational demonstrations of sustainable procurement, mobility, food systems, circular material use, and evidence-based environmental management. The proposed framework provides a transparent basis for future empirical evaluation of higher-education events while preserving the distinction between simulated results and verified institutional performance.

Keywords: sustainable event management, higher-education institutions, campus sustainability, green events, sustainable procurement, food waste, academic conferences, event carbon management.

1. Introduction

Higher-education institutions are complex organizations in which education, research, administration, community engagement, accommodation, catering, transportation, and campus operations occur simultaneously. Events connect many of these functions. Universities host academic conferences, research seminars, graduation ceremonies, cultural programs, recruitment activities, student festivals, professional-development workshops, sporting events, exhibitions, alumni gatherings, and public-engagement programs throughout the academic cycle. Although each event is temporary, collectively these activities can consume substantial quantities of energy, food, transport services, printed materials, temporary infrastructure, and other resources. Velazquez and colleagues' model of the sustainable university emphasizes that operational practices form an important part of institutional sustainability rather than existing separately from educational and research responsibilities.

Event sustainability is consequently relevant to universities for both operational and educational reasons. Research on event management demonstrates that environmental impacts extend across transportation, waste, energy use, procurement, catering, and venue operations. Collins, Jones, and Munday showed that environmental impacts associated with events are complex and can require multiple methods of assessment rather than reliance on a single environmental measure. Mair and Laing further demonstrated that event greening depends not only on technical opportunities but also on managerial values, stakeholder expectations, supplier availability, financial resources, and organizational commitment. This suggests that sustainable university events require an integrated management process rather than isolated interventions such as adding recycling containers immediately before an event begins.

Academic and university-related events have two impact categories that deserve particular attention: participant travel and catering. Ciers and colleagues demonstrated that academic mobility can generate a substantial institutional carbon footprint, while van Ewijk and Hoekman's analysis of international academic conferences showed that long-distance travel can dominate conference-related greenhouse-gas emissions and that virtual or distributed participation arrangements can offer substantial reduction potential. Catering creates a different operational challenge. Monteiro, Brockbank, and Heron's higher-education event study physically measured catering waste and found that food-waste outcomes varied across settings and organizer experience, demonstrating that event planning practices influence resource efficiency before food reaches the waste stream.

Higher-education institutions also possess characteristics that distinguish their events from many commercial events. Universities control or influence venues, procurement systems, catering contracts, campus mobility, waste services, student engagement, academic calendars, and environmental policies. This organizational integration can allow sustainable event practices to be institutionalized rather than reconstructed independently for every event. Amaral and colleagues' review of university campus operations found that higher-education sustainability initiatives span energy, buildings, transport, waste, water, procurement, and related operational areas, while Ramos and colleagues emphasized the importance of integrating sustainability into institutional systems, stakeholder participation, operations, reporting, and organizational change. Events can therefore function as operational intersections where several campus sustainability systems are tested simultaneously.

The present study develops a structured model for Sustainable Event Management in Higher-Education Institutions. It conceptualizes event sustainability as a management system extending from initial event justification and format selection through procurement, venue choice, transportation, catering, material use, accessibility, implementation, measurement, and organizational learning.

The study introduces a Higher-Education Sustainable Event Management Index and a normalized Event Resource Impact Index to evaluate this relationship within a synthetic portfolio of university events. The purpose is not to claim verified environmental savings but to provide a reproducible methodological architecture through which universities can assess event sustainability consistently, compare events of different types, and identify which management practices merit empirical testing.

2. Objectives of the Study

2.1 Development of an Integrated Sustainable Event Management Framework

The first objective is to develop a framework that evaluates university events through multiple sustainability dimensions rather than focusing exclusively on waste. Sustainable event performance begins before participants arrive. Decisions concerning whether an event should be fully physical, hybrid, distributed, or virtual can influence travel requirements; venue selection affects energy and water demand; menu design affects food-related impacts; and procurement specifications influence packaging, materials, labor conditions, and reusability.

The proposed framework therefore integrates procurement, catering, mobility, venue operations, material circularity, accessibility, stakeholder engagement, and post-event evaluation. The aim is to create an institutional tool that can be applied consistently to different event formats while remaining sufficiently flexible for small departmental workshops and large campus-wide programs.

2.2 Assessment of Resource Impact Across Event Types

The second objective is to establish a comparable measure of event-related resource intensity. Total consumption alone can create misleading comparisons because a graduation ceremony involving several thousand participants will normally use more resources than a twenty-person seminar. Appropriate analysis therefore requires both total-impact and intensity-based indicators.

The study develops an Event Resource Impact Index representing normalized pressure from participant mobility, venue energy, food and catering, material consumption, and residual waste. The index is intended as an internal decision-support measure rather than a substitute for detailed greenhouse-gas inventories or life-cycle assessment.

2.3 Examination of Sustainable Events as Institutional Learning Mechanisms

The third objective is to examine the wider institutional contribution of sustainable event management. Universities differ from conventional event organizers because operational practices can contribute directly to education and organizational learning. Procurement standards, food-waste measurement, reusable systems, public-transport incentives, and event carbon calculations can become practical learning opportunities for students and staff.

Sustainable events can therefore serve two functions simultaneously: reducing the immediate environmental burden of university activities and demonstrating how sustainability principles are translated into everyday organizational decisions. This broader institutional function is incorporated into the interpretation of the proposed framework.

3. Review of Literature

3.1 Sustainable Events as Integrated Management Systems

Sustainable event management emerged from recognition that events generate environmental, social, and economic consequences across their complete life cycle. ISO 20121 established a formal event sustainability management-system approach applicable to events of different types and sizes, emphasizing systematic identification and management of sustainability issues rather than isolated environmental actions. Jones similarly presents event sustainability as a whole-process management issue involving venue selection, transport, energy, greenhouse-gas emissions, procurement, materials, waste, water, food, communications, and stakeholder engagement.

Mair and Laing's investigation of environmentally progressive festivals reinforces the managerial dimension of sustainability. Their research identified organizational and personal values, stakeholder demand, and educational ambition as drivers of greener events, while cost, time, venue control, and supplier limitations operated as barriers. These findings are particularly relevant to higher education because universities may have greater control over recurring venues, suppliers, catering, waste contracts, and participant communication than external event organizers. Recurrence also provides an opportunity to convert one-time innovations into institutional routines.

The central implication is that successful event sustainability depends on management architecture. A recycling station cannot compensate for excessive procurement of disposable products; a vegetarian menu cannot compensate for unnecessary long-distance travel; and environmental messaging has limited credibility when organizers fail to measure the event's own principal impacts. Sustainable management therefore requires prioritization of material impact sources followed by measurable operational controls.

3.2 Campus Operations, Food Systems, and Academic Mobility

Higher-education sustainability literature demonstrates that universities are simultaneously educational institutions and resource-consuming organizations. Velazquez and colleagues conceptualized sustainable universities through a strategic management model, while Ramos and colleagues identified campus operations, organizational change, stakeholder involvement, sustainability assessment, and reporting as interconnected aspects of implementation. Amaral and colleagues' review of empirical campus sustainability initiatives similarly found activity across energy, buildings, transport, waste, procurement, water, and other operational dimensions. Events intersect directly with nearly all of these systems.

Catering represents one of the clearest university-specific evidence areas. Monteiro and colleagues measured food waste arising from higher-education event catering and found meaningful differences among venues, food categories, and organizer practices. Experienced organizers generated less waste on average, suggesting that estimation, ordering behavior, and operational competence are important determinants of food loss. This evidence indicates that sustainable catering requires

interventions before leftovers arise, including more accurate attendance forecasting, menu design, portion planning, dietary preference collection, redistribution protocols, and measurement of unavoidable residuals.

Academic mobility can generate even larger impacts for internationally oriented events. Ciers and colleagues documented the importance of academic air travel within a university carbon footprint. Van Ewijk and Hoekman found that long-distance journeys contributed strongly to conference travel emissions and modeled substantial reductions through virtual participation and multi-location event formats. Faber additionally demonstrated that virtual conferences still generate environmental impacts through computing, data transmission, and infrastructure, meaning that digital participation should be regarded as lower-impact rather than impact-free.

3.3 Participation, Measurement, and Institutionalization

Sustainability initiatives become more durable when they are embedded in organizational systems rather than dependent on individual organizers. Menon and Suresh's review of sustainability in higher education emphasizes the importance of connecting education, research, campus operations, and community engagement rather than pursuing these areas independently. Events are unusually suitable for such integration because students, academics, operations teams, external suppliers, visitors, and community organizations often participate simultaneously.

Measurement is essential for institutionalization. Without standardized event-level indicators, universities may repeatedly describe events as sustainable without establishing whether food waste, travel intensity, disposable materials, energy use, or procurement practices actually improve. Sustainable event frameworks should therefore include pre-event targets, operational data collection, and post-event evaluation. Comparable indicators also allow institutions to establish benchmarks for recurring event categories rather than assessing every event as an isolated case.

The literature nevertheless leaves a practical gap between broad sustainable-campus frameworks and specialized event-management research. Campus sustainability research generally examines institutional operations at an aggregate level, whereas event research often concentrates on festivals, tourism, sporting events, or large conferences. A systematic framework tailored to the recurring, educationally embedded events of higher-education institutions can therefore contribute by connecting campus governance with event-level operational measurement.

4. Research Methodology

4.1 Research Design and Synthetic Event Portfolio

The study adopts a quantitative simulation-based methodological design. No verified university procurement data, event-carbon inventories, attendee travel surveys, catering records, utility measurements, or waste audits were supplied. Consequently, the analytical results do not describe an actual university.

A synthetic portfolio of 60 higher-education events is developed. The portfolio contains academic conferences, research seminars and workshops, student cultural events, recruitment and open-day activities, graduation or ceremonial programs, and community-engagement events. Event attendance varies from small departmental meetings to major institutional gatherings.

Each event is assigned standardized measures representing event-management sustainability and resource impact. Larger events are not automatically classified as less sustainable; instead, several indicators are normalized to attendance or service output so that the quality of management can be separated from event scale.

Table 1: Components of the Higher-Education Sustainable Event Management Framework

Sustainability Dimension	Representative Practice	Proposed Empirical Evidence	Management Purpose
Sustainable procurement	Reusable, durable, certified, locally appropriate, and reduced-packaging purchases	Purchase orders and supplier documentation	Reduces upstream material and procurement impacts
Catering and food management	Attendance forecasting, plant-forward options, portion planning, redistribution, waste measurement	Catering orders and food-waste audits	Reduces food-related impacts and avoidable waste
Participant mobility	Public transport, active travel, hybrid access, travel-distance management	Registration travel survey	Addresses transport-related emissions
Venue and resource efficiency	Efficient building use, lighting, heating/cooling control, water management	Venue and utility records	Reduces operational resource demand
Circular material use	Digital programs, reusable signage, reusable serviceware, material recovery	Materials inventory and waste audit	Prevents disposable-material consumption
Accessibility and inclusion	Accessible venue and participation modes, dietary inclusion, affordable access	Event accessibility checklist	Incorporates social sustainability
Measurement and learning	Targets, event-level indicators, post-event review, improvement actions	Sustainability report or event dashboard	Supports continual improvement

4.2 Higher-Education Sustainable Event Management Index

Higher values represent greater resource pressure. The index does not constitute a formal life-cycle assessment or verified carbon footprint. Instead, it provides a standardized comparative indicator suitable for methodological testing.

Synthetic event scores are generated with realistic variation so that higher management maturity generally, but not inevitably, corresponds with lower resource impact. This allows exceptional events to remain visible. For example, a well-managed international scientific conference may still have a relatively high impact because of unavoidable long-distance participation, while a poorly managed local seminar may have a low total footprint simply because attendance is small.

5. Analysis

5.1 Sustainability Maturity Across Higher-Education Event Types

The simulation indicates considerable variation in sustainability management among the 60 university events. Smaller departmental workshops often perform well on travel because participants are local, but several perform poorly on catering estimation, disposable serviceware, and post-event measurement. Large institutional events show greater formal planning but also face larger mobility, catering, and material-management challenges.

Hybrid academic conferences achieve comparatively strong mobility scores when distant participants can participate remotely. However, hybrid formats do not automatically produce strong overall HE-SEMI values. Events continue to require attention to venue energy, digital infrastructure, catering for onsite participants, printed or promotional materials, and accessibility for remote participants. Faber's analysis of virtual-conference impacts supports the broader point that digital alternatives reduce rather than eliminate environmental burdens.

Recurring events perform more strongly when sustainability procedures have become standardized. Reusable signs, supplier specifications, catering formulas, transport guidance, registration questions, and waste-audit procedures reduce the need for each organizing team to redesign sustainability controls from the beginning.

5.2 Comparative Performance of Sustainable Event Management

The synthetic event portfolio is divided into four management-maturity groups to examine broader differences.

Table 2: Simulated Sustainable Event Management and Resource Impact

Event Sustainability Maturity	Mean HE-SEMI	Low-Waste Catering Compliance	Low-Carbon Mobility Planning	Reusable Material Coverage	Mean ERII
Reactive event management	31.4	38%	29%	34%	87.2
Basic green practices	48.7	61%	53%	58%	74.1
Integrated sustainable event management	68.9	82%	78%	81%	59.8

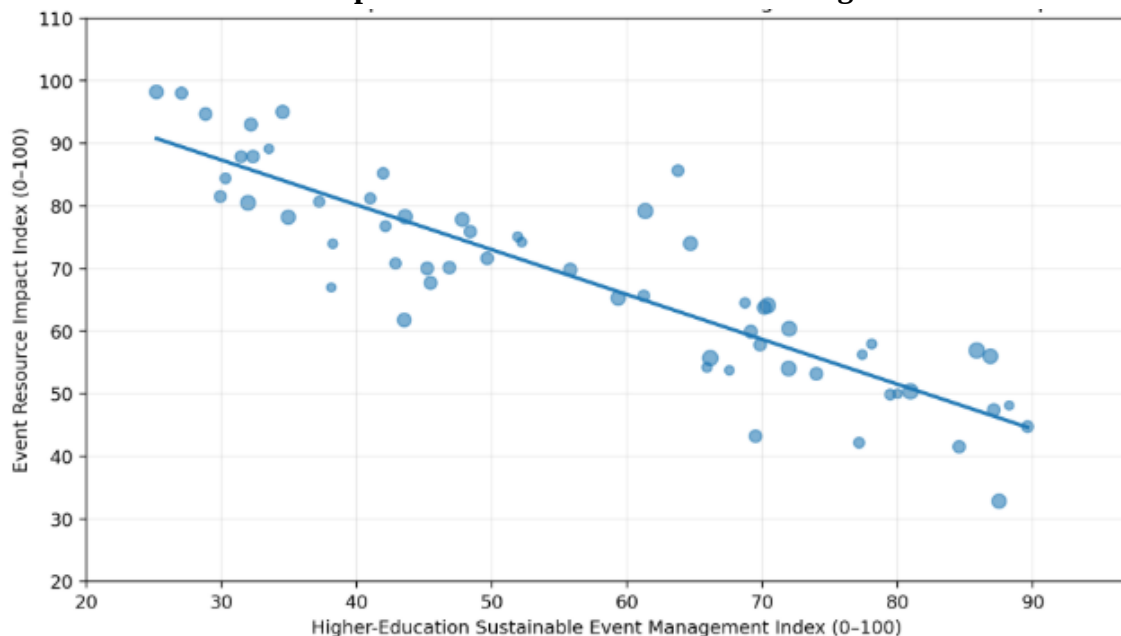
Event Sustainability Maturity	Mean HE-SEMI	Low-Waste Catering Compliance	Low-Carbon Mobility Planning	Reusable Material Coverage	Mean ERII
Measured and continually improved events	84.6	94%	91%	93%	46.7

The difference between the first two groups is driven primarily by easily visible measures such as recycling, reduced printing, and limited single-use products. These interventions are valuable but do not necessarily target the largest event impacts.

The transition toward integrated sustainable event management is more substantial because sustainability decisions enter venue selection, procurement, catering estimates, travel planning, and participant registration. The final maturity level adds measurement and feedback, allowing recurrent events to adjust ordering quantities, transport strategies, material inventories, and other operational decisions using previous-event evidence.

5.3 Relationship Between Sustainability Management and Resource Impact

Graph 1: Simulated Relationship Between Sustainable Event Management and Resource Impact



The simulated scatter plot shows a pronounced inverse association between HE-SEMI and event resource impact. The synthetic correlation is approximately -0.89 , indicating that stronger sustainability management is associated with lower modeled resource pressure.

Events below the median sustainability-management score record an average ERII of approximately 79.9, whereas events in the higher-maturity half average 56.3. The difference illustrates

the potential cumulative effect of addressing several resource categories simultaneously rather than implementing one isolated environmental initiative.

The remaining dispersion around the trend line is important. Sustainability management does not completely determine environmental impact because event size, participant origin, facility conditions, and event purpose also matter. Large internationally attended academic conferences can remain resource intensive even when managed responsibly. The appropriate interpretation is therefore that strong sustainability management reduces avoidable impact within the constraints of event purpose and scale, not that it guarantees a universally low environmental footprint.

6. Discussion

6.1 Sustainable Event Management as a Campus Operations System

The results support the interpretation of university event sustainability as part of campus operations rather than a separate environmental initiative. Events rely on institutional systems for purchasing, catering, transport, venue management, digital technology, waste services, accessibility, and communications. Their environmental performance is therefore partially determined before the event organizer begins detailed planning.

This conclusion is consistent with higher-education sustainability research showing that effective institutional transformation requires coordination among operational systems and stakeholders. Ramos and colleagues emphasize the integration of campus operations, participation, assessment, and organizational change, while Amaral and colleagues demonstrate that university sustainability initiatives span multiple resource systems rather than one operational domain. A university seeking consistently sustainable events should consequently modify central procedures as well as individual event behavior. Standardized procurement frameworks provide one example.

6.2 Mobility and Catering as High-Leverage Intervention Areas

The second implication is that universities should prioritize impact categories according to material significance rather than visibility. Decorative materials and recycling are highly visible and should be managed responsibly, but participant travel can outweigh many onsite environmental interventions for international academic events. Evidence from academic travel and conference studies consistently shows the importance of long-distance transport, with virtual and multi-hub arrangements providing potentially substantial reduction pathways.

This does not imply that all academic meetings should become virtual. In-person academic events can provide networking, informal interaction, laboratory access, field experience, and social benefits that may be difficult to reproduce digitally. Sustainable management instead requires proportionality. International travel should be justified where its academic and social value is significant, while meetings whose goals can be achieved effectively through hybrid or distributed formats should consider lower-travel alternatives.

Catering is a second high-leverage area because waste prevention can be integrated directly into registration and ordering. Monteiro and colleagues' higher-education evidence demonstrates that organizer practices influence food-waste outcomes. Universities can therefore establish institutional attendance-estimation methods, require dietary preference confirmation, design menus around lower-

impact options, track actual consumption, facilitate responsible redistribution where permitted, and preserve event-level waste records for future planning.

6.3 Events as Living Laboratories for Institutional Sustainability

A distinctive advantage of higher-education event management is its potential educational function. Universities frequently describe sustainability as part of teaching, research, or institutional mission. Events allow these commitments to become observable operational practice. Students can participate in travel surveys, food-waste audits, procurement evaluation, materials inventories, carbon estimation, accessibility assessment, and post-event performance analysis.

This approach strengthens the connection between curriculum and campus operations identified in the higher-education sustainability literature. Menon and Suresh emphasize the potential value of synergies among education, research, operations, and community engagement. Event sustainability can operationalize such synergy within short, measurable project cycles. A student team examining food waste at a university symposium is simultaneously engaging with sustainability education and improving an institutional process.

The educational value nevertheless depends on measurement and feedback. An event should not be labeled a sustainability learning exercise simply because students volunteer at recycling stations. Participants should have access to the problem definition, baseline information, implemented intervention, resulting data, and subsequent institutional decision. Sustainable event management can

7. Conclusion

Higher-education institutions organize numerous events whose combined environmental consequences extend across transport, food systems, energy, procurement, materials, and waste. These activities are significant not only because universities consume resources but because institutional behavior carries educational and symbolic meaning. A university that teaches sustainability while routinely organizing resource-intensive events without measuring their impacts creates a gap between academic commitments and operational practice. Sustainable event management provides one practical mechanism for narrowing that gap.

The Higher-Education Sustainable Event Management Index developed in this study evaluates seven connected dimensions: sustainable procurement, catering and food management, participant mobility, venue resource efficiency, circular material use, accessibility and inclusion, and organizational learning. Within the synthetic event portfolio, stronger management maturity is associated with substantially lower resource-impact scores. The modeled correlation of approximately -0.89 illustrates the theoretical relationship but must not be interpreted as an empirical effect size. Similarly, the difference between average impact scores of 79.9 and 56.3 across lower- and higher-maturity events represents simulated methodological evidence rather than verified environmental savings.

The analysis suggests that the most effective sustainability interventions occur early in the event-management process. Format selection, venue choice, travel expectations, supplier specifications, menu design, registration systems, and material requirements determine much of an event's environmental burden before waste-management decisions become relevant. Universities should therefore avoid reducing sustainable events to recycling, paper reduction, or environmental messaging. Those practices

are valuable, but they should form part of an integrated system capable of addressing the largest material impacts.

Future empirical research should apply the proposed framework to verified university events using attendee travel surveys, catering orders, food-waste measurements, venue-energy data, purchasing records, waste audits, accessibility assessments, and participant feedback. Longitudinal studies should examine whether standardized sustainable-event policies progressively reduce per-participant impacts across recurring conferences, ceremonies, recruitment activities, and student events. Research should also compare physical, virtual, hybrid, and decentralized formats while considering both environmental effects and the educational, collaborative, accessibility, and social value generated by different event designs. Sustainable event management in higher education should ultimately be understood not merely as greener event logistics, but as an institutional mechanism through which universities can align campus operations, organizational learning, and their wider responsibility to model more sustainable forms of collective activity.

References

1. Shabajee, P., Hiom, D. A., & Preist, C. (2013). Rethinking events in higher and further education: A systemic sustainability perspective. In *Events, Society and Sustainability: Critical and Contemporary Approaches*. Routledge.
2. Mair, J., & Jago, L. (2010). The development of a conceptual model of greening in the business events tourism sector. *Journal of Sustainable Tourism*, 18(1), 77–94. <https://doi.org/10.1080/09669580903291075>
3. Laing, J., & Frost, W. (2010). How green was my festival? Exploring challenges and opportunities associated with staging green events. *International Journal of Hospitality Management*, 29(2), 261–272. <https://doi.org/10.1016/j.ijhm.2009.10.009>
4. Mair, J., & Laing, J. (2012). The greening of music festivals: Motivations, barriers and outcomes. *Journal of Sustainable Tourism*, 20(5), 683–700. <https://doi.org/10.1080/09669582.2011.636819>
5. Collins, A., & Cooper, C. (2017). Measuring and managing the environmental impact of festivals: The contribution of the ecological footprint. *Journal of Sustainable Tourism*, 25(1), 148–162. <https://doi.org/10.1080/09669582.2016.1189922>
6. Jones, M. (2014). *Sustainable Event Management: A Practical Guide*. Routledge.
7. Raj, R., & Musgrave, J. (Eds.). (2009). *Event Management and Sustainability*. CABI.
8. Dickson, C., & Arcodia, C. (2010). Promoting sustainable event practice: The role of professional associations. *International Journal of Hospitality Management*, 29(2), 236–244. <https://doi.org/10.1016/j.ijhm.2009.10.013>
9. Getz, D. (2009). Event tourism: Definition, evolution, and research. *Tourism Management*, 30(6), 866–873. <https://doi.org/10.1016/j.tourman.2008.12.002>
10. Getz, D., & Page, S. J. (2016). Progress and prospects for event tourism research. *Tourism Management*, 52, 593–631. <https://doi.org/10.1016/j.tourman.2015.03.007>
11. Mykletun, R. J. (2009). Celebration at the end of the world: An analysis of the environmental impacts of festivals. *International Journal of Event and Festival Management*, 1(1), 1–18.



12. Andersson, T. D., & Lundberg, E. (2013). Commensurability and sustainability: Triple impact assessments of a tourism event. *Tourism Management*, 37, 99–109. <https://doi.org/10.1016/j.tourman.2012.12.001>
13. Andersson, T. D., & Getz, D. (2009). Tourism as a mixed industry: Differences between tourism and event management perspectives. *Tourism Management*, 30(6), 847–855.
14. Fredline, L., Raybould, M., Jago, L., & Deery, M. (2005). Triple bottom line event evaluation: A proposed framework for evaluating the socio-cultural, environmental and economic impacts of events. *Proceedings of the 15th Annual Conference of the Council for Australian University Tourism and Hospitality Education*.
15. Jones, M. (2010). Sustainable event management: A review of the literature. *International Journal of Event and Festival Management*, 1(2), 143–148.
16. Ferdinand, N., & Kitchin, P. (2017). Events and sustainability: Concepts and approaches. In *Events Management*. Routledge.
17. Ritchie, B. W., & Smith, B. (1991). The impact of a mega-event on host region awareness: A longitudinal study. *Journal of Travel Research*, 30(1), 3–10.
18. Hiller, H. H. (2000). Mega-events, urban boosterism and growth strategies: An analysis of the objectives and legitimations of the Cape Town 2004 Olympic bid. *International Journal of Urban and Regional Research*, 24(2), 439–458.
19. ISO. (2012). *ISO 20121: Event Sustainability Management Systems—Requirements with Guidance for Use*. International Organization for Standardization.