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Research Article

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Beyond the Environmental Footprint: Integrating ESG and the Three Pillars of Sustainability in Rural Festival Tourism

A longitudinal case study of the Valley of Arts Festival, Hungary (2024–2026)

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ABSTRACT

Cultural festivals can stimulate rural economies and community resilience while simultaneously creating substantial environmental pressures. This paper revisits the three-pillar sustainability and digital innovation perspective developed for the Valley of Arts Festival in Hungary in 2024 and extends it with a retrospective 2024–2025 greenhouse-gas inventory, a 2026 Good Events sustainability assessment, and a 2026 visitor survey. The estimated festival footprint fell from 3,571.42 t CO_2e in 2024 to 1,408.40 t CO_2e in 2025 (−60.6%), and estimated emissions per attendee-day fell from 15.87 to 4.79 kg CO_2e. These results are not a verified causal estimate of decarbonisation: the inventory relies on self-reported activity data and average emission factors, and its authors identify revised procurement inputs and sharply different assumed flight distances as principal explanations of the interannual change. Travel and transport accounted for 57% and 78% of estimated emissions in 2024 and 2025 respectively. A 2026 visitor study reported 739 consented valid interviews; 64.3% of respondents travelled by car and 31.3% by public transport, while 26.1% identified stronger sustainability efforts as improving perceived value. The Good Events report documents management practices and intended indicators across climate, procurement, waste, water, people and culture. The study proposes an ESG-aligned, three-pillar monitoring model that distinguishes environmental outcomes from management commitments and positions rural festivals as sites of integrated sustainability governance.

Keywords: Festival Tourism, ESG, Greenhouse-gas Inventory, Scope 3, Rural Development, Sustainable Mobility, Circular Economy, Cultural Sustainability, Valley of Arts.

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Introduction

The sustainability of cultural events cannot be judged by ticket sales or waste diversion alone. Rural festivals combine environmental resource use with social inclusion, cultural continuity and local economic activity. The Valley of Arts (Művészetek Völgye) festival, established in 1989 and hosted in Kapolcs, Taliándörögd and Vigántpetend, offers a particularly useful case because its operations are embedded in small settlements and a landscape with finite transport and service capacity. The 2024 paper "Online solutions and sustainability in festival tourism" described how the Arts for Rural Development Foundation and the Hungarian Tourism Programme Foundation support local cultural production, rural development and digital knowledge sharing [1]. The present paper develops that argument using newly available environmental and visitor evidence.

The research asks: (1) what the available greenhouse-gas estimates reveal, and do not reveal, about environmental performance; (2) how environmental, social and economic sustainability interact in a rural festival; (3) how the Good Events assessment supports

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ESG management and identifies measurement gaps; and (4) how the 2026 visitor profile can guide a realistic transition toward lower-impact festival tourism.

Conceptual Framework: Three Pillars and ESG

Environmental Pillar (E)

The environmental pillar encompasses climate mitigation, travel, energy, material throughput, food systems, water, pollution and nature protection. An event footprint should cover direct emissions (Scope 1), purchased energy (Scope 2), and material value-chain and visitor-related emissions (Scope 3), with transparent activity data and emission factors. The 2024–2025 inventory reports all three scopes and includes sources beyond the organiser's direct control. It is an estimated footprint, not an independently verified life-cycle assessment.

Social Pillar (S)

Social sustainability comprises fair employment, volunteers, inclusion and accessibility, visitor welfare, community participation, local cultural heritage and residents' access to public services. The 2024 analysis emphasised the ability of festivals to maintain creative networks and strengthen the prospects of small settlements [2,3]. Cultural value and local consent must therefore be assessed alongside emissions.

Economic Pillar and Governance (G)

Economic sustainability concerns viable local enterprises, equitable supplier opportunities, visitor spending, infrastructure, and year-round spillovers. Governance is not a substitute for the economic pillar: in ESG it is the cross-cutting mechanism that assigns responsibilities, maintains evidence, establishes targets and reports performance. Procurement rules, vendor contracts, stakeholder dialogue and audit trails connect the three sustainability pillars to accountable management. The 2024 paper's digital knowledge-sharing approach remains relevant for collecting comparable evidence [4,5].

Materials and Methods

This descriptive, mixed-source case study triangulates four supplied documents: (a) the peer-reviewed 2024 Turizmus Bulletin article; (b) the revised April 2026 carbon-footprint calculation comparing the 2024 and 2025 editions; (c) the March 2026 Good Events / Good Travel Seal Assessment & Reporting sustainability report (93 pages); and (d) the August 2026 final visitor-profile presentation from a research collaboration involving Corvinus University of Budapest, Sapienza University of Rome CIMEO Lab and festival representatives. A preliminary August 2026 roundtable presentation is consulted for research design and vendor-study context, but final visitor results take precedence where figures differ.

The carbon inventory uses festival-supplied activity information and Hungarian/European average emission factors, expressed as CO_2-equivalents. Its authors state that the self-reported inputs and simplified factors make the estimates most suitable for understanding orders of magnitude and trends. A revision of 2024 and 2025 visitor and performer numbers was undertaken in early 2026. No primary activity-level spreadsheet, uncertainty intervals, raw survey microdata or independent verification statement was supplied. Consequently, this paper does not recalculate individual emission sources, estimate statistical significance, or assert causal attribution.

The final visitor presentation describes face-to-face, tablet-supported interviews, informed consent and location-based stratification. It lists 932 total records and 739 consented valid interviews; its additional categories of explicit refusals (83) and blank/no-answer records (121) do not reconcile arithmetically with the reported total, and should be checked against the underlying survey database before publication. Percentages below are reported as presented, not recomputed.

Results: Environmental Pillar

Carbon Footprint and Comparability

Metric	2024	2025
Total estimated footprint	3,571.42 t CO_2e	1,408.40 t CO_2e
Estimated per-person-day footprint	15.87 kg CO_2e	4.79 kg CO_2e
Travel and transport share	57%	78%
Material-flow share	23%	2%
Hospitality share	16%	14%

The reported total fell by 2,163.02 t CO_2e, equivalent to 60.6%, while the per-person-day metric fell by approximately 69.8%. Yet the carbon report attributes the large change primarily to the absence of procurement inputs in 2025 and a reduction in the assumed one-way distance for air-travelling visitors from 6,800 km to 680 km. Accordingly, the reduction cannot be interpreted as a like-for-like improvement in operating efficiency. In particular, the sharp decline in material-flow emissions is a boundary/data-coverage issue as well as a possible change in purchasing; it is not evidence that material demand almost disappeared.

Travel and transport dominated both inventories. The detailed breakdown assigns visitor travel approximately 53% of the 2024 total and 71% of the 2025 total. Hospitality emissions represented a similar fraction of the inventory across years, although the report describes a substantial decline in absolute food-related emissions and a fall in estimated emissions per meal from 3.67 to 2.88 kg CO_2e. These estimates support prioritising visitor mobility and food procurement while retaining full Scope 3 accounting.

Mobility and 2026 Visitor Evidence

In the final 2026 survey, 64.3% of respondents reported arriving by car and 31.3% by public transport. The car share reinforces the strategic relevance of low-emission travel and integrated public transport. However, a mode-share percentage is not a carbon inventory: reliable emissions calculations also require trip distances, vehicle occupancy, vehicle/fuel characteristics, return-trip definitions and the distinction between day visitors and overnight visitors. The carbon report itself recommends improving these data, including air travel and separate travel patterns for visitors, performers and staff.

Energy, Circularity, Water and Biodiversity

The Good Events report records that the festival has operated without diesel-powered event generators since 2015, relying on grid connections, including 42 connection points. This is an operational practice, not proof of zero-carbon electricity. The assessment describes energy-efficient lighting and energy management, and sets a renewable-electricity objective; actual renewable-energy shares and metered electricity consumption require verification before being reported as achieved outcomes.

The assessment describes a "rent-first" approach for temporary staging and equipment, a Rental Utilization Rate (RUR), and a Local Procurement Ratio (LPR), with a stated approximate 2024 baseline of 15% for both. It also reports local food sourcing, a Kék Abrosz (Blue Tablecloth) food-vendor initiative whose criterion includes at least 60% regional ingredients, and an objective that at least 60% of food vendors meet its standards. These are criteria, baseline statements or targets—not independently verified 2026 attainment rates. The Good Events themes additionally include waste reduction, water stewardship, pollution and nature protection. Future reporting should attach measured tones of residual and separately collected waste, contamination rates, metered water use, wastewater treatment and habitat-impact observations to these commitments.

Results: Social and Economic Pillars

Community, Cultural Continuity and Social Value

The 2024 article argues that a rural festival can create long-term development opportunities through heritage preservation, creative networks, hospitality and community participation. The 2026 survey adds audience-level evidence: 63.1% of respondents were repeat visitors and 78.8% intended to return in the following year; 42.5% primarily characterised the festival as a high-quality cultural event and 36.1% as a community-building space. These indicators suggest durable cultural and social attachment but do not establish population-level changes in local wellbeing. The Good Events assessment covers caring for people, good employment and caring for culture; resident interviews, accessibility audits and worker outcomes are needed to test implementation.

Local Economic Resilience and Procurement

Local food, craft production, accommodation and service contracting are channels through which festival expenditure can circulate in rural settlements. The Kék Abrosz initiative and the proposed LPR provide a measurable route from local-development goals to procurement governance. The visitor research records spending patterns and high visitor loyalty, but the presentation does not supply a complete input–output model or verified net additional local expenditure. Claims about regional GDP, induced employment or multipliers would therefore be premature. The preliminary roundtable describes a vendor survey and entrepreneurial-learning questions; final vendor-level results should be incorporated only after the research team confirms the validated dataset.

Visitor Expectations and the Sustainability Experience

The 2026 visitor presentation reports that 58.9% saw improved infrastructure (seating, shade, cleanliness) as enhancing perceived value for money, while 26.1% identified stronger sustainability measures. This supports linking adaptation to heat, sanitation and accessibility with environmental communication. It does not mean that 26.1% are willing to pay a sustainability surcharge: 64.4% reported unwillingness to pay more for additional services. Digital services were widely used for payment (81.6% cashless/card); nonetheless 37% identified printed leaflets as the most used and useful information source. Replacing print should therefore be evaluated for actual material savings, accessibility and user preferences rather than presumed to be universally beneficial.

ESG Assessment and Governance Implications

The 93-page Good Events report applies the Good Travel Seal Assessment & Reporting system and provides a structured overview of 37 completed assessment criteria across event information (2), food and products (3), caring for people (5), good employment (3), caring for climate (3), reducing waste (4), caring for water (3), reducing pollution (1), caring for nature (2), caring for culture (2), and management and information (9). "Completed" denotes documented assessment coverage, not a verified score of full sustainability or proof of certification. The report combines self-descriptions, stated goals, evidence references and improvement actions; it should be treated as an ESG management source rather than a substitute for independently measured outcomes.

Pillar / ESG dimension	Evidence in supplied sources	Next auditable indicator
Environmental / E	2024–25 CO_2e estimates; travel dominance; grid electricity; circularity and water policies	Comparable Scope 1–3 inventory, passenger-km, electricity kWh, waste kg/attendee-day, water m^3
Social / S	2026 repeat attendance, community perceptions; Good Events employment/culture criteria	Worker and volunteer feedback, resident survey, access and inclusion outcomes
Economic / E–G	Local supplier and food criteria; visitor spending profile	Audited local spend share, vendor net revenue, local employment and repeat supplier rate
Governance / G	Good Events criterion register; procurement and transport commitments	Named owners, targets, data quality controls, annual third-party assurance status

An integrated monitoring cycle should (i) define consistent organisational and temporal boundaries; (ii) collect primary activity data from ticketing, mobility surveys, energy meters, waste contractors, vendors and staff; (iii) assign a named indicator owner; (iv) separate observed values from targets and narratives; (v) publish methods, uncertainty and year-on-year restatements; and (vi) validate a representative subset of the underlying records. A materiality assessment involving local residents, authorities, visitors, artists and suppliers would help priorities impacts beyond the organizer's direct operational control.

Discussion

The principal contribution of this case is methodological: sustainability narratives become more useful when three-pillar benefits are connected to ESG data systems without conflating commitments with outcomes. The footprint figures show that Scope 3 travel can dominate the climate profile even when on-site power is grid-connected. Conversely, the reported 60.6% fall in total emissions demonstrates why changing data coverage and assumptions must be disclosed before any trend is attributed to management success. The 2026 survey suggests that mobility choices, cleanliness and visible environmental measures affect the festival experience; sustainability policy should therefore address transport capacity and visitor welfare together.

The economic and social pillars also constrain environmental interventions. Local procurement may strengthen community livelihoods but does not automatically reduce lifecycle emissions; the climate effect depends on production methods, logistics and product mix. Digital tools may improve monitoring but should be assessed for access barriers and their actual environmental savings [5-8]. A transition plan should favour interventions with measurable environmental benefit and no disproportionate burden on rural residents, low-income visitors or small vendors [9,10].

Limitations

This is a secondary analysis of supplied organisational and research materials. The carbon calculations use self-reported inputs and average factors; the 2024–2025 estimates are sensitive to revised visitor counts, flight-distance assumptions and procurement coverage. The Good Events report is an assessment and improvement framework, not by itself an independent environmental impact audit. The 2026 survey presentation supplies descriptive percentages without microdata, confidence intervals or a fully reconciled record disposition. The available sources do not quantify local biodiversity change, measured water quality, avoided emissions, net economic additionality or causal social outcomes. These limitations restrict both longitudinal and cross-festival generalization.

Conclusions

The Valley of Arts case illustrates how environmental accounting, rural economic development and cultural community value can be integrated through ESG governance. The carbon inventory identifies visitor travel as the largest measured emissions category, but its apparent interannual improvement must be interpreted in light of substantial data and assumption changes. The Good Events framework provides an extensive management architecture, while the 2026 visitor evidence supplies behavioral priorities for mobility, infrastructure and environmental communication. The next stage should be a consistent, independently reviewable annual ESG dataset linking Scope 1–3 emissions, circularity, water and nature indicators with social and local-economic outcomes. This would enable the festival to report credible progress rather than rely on unverified claims of impact [11-15].

Declarations for Completion Before Submission

Author contributions: To be agreed with the research collaborators.

Funding and competing interests: To be disclosed, including festival management roles.

Ethics: Confirm institutional ethics requirements, consent protocol and data-processing permissions for the 2026 visitor survey.

Data availability: Aggregated presentation findings are cited; underlying individual-level records were not provided for this manuscript.

Prior publication: This manuscript substantially extends the conceptual framing of Oszkó-Jakab (2024) and must disclose that relationship to the editor. Good Events certification status and rights to reproduce any charts or graphics should be confirmed.

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