

Impact case study (REF3)

Institution: Cardiff University		
Unit of Assessment: Geography and Environmental Studies (14)		
Title of case study: Equipping organisers with a novel toolkit to reduce the environmental impact of major sport and cultural events		
Period when the underpinning research was undertaken: 2004-2017		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Andrea Collins Crispin Cooper Andrew Flynn	Senior Lecturer Research Associate Professor	30/05/2003-current 01/06/2011- current 01/07/1995- current
Period when the claimed impact occurred: 2016-31/12/2020		
Is this case study continued from a case study submitted in 2014? No		
1. Summary of the impact (indicative maximum 100 words)		
<p>Evaluations of sporting and cultural events historically focused on economic consequences. Interdisciplinary research in economics, geography and environmental planning at Cardiff led to the adoption of an event impact evaluation methodology that identifies linkages between economic and environmental impacts. The research transformed how policy-makers, event organisers and consultants understand and evaluate event environmental impacts. It underpinned the environmental section of the 'eventIMPACTS' toolkit from UK Sport (the UK's high-performance sports agency), the widespread adoption of which led to the staging of more sustainable events in five continents. It also influenced the development and scope of the first International Sustainability Standard for Golf Tournaments, which certified major tournaments in the US, Italy, and China.</p>		
2. Underpinning research (indicative maximum 500 words)		
<p>Business cases for hosting major sporting and cultural events, which often rely upon public funding, traditionally focus on economic impacts. This neglects to consider that such events can also bring significant adverse environmental impacts. To address this, an interdisciplinary Cardiff team analysed the environmental consequences of tourism consumption at major events.</p> <p>The research, supported through Research Council (ESRC and AHRC) funding, highlighted the growing importance of assessing linkages between the economic and environmental consequences of event development and resulting visitor impact in event business management and planning.</p>		
2.1 Combining environmental and economic assessments to evaluate sporting events		
<p>There has historically been a shortage of assessment tools (and benchmark evidence) to evaluate the environmental impact of events. In response, the Cardiff research team integrated existing methods from geography and environmental planning with economic approaches in order to assess both the environmental and economic impacts of events [3.1, 3.2, 3.3]. Methods used included i) Environmental Input-Output Analysis (ENVIO), traditionally used to examine the economic consequences of events, but more recently expanded to take into account linked environmental effects; and ii) Ecological Footprint (EF), used to assess resource use and measure its environmental impact. Collins and Flynn had previously applied the EF at a sub-national level (the city of Cardiff) [3.4].</p> <p>In 2004, the research team was the first to use both methodologies to evaluate a major sporting event (the FA Cup Final at Cardiff's Millennium Stadium). This research:</p> <ul style="list-style-type: none"> showed that direct and indirect environmental emissions could be estimated through the assessment of tourism spending linked to events [3.1]; 		

- identified the types of visitor spending which generated the most significant environmental impacts – particularly event-related travel and food and drink consumption [3.1, 3.2, 3.3];
- highlighted how changes to travel behaviour (e.g. reducing air and car travel) could significantly reduce the environmental impacts of events [3.2].

The researchers recommended that this combined approach should be used in event impact evaluation as it enables practical consideration of both environmental and economic impacts [3.1, 3.3]. They further assessed and compared the economic and environmental impacts of three major sporting events – the FA Cup Final (Cardiff, 2004), a Six Nations rugby fixture (Cardiff, 2006) and the Tour de France Grand Départ (London, 2007). This research:

- identified specific policy-amenable drivers that influence the scale of events' environmental impacts. This includes visitor numbers, spending/consumption patterns, travel distance and mode, length of stay and event duration [3.5];
- found that visitor profiles and spending patterns differed across events, resulting in varying economic and environmental impacts and a different composition of impacts;
- highlighted the need for future *ex ante* studies predicting event impacts to recognise the impact that different visitor types can have on spending/consumption patterns and resulting environmental consequences [3.2, 3.5].

2.2 Extending the research to assess the environmental impacts of cultural events

The team extended the scope of the research to examine use of the EF as a method for assessing the environmental impacts of cultural events and festivals, as well as evaluating scenarios to reduce negative environmental impacts [3.6]. Research carried out at the Hay Literature Festival (over 100,000 visitors) [3.6]:

- found that the significant resource demands and environment impacts of festivals (in particular visitor travel by car and air) are comparable to major sporting events;
- identified that the environmental impacts of events are linked to visitor numbers, geographical location and services available in the host area (public transport services, availability of overnight accommodation and food and drink outlets);
- recommended that strategies to reduce the negative environmental impact of the festival require a more radical change in how visitors travel and an enhanced understanding of factors influencing visitor travel choices.

Overall, this body of research identified how event evaluations can effectively assess the environmental, as well as economic impacts of major sporting and cultural events.

3. References to the research (indicative maximum of six references)

[3.1] Collins, A., Flynn, A., Munday, M. and Roberts, A. (2007) Assessing the environmental consequences of major sporting events: The 2003-04 FA Cup Final, *Urban Studies*, 44, 457-476. DOI: 10.1080/00420980601131878. Also included in an *Urban Studies* 2017 Special Issue on 'Urban debates for climate change after the Kyoto Protocol' due to its contribution to urban studies scholarship.

[3.2] Collins, A., Munday, M. and Roberts, A. (2012) Environmental consequences of tourism consumption at major events: An analysis of the UK stages of the 2007 Tour de France. *Journal of Travel Research*, 51 (5), 577-590. DOI: 10.1177/0047287511434113

[3.3] Collins, A., Jones, C. and Munday, M. (2009) Assessing the environmental impacts of mega sporting events: Two options? *Tourism Management*, 30, 828-837. DOI: 10.1016/j.tourman.2008.12.006

[3.4] Collins, A., Flynn, A., Wiedman, T. and Barrett, J. (2006) The environmental impacts of consumption at a sub-national level: the ecological footprint of Cardiff. *Journal of Industrial Ecology*, 10 (3), 9-24. DOI: 10.1162/jiec.2006.10.3.9

[3.5] Collins, A. and Roberts, A. (2017) 'Assessing the environmental impact of economic activity surrounding major sport events', in, B. P. McCullough and T. B. Kellison (eds)

Routledge Handbook of Sport and the Environment, Oxford: Routledge, 207-219. DOI: 10.4324/9781315619514-15

[3.6] Collins, A. and 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. DOI: 10.1080/09669582.2016.1189922

4. Details of the impact (indicative maximum 750 words)

Cardiff research identified how methodologies could be combined to assess the environmental, as well as economic impacts of major sporting and cultural events. Adoption of this approach nationally and internationally changed how policymakers, event organisers and consultants understand the potentially adverse environmental impacts of events.

This transformed impact evaluations of events and informed planning, policies and actions through:

1. underpinning the environmental section of UK Sport's 'eventIMPACTS' toolkit. Since 2017, the widespread adoption of this toolkit resulted in the staging of more sustainable events in the UK and across five continents;
2. establishing an international best practice standard for evaluating event environmental impacts, through the Golf Environment Organisation Foundation.

4.1 Transforming event impact evaluations

UK Sport (the government agency responsible for investing in Olympic and Paralympic sports in the UK) first developed the 'eventIMPACTS' toolkit in 2008 to standardise event impact methodologies. The toolkit is run on a collaborative basis between UK Sport and partners, including: the Department of Culture, Media and Sport; Discover Northern Ireland; Event Scotland; and the Welsh Government.

A lack of understanding of, and appropriate tools for, evaluation in this version meant that event organisers using it were giving limited attention to the wider impacts of events. When updating the toolkit in 2016/17, Lucy Crickmore (Major Events Consultant at UK Sport) stated that the agency "*wanted the event sector to go beyond economic impacts when setting objectives for their events and calculating their impacts*" **[5.1]**.

The Cardiff research team was invited to revise the environmental section of the toolkit. Crickmore stated that "*partners specifically wanted to work with Dr. Andrea Collins and Prof. Max Munday at Cardiff University... due to their research expertise in evaluating events and their environmental impacts*" **[5.1]**. The Cardiff team's redevelopment of the environment section of the toolkit and associated resources, based on **[3.1, 3.2, 3.3, 3.5]** included:

- the case for measuring the environmental impact of events;
- guidance on which environmental impacts should be considered;
- specific cases studies (based on their own research) demonstrating methodological approaches and measurement tools **[5.1, 5.2]**.

The 'eventIMPACTS' toolkit is now used extensively by UK Sport to enhance understanding of event environmental impacts and transform event impact evaluations. Crickmore stated that UK Sport "*specifically uses the toolkit when making financial decisions on which events to support*" and signpost organisations to the environmental section of 'eventIMPACTS' "*to determine how they might undertake their own research and a broader evaluation of environmental impacts*" **[5.1]**.

4.2 Staging more sustainable sporting and cultural events

Around 3,000 individuals and organisations in the UK and across Europe, Australia, South America, Asia and Africa have registered to use the transformed toolkit. In 2017, Collins and Munday collaborated with UK Sport to undertake a survey of these registered toolkit users. The 50 responses showed that 'eventIMPACTS' had been used to assess the economic and environmental impacts of sporting and cultural events by a wide range of organisations (including businesses, not-for-profits, consultants, event organisers and governments) across

13 countries worldwide (England, Wales, Scotland, Northern Ireland, the Netherlands, Spain, Denmark, Serbia, Cyprus, Singapore, Australia, South Africa, and Columbia [5.3].

The toolkit had informed planning decisions, policies and actions, and led to the staging of more sustainable events, as reported by users in the survey [5.4]. For example, the survey found that 47% of organisations strongly agree it enhanced their understanding of event environmental impacts and their evaluation; and 53% of organisations strongly agree it advanced their thinking about how to reduce these impacts. For example, John Coxeter-Smith (CEO of Sagacity Management Consultancy Services) described 'eventIMPACTS' as an "invaluable" resource for the Panamanian Government and Panama City Government: *We are confident, that it has at least opened Government 'minds' and hopefully enhanced ... [their] understanding of the wider environmental impacts of the [2022 Central American and Caribbean] Games and beyond the Games, methodologies for assessing impacts and indicators they might use* [5.4]. The Games will involve 6,000 athletes from 37 nations.

The survey also found that 22 organisations responding to the survey have directly used resources from the environmental section of 'eventIMPACTS' to inform event planning and operation decisions; and 27% have reduced the negative environmental impact of their events as a result of using the toolkit. For example, Clare Hartley (Director of ARC Events Consultancy) stated that the UK's National School Games "found the case studies and guidance on measuring [environmental] impact invaluable, specifically on food and drink and reducing waste" [5.5]. As a result, the Games "reduced single use plastic water bottles by more than 50%, from 55,000 in 2017 to 20,000 in 2018"; and significantly changed its branding policy; "Previously we spent about £120,000 on branding, last year we spent £50,000 as we reuse so much more. We have been able to reduce costs, but also reduce waste" [5.5].

The research also changed event planning decisions and reduced CO₂e (carbon dioxide equivalent) emissions of major annual events in Wales. Between 2017 and 2019, the research team collaborated with Run4Wales, organisers of the Cardiff Half Marathon (20,000 participants and 65,000 spectators), and the National Eisteddfod (45,000 visitors) to apply the measurement tools and guidance from the environmental section of 'eventIMPACTS'. Surveys at both events in 2017 provided new information on visitor profiles, their travel behaviour and its associated environmental impact and factors influencing travel choices. In 2018, organisers of both events used this research to inform event planning decisions and encourage more sustainable travel choices [5.6].

A joint report by the research team and Run4Wales showed resulting changes to travel patterns and a 49% reduction in CO₂e travel-related emissions at the Cardiff Half Marathon [5.7]. An 18% reduction in CO₂e travel-related emissions was achieved at the National Eisteddfod [5.8]. Matt Newman, CEO of Run4Wales, stated that the underpinning research "greatly enhanced our understanding of runner spending activities and their environmental impact"; enabled them to be "better equipped to minimise the environmental impact of our race catalogue"; "make real progress towards staging a more sustainable race"; and directly informed the scope of their first Environmental Policy and Green Action Plan [5.6].

4.3 Environmental event impact evaluations for international golf tournaments

In 2016, Cardiff research influenced the development and scope of the first International Sustainability Standard for Golf Tournaments via the Golf Environment Organisation Foundation (GEO) Expert Group. GEO is a not-for-profit that supports the international golf community to embrace sustainability. A group consisting of nine members wrote the Standard, with Collins as the sole academic representing the Cardiff research in event environmental impact evaluations [5.9]. Jonathan Smith, CEO of GEO, stated: "your expertise and knowledge...was invaluable in developing the criteria, scope and guidance for the new Golf Tournaments International Voluntary Sustainability Standard" [5.10]. The research informed the scope of the new Standard and was subsequently incorporated as mandatory criteria for achieving GEO® Tournament Certification [5.9, 5.10].

Smith stated: "The Standard has changed how GEO, the golf industry and tournament organisers consider the environmental impacts of golf tournaments, specifically in relation to

the scope of a tournaments carbon footprint, spectator travel and sustainable food and drink” [5.10]. The credibility of the standard also led to the following direct strategic impacts [5.10]:

- it has accelerated sustainability in golf and through golf;
- raised awareness of the importance and need to address environmental and social sustainability at professional and amateur golf events;
- raised expectations within the industry to meet the Standard;
- accelerated sustainability commitments;
- elevated other tournaments to be more comprehensive by broadening their scope and deepening the delivery.

Since the launch of the Tournament Standard in 2017, Smith notes: “*six major golf tournaments have achieved GEO® certification including RBC Heritage (US, 2017); Waste Management Phoenix Open (US, 2017, 2018 and 2019) (the world’s largest golf tournament with 720,000 spectators); the US Kids Venice Open (Italy, 2018 and 2019); Dow Great Lakes Bay Invitational (US, 2019) (with 35,000 spectators) and the AT&T Pebble Beach Pro-Am (US, 2019) (with 150,000 spectators) and...The Foshian Open (China, 2019) - the first tournament in the Asia Pacific”* [5.10].

Two further major tournaments have also committed to working towards certification, CJ Cup (South Korea) and AT&T Byron Nelson (US), and twelve tournaments (in US, Europe, Asia and South Africa) are using the Standard as a guide to implement sustainability [5.10]. The Standard is also directly informing the International Olympic Committee for Olympic Sports [5.10].

5. Sources to corroborate the impact (indicative maximum of 10 references)

[5.1] Testimonial from Lucy Crickmore, Major Event Consultant at UK Sport

[5.2] UK Sport ‘eventIMPACTS’ Toolkit: Environmental section

[5.3] Collins, A. and M. Munday (2018) eventIMPACTS.com: User Engagement and Impact (Summary Report)

[5.4] Testimonial from John Coxeter-Smith, Director of Sagacity Management Consultancy

[5.5] Testimonial from Clare Hartley, Director of ARC Events Consultancy

[5.6] **a)** Run4Wales: Testimonial from Matt Newman, CEO; **b)** Environmental Policy (2019)

[5.7] Collins, Munday and Run4Wales (2019) The Race for Sustainability (Report)

[5.8] Cardiff University research presentation to National Eisteddfod organisers

[5.9] Golf Environment Organisation Foundation (2017, First Edition) Sustainable Golf Tournament Voluntary Sustainability Standard

[5.10] Testimonial from Jonathan Smith, CEO, Golf Environment Organisation Foundation