Leave a trace not a footprint

A guide for cities to address the environmental impact of cultural events

This guide has been developed by Julie's Bicycle and EUROCITIES as part of the 'ROCK project Sustainable Events' series.

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Find out more about the ROCK project: www.rockproject.eu.

ROCK
Regeneration and Optimisation of Cultural heritage in creative and Knowledge cities

EUROCITIES

Julie's Bicycle
CREATIVE • CLIMATE • ACTION

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Introductions

This guide provides practical guidance on improving the environmental sustainability of cultural outdoor events in heritage cities, addressing key impact areas and using international best practice to inspire positive change.

Who is this guide for?

Event managers, cultural producers, city departments working on the licensing, management, and organisation of cultural outdoor events in cities.

About the ROCK project

ROCK aims to support the transformation of historic city centres afflicted by physical decay, social conflicts and poor life quality into Creative and Sustainable Districts through shared generation of new sustainable environmental, social, economic processes. ROCK develops and applies an innovative circular systematic approach to connect different actors, places of cultural heritage value and systems, at a European level as well as at a local level, facilitating the innovation process and the adoption of environmentally and socially sound solutions to achieve sustainable growth.

This Guide has been produced by Julie's Bicycle and EUROCITIES.

www.rockproject.eu

About Julie's Bicycle

Founded in 2007 to respond to the climate crisis, Julie's Bicycle is working globally across the creative sector to reduce greenhouse gas emissions and catalyse the green creative economy. Working with over 2,000 organisations, NGOs and governments worldwide, Julie's Bicycle has developed an approach which harnesses the power of the creative sector to communicate the reality of the climate crisis, advocate for science-based solutions, take bold practical action, and offer support and advice to those who share their vision. The team blends environmental expertise with arts and cultural sector experience, and the freely available resources constitute the most comprehensive library of good environmental practice developed specifically for the arts and culture sectors anywhere in the world. Designed and developed by Julie's Bicycle, the Creative Green Tools – a suite of carbon calculators and a certification scheme – are the recognised benchmark for sustainability achievements within the creative industries.

www.juliesbicycle.com

About EUROCITIES

EUROCITIES is the political platform for major European cities. Founded in 1986, EUROCITIES networks the local governments of over 140 of Europe's largest cities and more than 40 partner cities that between them govern some 130 million citizens across 38 countries. EUROCITIES engages in dialogue with the European institutions across a wide range of policy areas affecting cities, which include culture, social inclusion, migration and integration, economic development, environment, transport and mobility, smart cities, and public services. EUROCITIES provides a platform for member cities to share knowledge and ideas, exchange experiences, analyse common challenges and develop innovative solutions, through a wide range of forums, working groups, EU funded projects, activities and events. EUROCITIES is committed to working towards a common vision of a sustainable future in which all citizens can enjoy a good quality of life.

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Environment and Cultural Heritage

Why we need environmental transformation: cultural heritage cities at risk

The stewardship of our tangible and intangible heritage is deeply connected with the stewardship of our climate and natural resources. The effects of climate change – including sea-level rise, coastal erosion, higher temperatures, and increasingly frequent extreme weather events such as floods and storms – are already degrading and irreversibly changing our natural and cultural heritage.

The International Union for the Conservation of Nature (IUCN) has identified climate change as the fastest growing threat to natural World Heritage[1]. A 2016 report prepared by UNESCO and the United Nations Environment Programme used case studies from all over the world to illustrate how world heritage is increasingly vulnerable to climate change, concluding that achieving the aims of the Paris Agreement to reduce greenhouse gas emissions and limit global warming is "vital" to the future of World Heritage.[2] Other environmental impacts, such as air pollution, threaten to damage our built cultural heritage.

In recognition of these links, heritage leaders and practitioners in cities need to bring environmental sustainability and action on climate change into their work: it is now part of the work of safeguarding our cultural heritage. Doing so will also unlock the potential of cultural heritage to be a driver for a new green economy; enhance economic, social, and cultural value in cities; and help make the link between the global and the local.

Cultural heritage – and the resilience of historic communities to other environmental changes – can teach us a lot about building resilience today. Working through cultural heritage can also foster social cohesion and economic development, and deliver creative approaches to policy making and citizen-led solutions: this is an opportunity to apply these strengths to environmental transformation and action.

"Cultural Heritage can convey traditional knowledge that builds resilience for change to come and leads us to a more sustainable future"

Mechtild Roessler, Director of the UNESCO World Heritage Centre.

The role of sustainable events in cultural heritage cities

City events bring together countless different groups of citizens (and visitors), and provide cities with an opportunity to showcase and celebrate their cultural heritage and present-day achievements. As such, they provide a platform to inspire and engage audiences, share knowledge, build a sense of community, enhance the local economy and stimulate inward-investment.

According to the C40 Cities Climate Leadership Group, cities have the potential to contribute more than 40% of the emissions reductions that are needed to meet the aims of the Paris Agreement.[3]

More and more cities are setting ambitious climate change reduction targets and developing action plans covering all sectors. Outdoor events link with many crucial systems involved in these action plans, including mobility, waste, energy, sanitation, and food.

Event planning brings together range of stakeholders – including urban policy-makers, local businesses, artists, and citizens – providing an ideal platform to galvanise environmental leadership and work together to manage the environmental impacts of events, and identify opportunities for events to contribute positively to sustainable urban development.

Case study

Greentrack – Ghent, Belgium

Greentrack is a network of 57 organisations representing all major cultural organisations in Ghent. The network works with the City of Ghent to reduce environmental and carbon impacts and embed climate adaption. The network collects members' environmental performance data and helps them create action plans for reduction; it also supports and develops collaborations and projects, such as group purchasing and material sharing. Upon joining, all members agree to 10 guidelines – covering topics such as sustainable banking, vegetarian catering, reusing materials etc. Greentrack is also a partner of the Creative Europe project 'Cultural Adaptations' with Creative Carbon Scotland (UK), Ballymun Arts and Community (IE) and Tillt (SE) which aims to increase knowledge amongst the cultural sector on climate impacts and adaptation.

Case study

European Green Capital 2019 – Oslo, Norway

Citizens, urban planners, politicians and businesses have worked hard to reduce the city of Oslo's carbon footprint and support a more sustainable society. Their efforts were recognised and rewarded by the European Commission, which named Oslo 'European Green Capital' for 2019. The European Green Capital programme offered an exciting opportunity to showcase and develop the environmental initiatives of Oslo's leading arts and cultural community.

During the 2019 European Green Capital, Oslo hosted hundreds of different events to highlight and celebrate sustainability and the environment, from citywide festivals to small markets and children's workshops. Events included the Repurpose Festival at the Norsk Folkemuseum, and Oslo Rooftop Festival. In May 2019, the City Government also approved a new event strategy for the City of Oslo, which aims to make Oslo a more event-friendly city as well as developing measures for greener events.

Case study

C-Change –Arts & Culture Leading Climate Action in Cities, URBACT

C-Change is an Urbact transfer network of 6 European cities committed to working together to develop arts and culture sector collaboration on climate action and engagement. It is led by Manchester (UK) with Wroclaw (Poland), Sibenik (Croatia), Agueda (Portugal), Mantova (Italy)and Gelsenkirchen (Germany)with a combined population of over 1.6 million people. These are cities with the arts, culture and creativity at their heart, including four UNESCO World Heritage sites, one UNESCO World Book Capital, two former European Capitals of Culture and one former national Capital of Culture; and all already experiencing the impacts of climate change in different ways. C-Change's main objective is to transfer the learnings and best practise of Manchester Arts Sustainability Team (MAST)to support the network cities to mobilise their arts and culture sectors into climate change action. This is achieved through:

- Developing local policies, governance and capacity to act
- Developing plans to reduceCO2emissions and/or adapt to climate change, and supporting implementation
- Developing plans to use arts and culture to engage citizens to act, and supporting implementation
- Encouraging replication in other cities.

Julie's Bicycle is acting as the lead expert supporting the project, and has worked with the Manchester Arts Sustainability Team since its founding (as Manchester Cultural Leaders Environmental Forum) in 2011.

1 UCN World Heritage Outlook 2 (IUCN, 2017) https://portals.iucn.org/library/node/47013
2 Markham, A., Osipova, E., Lafrenz Samuels, K. and Caldas, A. World Heritage and Tourism in a Changing Climate. (UNEP and UNESCO, 2016) https://whc.unesco.org/en/activities/883/
3 C40 Cities Annual Report 2017 https://www.c40.org/about

2

Greening city outdoor events: practical actions

These actions are not designed to be a definitive list, but a starting point that can be tailored to your own city and cultural heritage contexts. They can serve as a blueprint for action for event managers, or can be used by city departments to support the development of sustainability requirements for events held on public land, or requiring an event license from the city.

2.1 Governance

For cities:

Policies and procedures linking culture, the environment and city events is the foundation of delivering sustainable cultural events. It creates clear shared expectations and standards for event planning and delivery, will support investment and a greener supply chain, and is an opportunity to align cultural heritage and climate/environment priorities in cities. For example, linking certain environmental conditions related to overall city environmental strategies to licenses and permissions for running events on public land or in city centres; or linking the aims of cultural events run by the city into the city environmental strategy to drive positive change beyond the events themselves.

For event managers:

Clear action plans and measurable Key Performance Indicators (KPIs) will help structure your aims and evaluate your progress over time. In addition, developing your plans through consultation will ensure stakeholders at all levels are engaged and accountable – and that roles and responsibilities are agreed.

Governance Checklist:

- Ensure you have a clear ambition (e.g. all events on public land to use reusable cups by 2021, events to measure and report their carbon footprint by 2021, events to be carbon neutral by 2030). Understand what that ambition means in practice and the resources required to get there (e.g. time, financial, expertise), including how you will monitor and report against progress.
- Understand city environmental policies and targets, and how they link to and can be translated to events – for example, on emissions reductions or citizen engagement. Use city targets to set targets for your events.
- Engage stakeholders in your environmental aims and objectives through working groups, digital communications, and other consultation activities.
- Develop an action plan to deliver your environmental ambitions ensuring it covers all key impact areas.
- Assign roles and responsibilities, outlining what needs to be achieved, how, and at what stage of the event planning. Create budgets and/or time resources where necessary.
- Organise regular reviews throughout planning and delivery to assess progress against aims and objectives.
- Ensure measures and KPIs are appropriate, meaningful and that the data can be collected and checked for accuracy.
- Use your collected data to evaluate the event and consider successes, challenges and transferable learnings in order to improve your events over time.
- Share learnings with all stakeholders (staff, sponsors, audiences etc.) and celebrate successes.

Case study

Edinburgh and Creative Carbon Scotland, UK

In 2011, the City of Edinburgh Council came together with Festivals Edinburgh, and founding partners the Scottish Contemporary Art Network and the Federation of Scottish Theatre to form Creative Carbon Scotland: a charity that works to connect the cultural and environmental sustainability worlds, and to ensure that culture is at the heart of a sustainable Scotland. One of the most successful initiatives resulting from the creation of Creative Carbon Scotland, and the resultant partnership working, has been the establishment of the Green Arts Initiative: an interactive networked community of practice, made up of cultural organisations committed to reducing their environmental impact. Beginning with Edinburgh Festivals – which are central to the Edinburgh's cultural heritage and expression – and the associate venues in 2013, the initiative was first expanded to other cultural organisations in Edinburgh (where it now has over 100 members) and then to the whole of Scotland (where there are over 200 active members in the community). Members work year-round on ambitious projects to affect their own work, and report each year on their activities and plans.

Read more in the appendix

Case study

REEVE empowers green events

Since 2012 the Waste Prevention and Climate and Sustainable Development Coordination departments of Nantes Métropole offers support systems for around thirty events each year. A tailor-made support called the '1001 eco-events' challenge focuses on an eco-responsible action plan with a focus on waste reduction and mobility, called the 'eco-event competence path'. These support actions can take place over time to allow the events to become more autonomous. In addition, an autonomous and sustainable structure, the 'eco-event network (REEVE)' association has emerged to amplify actions beyond the scope of Nantes Métropole's support services.

In 2020, after 7 years of support, there are more than 150 accompanied events on the territory. A real change in practice is visible: reusable cups, waste sorting, but also the emergence of bicycle as a prioritised transport mode, ingredients served during parties, energy consumption etc. There are more and more public policies initiated or renewed in the Nantes conurbation area (which includes 24 municipalities) and beyond. The eco-event network (REEVE) network has taken on a leadership role in the region with the support of regional funding. This has led to the creation of tools such as the 'eco-committed event' label and a national study day for local authorities – 'Responsible events territories'.

Read more in the appendix

2.2 Energy

The use of fossil fuels to generate energy is the main driver of climate change in the world. In cities, managing outdoor event energy consumption can contribute to wider ambitions around greenhouse gas emissions reductions and reducing local air pollution.

Energy generated from diesel generators is one of the most significant sources of greenhouse gas emissions and air pollution from event sites.[4] Reducing energy use is also one of the most cost-effective methods for reducing environmental impacts, as greater energy efficiency can lead to financial savings from reduced diesel use and/or lower generator hire costs.

Generators are a preferred mobile power solution for performance stages, on-site offices including medical provision, event infrastructure including additional sanitation, lighting, outdoor art installations, food traders, mobile parade floats, and more. Particularly for cities with net zero carbon targets, there is a clear incentive to move away from diesel generators as energy source for events and move towards other forms of energy, including: greater provision to link city-centre events to mains grid electricity, better deployment of battery power and mobile renewable energy solutions.

Energy Management Checklist:

- Engage the power contractor early on and engage end-users to plan and understand event energy requirements, estimate how much power will be needed where and when, and ensure power provision is matched to actual requirements.
- Centrally control supply rather than allowing individuals (traders, concessions) to source their own.
- Use the 'power management hierarchy' to reduce energy and diesel use[5]:
  - Prevent/avoid: do you actually need power in this location or for this application?
  - Efficiency: use less and more efficiently. For example, use energy efficient equipment (like LED site and stage lighting) and optimise generator use.
  - Sourcing: shift away from diesel generators where possible, in order:
    1. Assess whether it is possible to plug into a mains electricity supply at the outdoor event site, how much mains grid power is available, and what kind of tariff it is on (e.g. is it generated by renewable sources)? Note: urban events which require local mains connections may need permits and evidence which ensures the event will remain within the capacity of the local grid.
    2. Use renewable energy where possible – e.g. mobile solar power
    3. Integrate battery technology into the system to reduce fuel use where possible.
    4. Use alternative fuels – such as HVO (hydrotreated vegetable oil) – following best practice on sustainable sourcing
- Monitor and analyse energy use through contractual agreements with power companies and use this data to set reduction targets and engage stakeholders.
- Use on-site renewable energy micro-generation installations to engage the public

4 The Show Must Go On Report Update (Powerful Thinking/Vision 2025 and Julie's Bicycle, 2020) https://www.vision2025.org.uk/
5 UK Events and Diesel Use (Hope Solutions, 2019) https://issuu.com/hopesolutionsservices/docs/uk_events_and_diesel_use_factsheet

Learn more about environmental impact monitoring: Creative Green Tools

The Creative Green Tools are a suite of free carbon calculators developed for the cultural sector – they are specific to cultural activities and used to understand the environmental impacts of cultural buildings, offices, outdoor events, tours and productions, covering: energy, waste, water, travel and transportation and materials. Environmental impacts are visualized in a variety of carbon footprint graphs, allowing users to compare their environmental performance between activities (such as city festivals), buildings, and also year on year analysis. Users are also able to compare their environmental performance against Julie's Bicycle benchmarks which compare your environmental performance against industry averages.

Total Carbon Footprint
184 tonnes CO_2e

Through data collected via the CG Tools, Julie's Bicycle continues to inform the creative sector's climate action –for example, calculating the greenfield outdoor festival benchmarks on energy, waste, and water used to underpin The Show Must Go On report on UK festival industry environmental impact, and the Vision 2025 outdoor event industry commitment to reduce GHG emissions by 50% by 2025 that more than 100 UK events are signed up to.

Read more:

- Powerful Thinking & Julie's Bicycle: The Powerful Thinking Guide 2017: Smart Energy for Festivals and Events
- Powerful Thinking Factsheets – including energy tips for traders, tips for smart energy contracts, energy action plan templates, and a power monitoring resource pack
- Vision 2025: Energy Case Studies

Case study

Powerful Thinking, UK

Powerful Thinking brings together festivals, power suppliers, and environmental organisations to provide clear guidance and resources to festival organisers about approaches to sustainable power and to drive a market for renewable energy supply at festivals, underpinned by a specific understanding of the operating realities of outdoor events and festivals. The pioneering Powerful Thinking Guide on Smart Energy for Festivals and Events has been translated into Catalan, French, and Dutch. Powerful Thinking was inspired by Shambala Festival and Julie's Bicycle, and founded in 2011 by a consortium representing a cross-section of promoters, festival membership organisations, and suppliers. These organisations provided start-up funds and an impetus to drive the initiative forward on behalf of the wider festival industry. Julie's Bicycle further support the group by providing the secretariat and support in-kind. For the Intelligent Energy Europe co-funded project EE MUSIC (2013 –2016), Julie's Bicycle helped share the expertise on better power management with festival professionals in 27 European countries through resources and workshops.

Case study

Film London Grid Project, UK

A Green Screen EU project led by Film London is exploring the feasibility of installing mains powered electrical cabinets at eight of the most-used Unit Base locations in London to allow teams to link to the electricity grid on location and reduce their dependence on diesel generators. The project estimates that CO_2 emissions could be reduced by up to 97% as a result. A feasibility study is being finalised by Arup, and Film London is working with the Mayor of London's Office to identify sources of funding.

Read more: Bigger Picture Research: 'Green matters Environmental sustainability and film production: an overview of current practice'

Alternatives to diesel generators for city-centre events:

- Waste Vegetable Oil biodiesel (FAME biodiesel) is one possible alternative to fossil fuel diesel to reduce greenhouse gas emissions. Note this requires adapted and dedicated generators.
- Hydrotreated Vegetable Oil 'renewable' diesel is another possible alternative to fossil fuel diesel with the potential to reduce greenhouse gas emissions as well as air pollution. It is a 'drop-in' fuel that can be used in any generator; however, due diligence is needed to make sure HVO fuel comes from sustainable sources. Some HVO diesel is derived from waste materials from palm oil plantations may come from areas with high risk of deforestation.
- Mobile battery systems of varying capacities that can be used to power certain applications (e.g. tower lights) or be linked into generator systems to improve fuel efficiency.
- Renewable microgeneration, usually in the form of some kind of hybrid system linking together generators, renewable energy e.g. solar panels, and batteries.
- Other new energy technologies, such as hydrogen fuel cells. These remain more speculative, but event sites can be good places for trialling and experimentation.
- Some event sites may also be suitable for more permanent renewable energy installations. For example Wiesen Festival in Austria has a 10 kW solar PV array that was installed in 2013, producing around 700 kWh every month[6]

Read more:

- Julie's Bicycle Biofuels Guidance: what to know, ask, and do

6 Green Wiesen, https://www.wiesen.at/EN/info/greenwiesen

Case study

Welcome To The Village, Leeuwarden, Netherlands

Welcome to The Village is a three-day festival in a natural recreation area near Leeuwarden – it aims to act as temporary, small-scale society where ideas can be developed and tested. If an idea or new prototype works at a festival, it can also work in the "real world". Within that framework, organisers examine how society should look like in 2030 and how to get there. They believe that art and culture are a catalyst for social innovation, and a festival is a place where a very diverse group of people, who are open to new ideas and to others, comes together – a society that runs on sustainable energy and where social and sustainable innovation is key.

Welcome to The Village wants to develop further every year, aiming for a fully circular event in 2022.

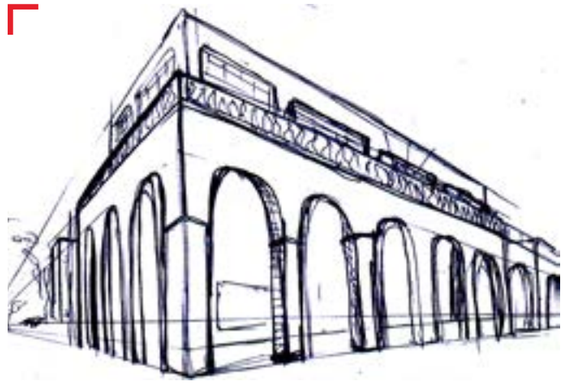
The diesel generators that most festivals use has been replaced by a fixed mains power connection that was installed, and by a number of GreenBatteries. The festival's energy transformation is a collaboration with Nuon/Vattenfall, the Municipality of Leeuwarden, GreenBattery, EventEngineers and Lab Vlieland. The use of the fixed connection and the GreenBatteries ensures 40% less CO_2 emissions (equating to around 17 tonnes), compared to the 2018 edition. That is equivalent to the emissions of more than 6,000 mopeds driving circles around the festival!

Everything that is handed out at the festival is either edible (local food and drinks), reusable (hard cups for drinks) or compostable (leftovers, napkins, plates and cutlery). All waste is collected separately, everything that is not reusable is processed into compost, and ultimately serves as food for new crops.

Read more in the appendix

Energy management venue partners:

Although this guide focuses on outdoor cultural events, for event organisers working with partner venues and buildings, their energy consumption should also be considered. Ask partner venues for a copy of their environmental policy and action plan with a focus on energy management, give priority to energy efficient equipment, encourage venues to switch to renewable electricity providers, and work with event managers on the day to prioritise energy efficiency (e.g. avoiding rooms being heated and cooled at the same time).



Case study

Teatro Comunale di Bologna, Italy

TCBO theatre (Teatro Comunale di Bologna) is a major cultural landmark in Bologna; about 80 operas and 30 symphonic concerts are performed each year in its walls. However, like any other cultural events, opera and concerts require materials, travel, energy, etc. which all have an impact on the environment. As part of the ROCK project, the city of Bologna launched a study to highlight possible critical aspects and suggest measures to reduce the environmental impact of performances at the theatre. The life cycle analysis (LCA) has been a part of an integrated and innovative approach; the goal of the study was to understand the environmental impact of a theatre play. In total, the Barber of Seville produced 111.13 tonnes of CO^2 equivalent. The main environmental impacts were electricity consumption for audio-light systems, lighting system, electrical and electronic devices in offices – other impacts included heating and transports of employees, artists and viewers.

Read more in the appendix

2.3 Waste Management

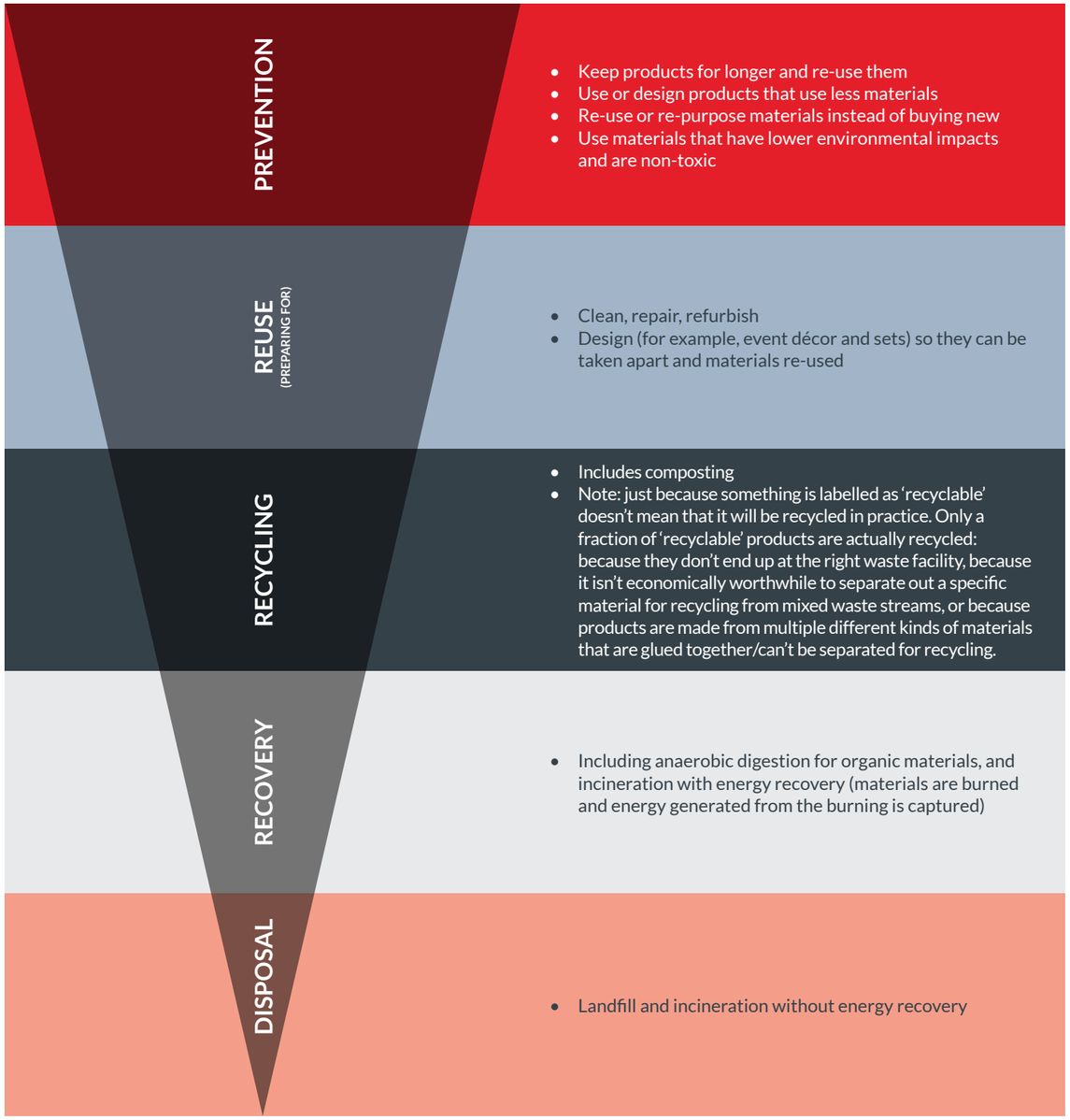
Waste creates a highly visual impact, and is the environmental impact from events that audiences and citizens are most likely to be aware of. City-centre cultural events (like festivals, marathons, food festivals, carnivals and parades) can dramatically increase pressures on city waste management services, and create higher-than-usual volumes of certain kinds of waste. Photos of litter and overflowing bins in streets and parks can pose reputational risks to city administration and event organisers and create friction between cultural events and local residents.

The European Waste Hierarchy is a legal framework that ranks waste management options to prioritise less environmentally damaging options, and should be followed by event organisers:

How waste is best managed for outdoor events in city centres will depend on whether it is a 'closed' and ticketed event or an 'open' event taking place on city streets or other public spaces.

The more control you have about what kinds of materials enter the event area in the first place, the better waste can be avoided and managed: generally, the fewer different 'material streams' there are, the easier it is to enable reuse, prevent contamination, make sure waste collection infrastructure is in place that puts the waste hierarchy into action, and the more opportunities there are to engage different stakeholders (audiences, traders, staff, crew, volunteers, other partners).

Whatever the size of your event, think about all the areas that will generate waste, what types of materials are likely to be used where,



whether there are opportunities to restrict or control the kinds of materials/resources used, what needs to happen to these materials after the event, and how you can make sure they get collected at the event in a way that allows them to be reused or recycled.

Common waste streams include:

- Front of house / waste generated by audiences: mainly food, drinks, and associated serve-ware; and can also include discarded promotional materials, costumes, and other miscellaneous items brought along.
- Back of house / waste generated backstage: food, drink, and packaging/serve-ware from bars and food preparation areas; pallets, cardboard, and other waste from bulk deliveries; set design, décor, costumes; and may also include difficult waste streams such as batteries, fabric, paint tins, electrical cabling, cable ties, and more.

Waste Management Checklist:

- Go through the different areas of your event and identify any opportunities to avoid waste, for example, by banning promotional give-aways (this might include merchandise that is labelled as 'eco-friendly': most people don't need another cotton bag!) and reducing the amount of printed promotional material and banners.
- Avoid purchasing new items: try hiring, reusing from previous events or sharing resources with other events organisers.
- Introduce reusable cups at bars. Unbranded cups that can be collected and reused at other events are preferred. Introduce reusable/washable serve-ware for food where possible.
- Avoid drinks served or sold in single-use packaging wherever possible if they can be served in reusable cups instead. For example, instead of serving soft drinks in aluminium cans or plastic bottles, equip bars with post-mix dispensers and serve in reusable cups.
- Find out what materials can be recycled by waste management facilities in the local area, or with your chosen waste management contractor. As far as is possible, try to match the materials bought and used by the event to what can be composted, recycled, and otherwise processed locally.
- Provide a checklist of preferred and banned materials and information about the recycling systems in place to traders and other key partners likely to generate waste (also ask them about what kinds and amounts of waste they expect to create from their operations so you can plan ahead).
- Ban certain kinds of single-use products, such as individually wrapped servings of salt/sugar/condiments (provide bulk dispensers instead), or plastic straws (ensure alternatives or a limited number are available on request for those who require them for accessibility reasons).
- If reusable is not possible, use disposable serve-ware that is compostable, or made from renewable sources or recycled plastic (r-PET) – but check first with waste management contractors that they can handle a specific material stream. You may want to create an approved supplier or product list for common items (like cups or food serveware) for food traders and other event partners.
- Have clearly labelled recycling bins for segregating waste streams (at least plastic bottles, cans and glass) and clear signage located frequently across the event site, or work with the city waste authority to make sure enough additional bins are in place for events taking place in public spaces across the city centre.
- Consider working with volunteers to help audiences use the correct bins, and use colour-coded and clear signs to let people know what can go in which bin – consider that international visitors may not be familiar with local waste management systems and practices!
- Provide specific recycling options 'back of house' for traders and contractors e.g. batteries, food waste, used cooking oils and fats. Include training on waste management and separation as part of crew and staff inductions, especially traders and bars.
- Provide accurate information about expected audience numbers to food traders to avoid food waste from over-supply.
- Organise collections of any surplus food from traders at the end of an event and donate to charities and food banks where possible.
- Ask suppliers/production designers to use hired, borrowed, reclaimed or recycled materials rather than buying new; and to design and build temporary structures, stands, and stages for reuse and recycling.
- Gather accurate data on your waste footprint through working with your waste contractor, production company or local authority. Understanding quantities and types of waste streams and how each one is currently treated will form an important first step to improving your waste management systems in future years.
- Work with the waste contractor to analyse waste samples to understand the make-up of waste from certain sources (e.g. bagged waste from traders). This will help you understand the potential for improving recycling rates and the materials you are dealing with.
- Don't forget about build and break periods (pre/post event) – production can also create significant amounts of waste. During this time, a lack of signage or training for employees and contractors can contribute to higher levels of general waste and ineffective segregation.
- Explore opportunities to make waste management a visible activity on site – for example, by separating materials in view of audiences, or organising activities to engage audiences with topics around materials, recycling, and the circular economy.

Case study

Upcycling-advanced merchandise workshop in Bologna, Italy

The circular economy is a regenerative economic model designed to keep products, materials, and resources at their highest value for as long as possible through continuous cycles of reclamation, remanufacture, and regeneration. It asks us to think differently about resources: at the end of its life, a product should not be waste, but a new product or a second material to be reused or recycled.

In this context, the Bologna 'Upcycling-advanced merchandise workshop' was conceived to create new products from advertising banners reaching the end of their product life. The advertising banners are made of mixed types of plastic, currently not recyclable and usually destined for disposal in landfills.

Advertising banners have been at the centre of the work of the students of DICAM (Department of Civil, Chemical, Environmental and Materials Engineering) and Advanced Design Course from the University of Bologna. The intent of the first group of students and researchers were to analyse the materials in terms of performance: usability, resistance to fire, to cut, sun and rain, workability, and aging. The main activities of the second group of students and tutors was to study these materials at the end of their product-life, and transform them into new products for fashion, design or furniture.

The prototypes were displayed during the design week event in the Teatro Comunale di Bologna (city theatre). The intent was to generate an entire supply chain for the new banner products and thus create a virtuous circle of valorisation of the materials in a circular economy approach for cultural events.

Read more in the appendix

Case study

The Dutch Green Deal for Festivals, Netherlands

The Dutch Ministry of Infrastructure and Water Management and Green Events International have launched a 'Green Deal' with a range of European festival partners, including Best Kept Secret, Boardmasters, Boomtown, Down the Rabbit Hole, DGTL, and Roskilde. The Green Deal is a partnership of festivals collectively committed to developing and piloting circular solutions for the events industry. This will be achieved through re-designing supply chains and developing circular projects for food, water, energy, travel, transport and materials, including plastics.

Read more in the appendix

Case study

DGTL Festival, Amsterdam, Netherlands

DGTL Festival worked with consultancy Metabolic to undertake a 'Material Flow Analysis' as a basis to understand resource and material flows through the event and identify priority areas for action towards becoming a circular festival.

They have designed a number of initiatives including a 'circular food court', where the entire menu is designed using unwanted food from local suppliers, and a 'Resource Street', where rather than hiding waste collection areas behind the scenes, waste separation for recycling is turned into a visitor attraction and means of engagement in circular solutions.

Read more

2.4 Procurement

Goods and services used at events have 'hidden' carbon footprints and other environmental impacts from their manufacture and transport. Event organisers can help support a greener economy by introducing minimum sourcing standards.

Procurement Checklist

- Ask suppliers to share their environmental policies and credentials.
- Local suppliers may not be able to offer the most sustainable solutions on the market – however, you may be able to use your relationship with them to engage them in improving their environmental credentials in the longer term and help invest in a local green economy.
- Set minimum sourcing standards in different areas: for example, specify certifications or accreditations on how the product was grown (e.g. organic), harvested, processed/manufactured, considering social and environmental claims; human rights (e.g. Fairtrade); release of chemicals to the environment; forest sustainability (e.g. FSC certified).
- Give preference to hired, reused, reclaimed, and recycled materials and products.
- Beware of greenwashing! Ask follow-up questions to claims that are not specific or hard to verify: for example, what does 'sustainable' mean? Compostable in what conditions?

Food and Catering Procurement Checklist:

- Consider making your event menu and catering entirely vegetarian (or vegan!): the highest food-related greenhouse gas emissions come from animal products.
- You can also set a policy for the ratio of vegetarian to meat-based dishes to be provided by vendors – as a minimum, specify that traders must serve at least one vegetarian option.
- Avoid unseasonal produce, foods grown in greenhouses or air-freighted produce.
- Sourcing food as locally as possible will reduce emissions from food miles and boost the local economy (although note that food miles are less important than how food is grown when it comes to the carbon footprint of food – for example, food grown locally in a greenhouse may have a higher carbon footprint than the same produce grown in open fields but transported a longer distance!)
- Local, cultural, heritage foods will be appealing to visitors and tourists. Supporting heritage varieties of vegetable and fruit produce can also help support biodiversity and the resilience of global food systems.
- Support local initiatives and existing campaigns e.g. local cooperatives or grower's associations, permaculture projects, allotments and urban farms, food redistribution charities, etc.
- Consider making Marine Stewardship Council certified fish, Fairtrade, certified organic, RSPO-certified Palm Oil, and Rainforest Alliance Certified standards a requirement of food sold at your event.

Case study

Manchester Arts and Sustainability Team (MAST), UK

Manchester's cultural community has been working together through the Manchester Arts Sustainability Team (MAST) since 2011, to understand, share, solve and scale climate action. MAST brings together over 30 diverse arts and cultural organisations, from community-based arts centres and iconic cultural venues to an internationally renowned festival and national broadcasters, in a participatory and non-prescriptive way.

The MAST group meets regularly to exchange best practice and develop joint actions. Finding out who is using which green suppliers, products and services providers is always a big point of interest. As a result of this exchange the group is now creating a green supplier directory. MAST has also been supported by the Business Growth Hub in developing a sustainable procurement survey and a framework to review suppliers and strengthen environmental sustainability in procurement for operational activities.

Case study

Lambeth Country Show, London, UK

Lambeth Country Show is a free family festival taking place every year in London, attracting over 120,000 visitors across the weekend. With a commitment to be as environmentally sustainable as possible, the event has been assessed through Julie's Bicycle Creative Green Certification.

"The Show is a real opportunity to model sustainable behaviour and engage with the community on how we can reduce the resources that we use and why this is important to Lambeth, to London and the planet."

Key actions in relation to food in 2019 included:

- All traders serving Fairtrade tea, coffee, and sugar
- Over 75% of traders using seasonal and local ingredients
- Food traders are not accepted at the event unless they agree to serve only fish from Marine Stewardship Council (MSC) approved sources
- All traders committed to having a 'healthy option' on their menu
- All traders have a waste management strategy
- All traders using compostable plates, cutlery, and cups
- All traders have some kind of environmental policy

Working with food sharing app Olio and the food waste social enterprise Brixton People's Kitchen, any leftover food (including prepared food!) is collected from the traders after the show and redistributed to people in need in the local neighbourhood and across London. In 2019, 347 portions of food were collected and 69 kg of food saved.

Read more:

https://lambethcountryshow.co.uk/sustainability/

Case study

Roskilde Festival, Denmark

In 2018, Roskilde Festival in Denmark worked with CarbonCloud's climate impact calculator CarbonAte to mark all 400 food options served by 100 different traders at the event with climate labels. This meant that visitors to the event could see the carbon footprint of everything on offer and, if they wished to, choose their food based on climate impact.

Case study

(H)eerlijk Brugge, Bruges, Belgium

Heerlijk Brugge sustainable food festival aims to raise awareness of sustainable food and promote the work of the Bruges Food Lab. Through workshops, food stands from local businesses and growers, and competitions, the event engages local citizens in topics around food and environment. The launch saw the 'Feeding of the 5000', where 5000 meals were prepared using only food which would have otherwise gone to waste.

2.5 Transport

The travel and transport of audiences, artists, crews, infrastructure, and suppliers is one of the largest sources of emissions for any event, although this will vary by the type of event and audience. For example, the travel carbon footprint of city-centre events aimed at presenting local culture to local audiences will be much lower than the travel carbon footprint of an event aimed at attracting international tourism, or presenting a line-up of international artists.

Transport and travel give rise not just to greenhouse gas emissions, but also to local congestion and air pollution: focusing on reducing traffic can reduce not only environmental impacts, but also improve the experience of local communities.

Transport management checklist:

- Encourage audiences to use public transport: share clear information about stations, routes, and times, and provide incentives such as reduced event entry prices or free food/drink vouchers.
- Partner with public transport providers to offer free or reduced transport tickets, and (for larger events) expand capacity and/or running times to enable audiences to take public transport
- Make cycling or walking to the event as stress-free and attractive as possible e.g. share information on local cycling routes, provide access to secure cycle storage, organise group rides or walks, provide on-site cycle maintenance services or workshops.
- Limit car travel and encourage car sharing e.g. if possible, reduce the availability of parking spaces, use a lift-share platform for people to find others to carpool with, and make parking more expensive.
- Create a transport plan by mapping the areas where contractors, goods or equipment are coming from or going to, ask contractors whether they can share loads, and ask them about their own investments and practices (e.g. fuel-efficient driver training, electric vehicles, etc)
- Look for equipment, production materials and food that can be hired or bought locally to minimise transport delivery distances.
- Collect qualitative and quantitative data on audience travel to improve your event travel plan year on year. For example, ask people where they travelled from, how they travelled, what would help them to use public transport.
- For events that need on-site transport, consider electric vehicles (or even bicycles!)
- Consider prioritising booking local artists or those that can travel by train. Financially, consider increasing the artist travel budget to allow for train over air travel.
- Offsetting should be a last resort not a solution. Consider including an offsetting agreement in artist's contracts, or enabling audiences to make a donation to an environmental cause on the ticket booking page to account for their travel.

Case study

International Ski Federation (FIS), Sweden

Continest Technologies offer folding containers for mobile/temporary event infrastructure – including accommodation, offices, and even sanitation. The folding design allows more units to be transported on a single truck. In 2019, Continest supplied temporary infrastructure solutions for the FIS Alpine World Ski Championship in Sweden. Transport was reduced from 40 to just 8 trucks resulting in an 80% cut in CO_2 emissions.

Read more:

https://www.vision2025.org.uk/case-studies-index/continest-technologies

2.6 Offsetting

Offsetting is a way of acknowledging and seeking to 'offset' or 'balance' the impact of carbon emitting activities through investing in projects or initiatives that aim to reduce or capture carbon emissions elsewhere, for example, renewable energy projects or tree-planting schemes. Offsetting cannot directly 'undo' environmental damage, so it's best practice to put in place separate emissions reductions targets and committing to meet these without offsets.

For emissions you cannot avoid or reduce, you can then determine an approach to 'price in' environmental damage:

- **Buy certi ied carbon credits on the voluntary carbon market** through an offsetting platform. These are regulated and quantifiable, and may be necessary to meet net zero commitments. However, the carbon market has many shortcomings that mean offsets are rarely as effective as promised, which is why reducing emissions yourself is always the preferred course of action. If you do choose to buy offsets, look for Gold Standard certified.
- **Do-It-Yourself:** set your own price per Tonne of CO_2 and donate to a project or charity driving environmental change through campaigns, education, research, legal reform, and more. This has the benefit of supporting transformational causes that resonate with audiences, staff, and partners, but impact is difficult to quantify in terms of emissions reductions.

- **'Inset'** internally by setting an internal price per Tonne of CO_2 and creating a ring-fenced budget for reducing your own emissions.
- **Invest** directly into projects with an environmental return, such as buying community energy shares. This has the benefit of supporting a new green economy, but doesn't count towards net zero commitments.

Read more:

- Julie's Bicycle Offsetting Factsheet

Case study

City of Melbourne, Australia

City of Melbourne, whose events portfolio includes Melbourne Fashion Week, Melbourne Music Week and Melbourne City of Knowledge, are the first to have all their events certified carbon neutral under the National Carbon Offset Standard by the Australian Government. They measure the emissions from their events, reduce emission intensive activities as much as possible (the Melbourne Music Week hub is powered by 100% renewable energy) then invest in carbon off-setting to help counterbalance their emissions though supporting positive environmental and social outcomes in local and international communities. Their top two emission sources are patron transport and catering.

2.7 Water

In some areas, water scarcity and costs of providing water infrastructure are forecast to increase with the impacts of climate change. Examples like the Cape Town water crisis show that some cities are especially vulnerable to the impacts of changing weather patterns and limited water supply.

Events need to support water conservation, avoid water pollution, and manage provision of water and management of waste water according to any health and safety regulations.

Water management checklist:

Water conservation:

- Increase water efficiency through using water saving devices on taps, showers etc.
- Regularly check water systems for leaks.
- Capture, treat and reuse grey water (relatively clean water from washing, showers etc) for non-contact purposes or collect rainwater using tanks.
- Use waterless toilets and urinals (e.g. compost toilets).
- Provide hand sanitiser (natural and alcohol free).
- Don't allow hoses for cleaning or catering, instead have central water points that require physical transport of water to discourage excessive usage.
- Use a non-hazardous, organic dust settling agent to reduce the amount of water used.

Water pollution:

- Avoid use of chemical cleaning products opt instead for biological treatments.
- Ensure grey water is disposed of at least 100m from a waterway and is free of chemicals.
- Provide plenty of toilets to avoid urination on the land which could contaminate the chemical balance of waterways and kill aquatic life.

Engagement and behaviour change:

- Use campaigns and creative programming to engage audiences in water conservation and management. Consider partnering with a water charity or organisation with resources and projects to engage audiences in practical action.
- Provide plenty of fountains and taps for water-refills, this reduces plastic rather than water consumption, but also bottled water is more energy intensive to produce, transport etc than using the local water supply.

Case study

CURRENT:LA Water, US

CURRENT:LA Water was the first instalment of a new Public Art Biennial presented by the City of Los Angeles Department of Cultural Affairs (DCA). It included temporary outdoor installations at 15 sites across the city, providing a range of free summertime cultural experiences. Each site had a specific connection to water: either located along the LA River channel, along an original tributary of the historic LA River, or adjacent to a manmade body of water. The Biennial aims to maximise the potential for public art to create dialogue, encourage the exchange of ideas, and inspire civic discourse about issues affecting LA and other global cities – in the words of the DCA, "dialogue around water-based issues" and "civic discourse on the issue of water and allied topics such as infrastructure, drought, ecology, and conservation" Read more.

2.8 Biodiversity and Green Spaces

Dramatic declines in biodiversity are being experienced internationally, of the 1.6 million species we have described, one million species are facing the threat of extinction within decades (IBES, 2019). Urban centres are essential spaces to encourage and support biodiversity through the creation of green infrastructure and as a means of connecting people to nature.

A vast and growing body of literature evidences the value of green spaces. The impacts on people's health and wellbeing have been widely evidenced, from psychological to physical benefits, in addition, psychological benefits increase with the species richness of urban greenspaces. Successful management of urban greenspaces should therefore focus on enhancing biological complexity. (Fuller et al, 2007). Further benefits include increasing worker productivity, retaining staff and reducing sick days (NEN, 2008) through to a host of functional benefits such as flood prevention, cleaner air and providing recreational value.

Hosting an event in an urban green space provides an excellent opportunity to attract people to those spaces, celebrate and enhance nature and engage audiences in the conservation of our natural heritage.

Careful management and planning will avoid or mitigate negative impacts on wildlife using green spaces as their homes. Species such as birds and bats also use the urban environment to roost and may be negatively impacted by noise and lighting. Internationally many species are protected by legislation (in Europe species include birds, bats, water voles, otters, reptiles, dormice and in some countries, badgers and hares) and disturbing or destroying the habitats or the species themselves is a criminal offence.

For large events using spaces with wildlife value, a thorough survey to assess the impacts of the events on the local ecology is recommended by a suitably qualified ecologist. Surveying the site in plenty of time will allow enough time to put appropriate measures in place and prevent delays to event programmes.

Events should aim to understand the local biodiversity, and not just to minimise impacts on it but to use your event as an opportunity to enhance the space for wildlife and engage audiences in the local biodiversity and natural heritage.

Case study

London City Park Festival , UK

London National Park City Festival (2019) saw multi-discipline performances celebrating nature and London's green spaces, including city rooftops, national park city forests, bee-keeping and open water events, encouraging people to connect to nature and value the natural environment. London National Park City is the world's first National Park City – "A place, a vision and a movement to improve life in London. We're doing this by enjoying being outdoors more and helping to make our city greener, healthier and wilder". Read more.

Biodiversity and Ecology Checklist:

- Avoid holding events close to or in high value habitats or areas of conservation concern.
- Employ an ecologist to assess trees, hedges and buildings for presence of bats or nesting birds designing the event to avoid impacts on any high value habitats.
- Design lighting to avoid light spill or excessive/unnecessary lighting that can disturb wildlife.
- Consider fencing off areas or controlling pedestrian flow to prevent overcrowding or damage to sensitive areas.
- Find out what wildlife is using the area and engage audiences and visitors in your local ecology, consider partnerships with local wildlife charities to aid engagement.
- Create habitats such as invertebrate homes, bird or bat boxes, involving audiences.
- Consider growing food on site as part of larger sustainable food initiative or city policy.
- Consider longer term plans for the green space/land used, especially where an event may take place on a regular or repeat basis; look for areas you could plant pollinator friendly plants which would improve the aesthetics and wildlife value of the site, this could include small spaces such as window boxes, verges or rooftops.
- Consider site connectivity, are there biodiverse areas nearby and if so, how might wildlife be using the surrounding areas or green spaces? Is there potential to increase connectivity or enhance connecting areas perhaps aligning to the city's biodiversity or environment plan.

Case study

London Wildlife Trust , UK

Undertook a Breeding Bird Assessment to ensure Illuminated River (a permanent art commission to light central London bridges along the river Thames, once complete it will be the longest public art commission in the world at 2.5 miles in length) would not be a disturbance to breeding birds.

Case study

Taipei Biennial 2018, Taiwan

Taipei Biennial 2018 was themed 'Post-Nature—A Museum as an Ecosystem' and hosted by Taipei Fine Arts Museum (managed by the Department of Culture). Curated by Mali Wu and Francesco Manacorda, the exhibition investigated how systems theory can inform art-making and allow us to reflect on our natural environment and human dependence on natural systems. Read more.

Case study

Cape Town, South Africa

Cape Town's natural heritage is a significant economic and social asset, and contributes significantly to the unique sense of place, strong global identity, and distinctive landscapes that are characteristic of the city. Cape Town is a city with a rich cultural history, unique biodiversity and stunning natural landscapes which are home to around 3000 species of indigenous plants. Cape Town Carnival 2018 was themed 'Mother City, Mother Nature', featuring close to 1,700 dancing, singing and instrument playing performers and intricate floats. The 2018 Cape Town International Public Art Festival (IPAF) 'Nature doesn't need us, we need nature' artists brought subjects related to environmental issues, including the water crisis Cape Town was in the midst of in 2018, all while celebrating the beauty of nature. Read more.

2.9 Noise Management

Noise pollution can be a contentious issue and a difficult impact to manage, especially in city centres where noise from music venues, open air events and nightlife has come under increasing scrutiny, and conflicts with other land users arise threatening the future of cultural spaces and events.

The two key considerations are volume and duration of noise when it comes to assessing noise impacts and how to reduce potential conflict. For example, limiting the times of your events to avoid anti-social hours or giving citizens advance warning of your event and the anticipated noise disruption can both be helpful strategies.

Most local city councils will require an application for a license which will include evidence of how you plan to manage noise.

Case study

Turin, FuturFestival, Italy

Recreational noise has been one of the main issues for event sustainability as major outdoor cultural and leisure events are often accompanied by difficulties related to acoustic quality. Despite of noise permit and noise monitoring, requests for a reduction of annoyance have always been an open issue. Turin is facing issues related to recreational noise of nightlife in open urban areas, such as streets, squares and terraces, where thousands of people meet during the evening and night time, as well as with the impact of music concerts in parks and green area surrounded by residential buildings, in particular when the relevance of the low-frequencies is high (e.g. electronic music festival). Therefore, as part of the MONICA EU project, one of Turin's actions focused in the San Salvario district, the heart of the city's nightlife and the new centre of Turin's movida.

During the FuturFestival, priority was given to the reduction of the off-site noise levels, with special regards to low-frequency noise. An extensive assessment of the state-of-art loudspeakers solutions has been performed, looking for the best combination of stages setup, directivity and optimized installation. The choice of the final setup has been supported by environmental noise simulations in different scenarios, optimized on the base of monitoring campaigns and simulations. A continuous monitoring campaign, inside and outside the Festival venue, by the use of 10 IoT sound levels meters allowed real-time controls of LeqA (usually used for environmental noise), LeqC (low frequencies) and spectra levels of each of the four stages and the nearest dwellings in the four directions around the concert area. This real-time monitoring system at the sources (stages) and at receivers (dwellings) allowed a full control of event, and better management of noise permit rules. As a result, the City Council updated the implementation rules of the Noise Act, introducing the real-time low-frequencies dBC monitoring for all relevant music festival and concerts.

Read more in the appendix

Noise management checklist:

- Create a noise management plan detailing the type of music, the type and size of event and duration. Collaborate with venues and festivals (and the night sector for what concerns nightlife).
- Determine the local decibel limits for the nearest offices and residential buildings and adapt the design and noise levels of your event accordingly.
- Consider contracting a consultant and adopting a modelling software which can map noise prediction taking into account your sound system and the topography of the local area. This can help to plan the location and angle of stages.
- For large events consider investing in a Sound Management Tool to be used on-site during your event. These can allow event organisers to monitor multiple sources of noise, reach the limits of amplitude without compromising sound quality or breaching legislation through close real time monitoring and controlling different frequencies of sound.
- Be prepared for environmental factors such as cloud over or strong winds which may cause sound to travel further or interfere with the audience's ability to enjoy live music.
- Green spaces can provide a less disruptive location for loud events with live music where sound can be buffered by green infrastructure.
- Adapting the location of speakers can also help to modify the amount of sound escaping, or using sound absorption and anti-vibration materials below or above stages.

Case study

Bonn noise management, Germany

Bonn plans to install permanent noise measurement infrastructure at the recurring measurement points of the main event area "Rheinauen Park" and to include the measurement points in the special permits if the measures are continued. The noise measurement technicians to be commissioned by the organisers must make use of this noise measurement infrastructure. In this way, the city as a public authority can ensure the current state of the art, fair competition between noise measurement technicians and measurement supervision.

With noise measurement technology, the modelling of a sound heat map and the visualisation of an annoyance index, requirements and measures to maintain the specified noise values can be determined. In the event of an increased number of complaints regarding a major event, we as an authority can analyse the process retrospectively and react appropriately with objective instruments and values. In addition, we can check the reason for the complaint for sufficient conclusiveness.

Read more in the appendix

3

Conclusions

Sustainable Events in Cultural Heritage Cities present numerous benefits and opportunities. From a social perspective participation in cultural events improves people's wellbeing, contributes to a sense of community and encourages social cohesion. From the point of view of cultural heritage city, sustainable events can contribute to cultural, economic and social development, build international connections and partnerships, regenerate and revitalise urban centres, foster new innovative, creative approaches to sustainable development and attract international acclaim, visitors and tourists. Events can act as a launch-pad for new technologies, policies, and engagement in mitigating against and increasing resilience to climate change e.g. through investment in energy efficiency and green infrastructure.

Despite the opportunities, challenges still remain. For events and cultural heritage to be truly sustainable, we need to increase participation and inclusion, reaching diverse audiences across all socio-economic and demographic spectrums. Cities need to overcome geographical, cultural, social and technological barriers, increase skills and capacity to deliver sustainable events, working together to share solutions, increase engagement and embed sustainable approaches to decision making and climate action at all levels.

Collecting data, measuring improvements and evaluating the environmental performance of your events will demonstrate the positive impacts they're having, attracting further investment in environment and culture, contributing to a growing international movement and community of cities committed to sustainable and resilient future for cultural heritage.

4

Further Resources and Reading

General

- Climate Heritage Mobilisation http://climateheritage.org/about/
- European Commission (2017) "Linking Natura 2000 and cultural heritage" https://ec.europa.eu/environment/nature/natura2000/management/pdf/case_study_natura2000_cultural_heritage.pdf
- International Union for the Conservation of Nature IUCN (2014) "World Heritage Outlook". https://www.iucn.org/theme/world-heritage/our-work/iucn-world-heritage-outlook
- United Cities and Local Government UCLG (2018) "Cultural Heritage and Sustainable Cities. Key Themes and Examples in European Cities". http://www.agenda21culture.net/sites/default/files/report_7_-_cultural_heritage_sustainable_development_-_eng.pdf
- United Nations Educational, Scientific and Cultural Organization UNESCO (2016) "Culture: urban future; global report on culture for sustainable urban development". https://unesdoc.unesco.org/ark:/48223/pf0000245999
- United Nations Educational, Scientific and Cultural Organization UNESCO (2008) "Policy Document on the Impacts of Climate Change on World Heritage Properties". https://whc.unesco.org/uploads/activities/documents/activity-397-2.pdf
- United Nations Environment Programme UNEP and United Nations Educational, Scientific and Cultural Organization UNESCO (2016) "World Heritage and Tourism in a Changing Climate". https://whc.unesco.org/document/139944
- World Cities Culture Forum, Tackling Climate Change through Culture (2019) creative and cultural responses to climate change and environmental sustainability. https://juliesbicycle.com/resource_hub/resource-tackling-climate-through-culture-2019/

Green events

- Bigger Picture Research (2020) "Green matters Environmental sustainability and film production: an overview of current practice" https://www.bfi.org.uk/sites/bfi.org.uk/files/downloads/bfi-green-matters-uk-screen-sector-report-2020-v1.pdf
- Eventbrite https://www.eventbrite.co.uk/blog/venues-anti-noise-legislation/ and https://www.eventbrite.co.uk/blog/noise-management-for-events-ds00/
- Food Climate Research Network (FCRN), Foodsource 'Food systems and greenhouse gas emissions' https://foodsource.org.uk/chapters/3-food-systems-greenhouse-gas-emissions
- Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019) https://ipbes.net/sites/default/files/ipbes_7_10_add.1_en_1.pdf
- Julie's Bicycle, Culture Beyond Plastic: Understanding and Eliminating (2020) https://juliesbicycle.com/resource_hub/culture-beyond-plastic-understanding-and-eliminating-problem-plastics/
- Julie's Bicycle, Sustainable Events Guides with Manchester (2019) https://juliesbicycle.com/sustainable-events-guides-with-manchester-city-council/
- Julie's Bicycle, How to Buy Sustainably Sourced Power (2019) https://juliesbicycle.com/how-to-buy-sustainably-sourced-power/
- Julie's Bicycle, Biofuels Guidance (2018) https://juliesbicycle.com/biofuels-guidance-2018/
- Julie's Bicycle & Powerful Thinking (2015) 'The Show Must Go On'
- Julie's Bicycle, Sustainable Procurement Guide (2015) https://juliesbicycle.com/resource-procurement-guide-2015/
- Julie's Bicycle, Waste Management at Outdoor Events Guide (2015) https://juliesbicycle.com/resource-waste-outdoor-events-2015/
- Julie's Bicycle, Water Management at Outdoor Events Guide (2015) https://juliesbicycle.com/resource-water-outdoor-events-2015/
- Julie's Bicycle, Audience Travel Guide (2015) https://juliesbicycle.com/resource-audience-travel-guide-2015/
- Powerful Thinking, Smart Energy for Festivals and Outdoor Events (2017) http://www.powerful-thinking.org.uk/resources/powerful-thinking-guide-2017/
- The Show Must Go On (2020) https://juliesbicycle.com/news/the-show-must-go-on/
- Vision 2025 Knowledge Hub', www.vision2025.org.uk, a significant free-to-access resource that will feature case studies, briefings and a supplier directory.

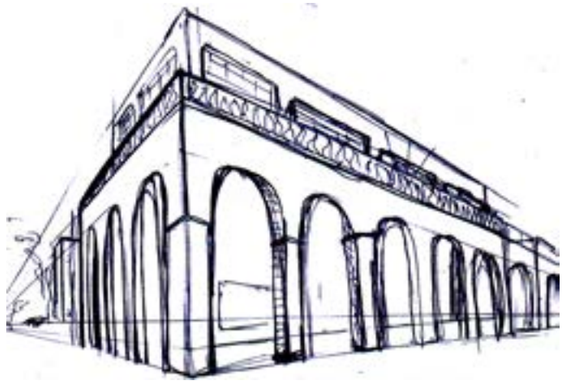
5

Appendix: case studies from cities

Bologna, Italy

389,000 inhabitants

U-Garden



Local context

The municipal area of Bologna is 1,408 hectares, and public green areas (over 1,100 hectares) represent almost 8% of the territory. Nearly 70% of these green areas are maintained as parks and gardens. Bologna's historic centre and university area is one of the largest in Europe (413 hectares), with about 4,500 buildings of architectural or historic interest and unique public spaces, such as the porticoes. Approximately 50% of the surface of Bologna's centre is made up of outdoor spaces that are either private (residential courtyards and gardens) or public (parks and gardens) and that can be promoted not only in terms of use, but also of ecological function.

Greening the Teatro Comunale's terrace

As part of the ROCK project on heritage and urban regeneration, Bologna paid particular attention to environmental and ecological dynamics in the university area located at the heart of the historic centre. U-Garden supports biodiversity, flora and fauna, and acts as urban ecological connector linking greening (pocket garden) with culture (Teatro Comunale). The project aims to create harmony in an area of contrasts and demonstrates how natural elements of vegetation can cohabit with the artificial and mineral environment of a heritage building. It also brings an informal aspect to a formal building located on an informal square where students meet and hang out (Piazza Verdi). The design of the pocket garden and the choice of species create a contrast between the more formal space of the atrio at the front of the terrace and the more informal space of the platea.

U-garden is a real 'pocket' garden in size, which concretely favours the biodiversity of the area in terms of use, and through the injection of functional green for the improvement of the microclimate in one of the places of cultural excellence in the city. In the summer of 2019, the terrace offered citizens a new small green corner from which visitors can enjoy unconventional perspectives and views of the city. The choice of types of plants deepens the theme of biodiversity in the city, connecting to the urban ecological network. In particular, the choice of plants capable of attracting numerous pollinating insects has generated the formation of a biodiversity hotspot, which over time has been able to promote the wide-ranging spread of these particularly resistant plant species.

Lessons learnt

The greening of unconventional spaces is part of the new project for heat wave reduction in the historic city centre. To make the process more participatory, U-Garden was developed involving students of advanced design in a co-creation workshop. The stimulus to see the plant element as the basis on which to build the entire project has allowed the co-design phase to investigate issues related to functional greenery. The choice of species was based on two levels of analysis: the first was dictated by the basic needs of the plant (exposure, maintenance methods, etc.) and the second, more compositional, on the directives provided by the vision of the project 'formal / informal'.

Recommendations

- Do not hesitate to test greening initiatives in unconventional spaces in the city.
- Include new target users in an 'old fashioned' cultural centre to gather creative ideas, and somebody responsible for the management of the co-design working group.
- Pay attention to the selection of plants and think in terms of biodiversity, resistance, etc.

Management

Municipality of Bologna, Opera House Foundation (public private entity responsible for the management of the theatre), universities (engineering and architecture), design services, students of the faculty of architecture of the University of Bologna, Rusconi foundation (architectural assistance), FIU (urban innovation foundation), ANTARTIDE (environmental and communication centre), local artisans.

Budget

European funding support via the ROCK project (H2020 research and innovation programme)

Bologna, Italy

389,000 inhabitants

Barber of Seville

Local context

TCBO theatre (Teatro Comunale di Bologna) is a major cultural landmark in Bologna. TCBO has been located in the heart of the city since the XVIII Century. About 80 operas and 30 symphonic concerts are performed each year within its walls. However, like any other cultural events, opera and concerts require materials, people travelling, energy, etc. which also has its toll on the environment. As part of the ROCK project, the city of Bologna launched a study to highlight possible critical aspects and suggest measures to reduce the environmental impact of performances at the theatre.

The life cycle analysis of a theatre performance

The life cycle analysis (LCA) has been a part of an integrated and innovative approach. The goal of the study was to answer questions such as "What is the environmental impact of a theatre play similar to The Barber of Seville?"; "What are the processes during its realisation that impact the most?"; "What is the attendee's perception of environmental issues related to theatre activities?"; "What are the possible improvement points from the organizer's point of view?"

To find answers, a number of surveys have been launched to investigate stakeholders' perspectives on issues like the environmental elements of plays; the sustainability approach in governance of the theatre; and mobility habits for employees, attendees and artists. Starting from results of the different surveys, critical aspects related to environmental issues have been highlighted and priorities have been addressed (according to ISO 14001).

The main objective of the study was not only to highlight issues but also to point out possible improvement strategies. In other words, the goal is to implement a possible environmental improvement programme based on clear and scientific assessments of the theatre's typical processes. In this way it is possible to obtain large-scale environmental benefits.

Lessons learnt

The biggest challenge was related to data collection, as it is not easy to collect some specific data from theatre activity. But all the stakeholders involved contributed to the data collection. In the end, the cradle to grave analysis for six theatrical performances has been calculated in terms of climate change impact. In total, the Barber of Seville contributed to the emission of 111.13 tons of CO^2 equivalent. The main environmental impacts are from electricity consumption of audio-light systems, lighting system, electrical and electronic devices in offices, etc.; heating; and transport of employees, artists and audience. This only accounts more or less for 50% of the total emissions. Even though only 24% of employees and 34% of audience members use a personal car to travel to performances, this accounts for 80%-90% of the total transport emissions. Environmental impacts associated with the play studied are not negligible, and there is no doubt that some improvements can be made.

Recommendations

- Do not underestimate the importance of involving staff, suppliers and spectators.
- Develop an implementation plan with a scope of at least three years and monitor improvements.
- Some possible strategies to reduce the environmental impact of theatre:
- Use certified ecological (EU Ecolabel, FSC or PEFC) and recycled paper for office prints and use ecological printers (FSC or PEFC);
- Implement an energy performance screening of the theatre to evaluate possible intervention for energy efficiency;
- Develop a sustainable mobility plan;
- Differentiate waste management.

Management

Municipality of Bologna; Opera House Foundation (public private entity responsible for the management of the theatre), Punto 3 (an Italian consultancy leader in sustainable event sector)

Budget

European funding support via the ROCK project (H2020 research and innovation programme)

Bologna, Italy

389,000 inhabitants

Bologna Estate

Local context

Bologna Estate is the summer events programme of the metropolitan city promoted and coordinated by the Municipality of Bologna. Every summer, dozens of events come to life on the territory of the municipality, enriching the cultural and recreational offer of the city. At the same time, these events are responsible for significant environmental impacts if taken together. Impacts mainly relate to participants' transport, waste production and demand for goods and services. It is essential to adopt sustainability policies that go hand in hand with the cultural value of Italian urban centres, considering the urban ecosystem is already subject to strong anthropic pressures, in particular pollutant emissions.

Call for tender for sustainable events

Every year, Bologna Municipality opens a public call in search of cultural projects to set up the summer programme of cultural events. The selection of projects is based on the quality of the artistic proposals, considering the balance between the various genres and with the aim of capturing the tastes of different audiences. For the first time in 2020, the commission included the criteria of sustainability and regeneration of disused spaces in its evaluation of proposals. A working group was formed with representatives of the culture (responsible for the call) and environmental departments of the municipality, the waste collection company HERA, and Punto 3, an Italian consultancy leader in the sustainable event sector.

The working group defined guidelines for the sustainability of events to be included in the call:

- Sustainability objectives, in the form of minimum environmental criteria. The approach will be tested this year and in subsequent years if successful.
- An awareness raising plan concerning sustainable events. In particular two training activities were carried out on the theme of sustainable events and all the selected cultural operators had the opportunity to join them.
- A helpdesk was set up to support winning proposals and implement in practice the sustainability ideas presented in their projects.

Lessons learnt

The municipality as a managing body has become a driver of sustainable change for the organisers of events on its territory by acting on governance tools. The great participation of cultural actors in the trainings provided (91 cultural operators took part) proves a certain territorial awareness of environmental and social issues. The associations organising events expressed interest in setting up a permanent working group to discuss sustainable event management. The project has therefore touched the organisational framework of the associations promoting their events in Bologna Estate programme. Most of the events that responded to the call for proposals have adopted sustainable best practices (plastic free, mobility plan, local products, stakeholder engagement, etc.). Applicants actively supported the sustainability objectives promoted in the different events of Bologna Estate.

Recommendations

- Open a discussion table with associations, bodies and suppliers.
- Increase the level of awareness about sustainability among event organisers.
- Have a picture of the average level of sustainability of local events and the main critical issues beforehand.
- Support the implementation of a purchasing group formed by organisers aimed at reducing costs of environmentally friendly products.
- Provide as many tools and as much information as possible to allow cultural operators to better create change.

Management

Municipality of Bologna, Punto 3 (an Italian consultancy leader in sustainable event sector), HERA (energy and waste multiutility), zero waste project, Julie's bicycle, NGOs and cultural operators in Bologna.

Budget

European funding support via the ROCK project (H2020 research and innovation programme)

Bologna, Italy

389,000 inhabitants

DAIPIANTALA- civic crowdfunding

Local context

In the last five years, Bologna has successfully trialled an urban innovation model based on circular subsidiarity and civic collaboration, the 'collaborative city.' This means public administrations governing not only on behalf of citizens, but also with citizens, basing their policies on the two concepts of city as commons and citizens as a great source of energy, talent, resources, capabilities and ideas in support of urban regeneration. Active citizens, social innovators, entrepreneurs, civil society organisations and institutions willing to work for the general interest can start a co-designed project with the city government leading to the signing of a collaboration pact for the care or regeneration of urban commons, such as public spaces, urban green areas and abandoned buildings or areas. The policy framework for managing all collaborative projects, from valorisation of cultural heritage to spontaneous street or building cleaning initiatives is the 'Regulation on collaboration between citizens and the city for the care and regeneration of urban commons', approved in May 2014.

"Dai, piantala!"

Citizens are increasingly asking to participate in the implementation of green spaces. In 2017, thanks to the European funded Life project GAIA, Bologna opened OpenGaia, a platform promoting crowdfunding projects on environmental and greening issues. The platform issued a call for citizens to participate to the regeneration of Piazza Scaravilli, promoting good urban greening practices and raising public awareness on environmental issues. "Dai, piantala!" raised €3,000 with 120 donors who contributed to the purchase and construction of the new green areas of Piazza Scaravilli. But "Dai, piantala!" went beyond mere online donation: Everyone was invited to collaborate with the Municipality of Bologna in taking care of the university square. The objectives of the crowdfunding campaign were to promote participation in the redevelopment of a university zone, build a community of active and interested citizens, tell the story of Piazza Scaravilli, and sensitize citizens to environmental issues.

The new green areas have been part of a general transformation of the square, which is the result of a co-planning process promoted by the ROCK project in Bologna. Students and local stakeholders have reflected and studied the area and imagined new ways to live and develop Piazza Scaravilli. The final project represents the expression and convergence of different needs and audiences that experience the square. Thanks to the effort of those who took part in the crowdfunding campaign, it will be possible to transform the square into a common good: A welcoming and green place given back to its community, a versatile space for events, socialising, meeting and sharing.

Lessons learnt

Thanks to the support of donors, plants and trees have been added to the corners of Piazza Scaravilli, one of the key squares of the university area in Bologna city centre. The intervention has extended green areas in the very heart of Bologna, increasing the level of biodiversity through the use of different plant species and favouring the propagation of the plants themselves by attracting a good number of useful insects. The temporary project will later be equipped with a new lighting system and a smart water system. A wooden platform will cover the centre of the square, on top of which several modular elements will be added: seats and tables as well as pots for trees and plants.

The rewards were selected taking into account both the objectives and the themes of the campaign. To this end, two main types of rewards have been included: Cultural themed rewards – tickets to visit key places in the university area of Bologna (BUB, Specola, Teatro Comunale); Green themed rewards – things to promote environmental issues (water bottle) and kits to stimulate the spread of greenery even in private environments (Ecocube, plants, sprout pencil). All donors were also given digital thank you certificates.

Recommendations

- The communities of interest are crucial; Known people and important people (testimonials) can be helpful in supporting the campaign.
- Institutional social communication is fundamental for credibility / reliability: "Dai, piantala!" was hosted on the ideaginger.it, a local crowdfunding platform and disseminated on OpenGaia's Facebook and Twitter channels but also on partners usual communication channels.

Management

Municipality of Bologna, consultant PPP, communication (BAM, indica,) crowdfunding platform (GINGER), University of Bologna advanced design and engineering departments, citizens, Opera House Foundation (public private entity responsible for the management of the theatre), NGO (Etabeta), Centro Antartide, Fondazione Rusconi, FIU (urban innovation foundation), Interreg Central Europe CROWD-FUND-PORT. Rewards came from SMA – Sistema Museale di Ateneo, BUB – Biblioteca Universitaria di Bologna.

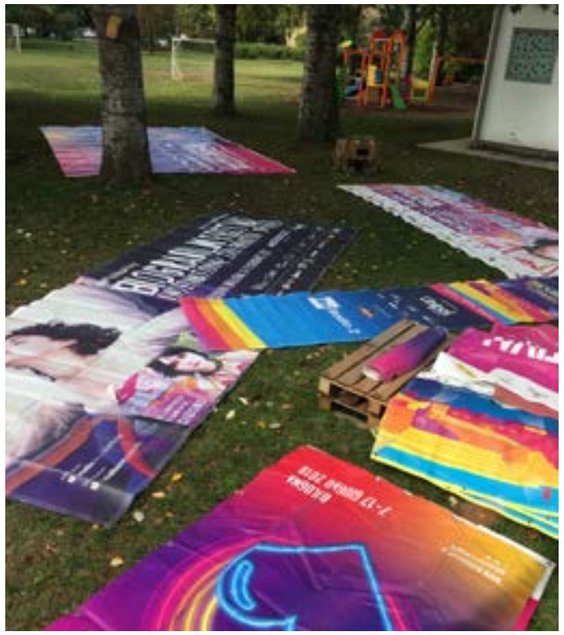
Budget

European funding support via the ROCK project (H2020 research and innovation programme). Municipality of Bologna added some funding, and citizens completed the pot.

Bologna, Italy

389,000 inhabitants

A new life for cultural events banners



Local context

Reduce, re-use, recycle and recover is the hierarchy for waste management. Waste can be used as a new resource in cities. In Bologna, there are collection centres and centres for reuse (second life), and many associations using waste in a creative and intelligent way (e.g. remida, etabeta, back-bo – also winner of the ROCK Hackathon in Bologna). But still today, Bologna has a low level of separated waste collection. In recent years, work has been done in the city to make collecting more efficient, but that can only be achieved through shared responsibility between all the actors involved, from the managing bodies, to the business world, public bodies and citizens to strive towards a zero-waste city. Cultural events also have a contribution to make.

Upcycling-advanced merchandise workshop

The circular economy is based on the recovery and recycling of resources and products; with it arises a revolution of the design criteria of the products: an end-of-life product it is no longer considered waste, but a new product or a second material to be reused or recycled. In this context, the activities of the Bologna 'Upcycling-advanced merchandise workshop' were conceived to create new products from advertising banners reaching the end of their product life. The advertising banners are made of mixed types of plastic, currently still not recyclable and intended for disposal in landfills. Advertising banners have been at the centre of the work of the students of DICAM (Department of Civil, Chemical, Environmental and Materials Engineering) and Advanced Design Course from the University of Bologna. The intent of the first group of students and researchers was to analyse the materials in terms of performance: usability, workability, ageing, and resistance to fire, tearing, sun and rain. The main activities of the second group of students and tutors was to study these materials at the end of their product-life and transform them into new products for fashion, design or furniture. The prototypes were displayed during the design week event in the Teatro Comunale di Bologna (city theatre). The intent was to generate an entire supply chain for the new banner products and thus create a virtuous circle of material for cultural events.

Lessons learnt

The series of workshops intended to give new values to inevitable waste, reinserting it into the flow, connecting the experience of craftsmanship and design thinking with the idea of multi-functionality, going beyond the concept of simply eco-friendly or charity products.

To these reflections is added a founding element of Italian culture: beauty, a concept used as a value to preserve the well-being of communities and individuals, as well as environmental resources and citizens' health.

In this context, the theme of environmental sustainability has been developed into various activities that are based on the action-research-action method, through the development of micro-scale prototypes to evaluate both the trigger power they have in solving complex problems, and the replicability on other city events contexts.

Recommendations

- Work with an interdisciplinary group requires some team building at the beginning of the collaboration, to increase trust and motivation, all in a playful way.
- Consider the city as an urban metabolism where the reuse chain of for advertising banners should be implemented at local scale.
- Before throwing something away, think, think, and think.

Management

Municipality of Bologna, University of Bologna engineering and architecture faculties, advanced design students, Remida (centre for creative re-use of manufacturing company waste material), tutors, designers, event banner owners (biografilm, archaeological museum).

Budget

European funding support via the ROCK project (H2020 research and innovation programme). Municipality of Bologna added some funding, and citizens completed the pot.

Bonn, Germany

320,000 inhabitants

Noise and culture

Local context

The cultural city, university city and Beethoven city of Bonn has a quantitatively and qualitatively high-class offer of events (approximately 300 annually of which around 40 are major events). A large number of these are outdoor events, some of which are accompanied by considerable noise pollution. The regulatory authorities grant special permits for these noisy public events in accordance with the applicable laws for Bonn. The laws are according to the State Emission Control Act of the State of North Rhine-Westphalia. Even if the legal regulations are observed and the greatest possible care is taken to comply with these regulations, complaints arise from the surrounding neighbourhoods of the two areas that are mainly used for major events. The organiser can provide proof of compliance with the specified maximum values by commissioning a state-approved noise engineer.

Enhance sound experience and noise control

The MONICA EU project aims to demonstrate how cities can use Internet of Things (IoT) technologies to manage sound and security during large, open-air cultural and sporting events taking place in cities. MONICA is funded under the Horizon 2020 research programme of the European Union. For the MONICA project, the first event selected by the city of Bonn is “Rhein in Flammen” (Rhine in Flames), an open-air festival with three performance stages as well as attractions, street food and fireworks, attracting up to 120,000 visitors in one day. The aim is to achieve the best sound experience from all perspectives – neighbour, visitor and performer – and improve crowd management. Alongside five other cities (Copenhagen, Hamburg, Leeds, Lyon and Turin), Bonn has carried out and tested various sound measures during cultural events:

- Wireless sound monitoring with IoT-compatible sound measuring devices at the noise measurement points relevant for the exemption.
- Modelling of a sound heatmap to analyse the noise level with regard to the strength and propagation of the noise.
- Classification of the measurement results in an ‘annoyance index’ to determine the additional noise exposure compared to everyday life.

Bonn plans to install permanent noise measurement infrastructure at the recurring measurement points of the main event area ‘Rheinaue’ and to include the measurement points in the special permits. The noise measurement technicians to be commissioned by the organisers must make use of this noise measurement infrastructure. In this way, the city can ensure state of the art measuring, consistency among noise measurement technicians and measurement supervision.

With noise measurement technology, the modelling of a sound heat map and the visualisation of an annoyance index, requirements and measures to maintain the specified noise values can be determined. In the event of an increased number of complaints regarding a major event, Bonn can analyse the process retrospectively and react appropriately with objective instruments and values.

Lessons learnt

- Early planning of measures and determination of local requirements
- Determination of the event area to be analysed
- Determination of the noise measurement points
- Procurement of suitable noise measurement infrastructure
- Commissioning of a proper installation of the infrastructure
- Assignment or provision of a noise measurement technician and technical support
- Use of suitable and hardware-compatible software
- Transmission test with wireless connection of the noise measuring devices
- Create the possibility of visualizing the measurements (Common Operation Picture).

Recommendations

- This topic can lead to increased expectations on the part of the citizens, therefore high-quality accompanying public relations work and education is recommended.
- The measures need the support of politicians, society and administration.
- Organisers must be convinced of the added value during the test phase and make their events available for demonstration purposes.

Management

Regulatory authorities, organisers, noise measurement technicians, technical support service providers, installers.

Budget

European funding support via the MONICA project (H2020 research and innovation programme).

Edinburgh, United Kingdom

500,000 inhabitants

Communities of Sustainable Practice for Greening Cultural Events

Local context

Edinburgh is known for its cultural offering: 11 major festivals delivering over 3000 events throughout the year (reaching an audience second only to the size of an Olympic Games or a FIFA Football World Cup), three National Galleries, Edinburgh Castle and hundreds of cultural venues, organisations and happenings. Edinburgh is also a city with cultural and natural heritage at its centre: a medieval Old Town and Georgian New Town lie in the shadow of an extinct volcano, and hills, lochs and beaches surround the city. The density, intricacies and overlaps of producing many cultural events within this unique setting present a challenge to addressing sustainability and climate change concerns, particularly around waste and greenhouse gas emissions from energy and transport.

Partnering for sustainable culture

Addressing the sustainability of a cultural event cannot be done in isolation. The temporary nature of events can mean that there is little time, resources or knowledge to support environmentally driven improvements to event design or delivery, particularly as best practice constantly evolves. In working together with other events and year-round cultural and city infrastructure, cultural organisers can build cumulative capacity and share experiences and learn to improve the sustainability of the whole sector at once. This collaborative approach has manifested in several ways in Edinburgh:

Edinburgh Council has hosted and worked closely with arts and sustainability charity Creative Carbon Scotland since 2011, incorporating climate change into decision making on cultural funding. Creative Carbon Scotland advises cultural organisations in Scotland on how to reduce their environmental impact and address climate change.

The umbrella body for the city’s major Edinburgh Festivals (Festivals Edinburgh) coordinates a joint environmental working group and employs an environmental sustainability officer – a shared resource which supports this collaborative work on an ongoing basis.

Working in collaboration has led to a number of shared initiatives which support cultural events and their organisations and organisers to produce more sustainable celebrations:

The Green Arts Initiative, a networked community of practice for cultural organisations providing advice and support for organisations looking to reduce their environmental impact. Initiated in Edinburgh with a starting group of 20 cultural organisations, it now has over 200 members across Scotland, hosts an annual conference and #GreenArts day for sharing case studies and tackling shared issues.

The festivals’ environment group is working in partnership with Scottish Government-funded organisation Zero Waste Scotland to explore a reusable cup scheme for a pilot, with a view to extending this across a number of festivals and events in future.

Creative Carbon Scotland trained members of staff from across Edinburgh’s cultural events in ‘Carbon Literacy’, embedding knowledge of climate change causes, impacts and actions within event teams.

The ‘Sustainable Fringe Award’ which recognises best practice in venue and production design at the world’s largest arts festival, run by Creative Carbon Scotland, the University of Edinburgh, theatre network Staging Change and the Centre for Sustainable Practice in the Arts.

Lessons learnt

This change towards collaboration on sustainability issues has led to several changes within events and within the city itself. Most importantly, cultural events have the knowledge, advice and examples of how to make their events more sustainable. Plastic-free events, public transport incentives, renewable energy, local, vegetarian and organic food and more sustainable resource use and sourcing are much more commonplace. The lessons from Edinburgh’s cultural events are now captured and shared with the local, national and international cultural community. Practical changes have extended to artistic programmes, many of which now include events on climate change or environmental issues, explicitly using their cultural reach to influence wider societal shifts towards sustainability, and acknowledging that the greatest potential impact of a cultural event is through its effect on its audience. Furthermore, in Edinburgh’s ambitions of reaching a net-zero emissions target by the end of the decade, the role and opportunity of culture is more fully recognised by the public and decision makers in the city.

Recommendations

- Support, empower and facilitate event organisers to green their events: they can’t do it on their own.
- Use a collaborative model of experimentation: using one event as a pilot sustainability initiative across a range of city (or national) events.
- Use your local context and expertise to inform your approach.

Management

Edinburgh Council’s culture service events team, Creative Carbon Scotland (since hosted in the city council), Festivals Edinburgh and the Edinburgh Festivals, academic support around learning, NGO expertise on environmental issues, in-kind business support from consultants.

Budget

Grant funding or support from the City of Edinburgh Council and from a number of national funding bodies

Leeuwarden, Netherlands

123,107 inhabitants

Welcome to the Village

Local context

'Welcome to The Village' is a three-day festival in a natural recreation area near Leeuwarden, a temporary, scaled society. If an idea or new prototype works at a festival, it can also work in the 'real world'. Within that framework, organisers examine how society should look in 2030 and how to get there. They believe that art and culture are a catalyst for social innovation, and a festival is a place where a very diverse group of people, who are open to new ideas and to others, comes together. The festival runs on a set of shared values, with less inequality between different population groups, where men, women and everyone who defines themselves as different are equal, a society that runs on sustainable energy and where social and sustainable innovation is key.

Glocal sustainable development goals

The festival is inspired by the Sustainable Development Goals, both on stage and behind the scenes. To achieve the SDGs, major global development goals are translated into the hyper-local situation of the temporary village, a society on scale. If these global goals are achievable on a small scale, they should also be able to work in a larger context. And if it can change a region, then it can change the world positively. Together with LabVlieland, organisers are looking at the possibilities to make the circle from raw material to waste material and back again as efficient as possible. The festival has become a moment to test new innovation ideas that can be use in society in the future.

Welcome to The Village wants to develop further every year, so that the festival will be fully circular in 2022. Welcome to The Village runs on sustainable energy. The diesel generator, which most festivals use, is replaced by the fixed power connection installed, followed by a number of GreenBatteries. This is a collaboration with Nuon/Vattenfall, the Municipality of Leeuwarden, GreenBattery, EventEngineers and LabVlieland. The use of the fixed connection and the GreenBatteries ensures 40% less CO_2 emissions, around 17 tonnes, compared to the 2018 edition. That is equivalent to the emission of more than 6,000 mopeds driving circles around the festival!

All waste is collected separately, everything that is not reusable is processed into compost, and ultimately serves as food for new crops. And everything that is handed out at the festival is either edible (local food and drinks), reusable (hard cups for drinks) or compostable (leftovers, napkins, plates and cutlery).

The festival teams up with local caterers and farmers, works with volunteers to build its own stages and, for the festival design, works with people in a day-care programme and senior citizens. The festival location has a line-up of artists, musicians, chefs, and start-ups, encouraging discussion and thinking outside of the box, showcasing the festival as a provisional society, a mini community. Local start-ups and entrepreneurs are also invited to test their prototypes during the festival thanks to Innofest, a regional organisation that uses festivals as living labs for innovation. Innofest's funding is 80% public (including from ERDF). It started two and a half years ago to help innovations succeed, as typically 90% of innovations fail within five years due to insufficient testing before market launch.

Lessons learnt

At the beginning it was difficult to get people from production (known as pragmatic people) to support the activist and idealist vision, as it obviously doesn't make their work easier. It was also difficult to go from vision to effectively carrying it out. The festival started with measurement to determine where they stood and take it from there, which was not easy because never done before. After determining a start position, it was easier to make a plan and get all the crew behind it. Being sustainable is not cheap: it'll cost you extra investment. When you have the money that is easy, but it makes things harder when you struggle, and it can become difficult to stay true to your values. But the result is there, the festival has set a standard and serves as an example for others, which proves that these investments and sacrifices start to pay off.

Recommendations

- Work together and help each other: share knowledge and find the right stakeholders to collaborate with.
- Try and explain things in a simple manner, and do not hesitate to keep repeating the values of your organisation to everybody working there.
- Celebrate your victories: take time to try to win awards, create moments to celebrate your success (even little ones) to make the people that work in the organisation proud and to show to the public what you are doing so they are willing to support it.
- Set crazy goals for a short term, because it motivates people to join and really get their teeth into it.

Management

Festival directors, circular festival advisors to advise on energy and batteries, project managers from the city of Leeuwarden, circular manager, energy supplier

Budget

Local municipality, energy supplier, festival budgets

Malaga, Spain

571,026 inhabitants

The Climate Journey

Local context

As a coastal Mediterranean city, Malaga is on the frontlines of the climate emergency. It constitutes a major challenge for the entire city, its dwellers and visitors, both in terms of the deep economic transformation required to achieve net-zero emissions in line with the science, and the revamping of its adaptation and resilience capacities. To make matters worse, the entire Costa del Sol region has been subjected to chaotic urbanisation, rendering it prone to flooding due to torrential rains and sea level rise. Concerning mitigation, as depicted in the Malaga Climate Action Plan 2050, emissions are still rising, driven by a spread-out city structure, and a growth-centred, globalized economic model, especially in relation to mass tourism.

Guided tours on climate awareness

The local NGO Climate Journey offers guided itineraries (tours, gymkhanas and other educational and recreational activities) across cities, towns and territories, around the topic of climate emergency, for participants to visualise the impacts, understand the causes and connections, and experience the solutions in terms of social mobilisation, democracy, critical thinking, regenerative cultures, arts, local wellbeing economies, and nature-based solutions. Guided tours hold great potential for impact as they will inspire thousands of people (youth, residents, tourists, and companies) to act on the climate emergency, both as citizens (residents and visitors) by joining the growing Climate Justice Movement, and professionals (participating in their local economies), by providing them with tangible success stories and transformative trends, through a learning-by-doing experience (joining local initiatives).

Specifically, the climate journeys seek to inform about the interrelated effects, causes and solutions of the climate emergency; catalyse collective mobilisation for climate action and social justice; boost local economies that generate wellbeing, equity and sovereignty; promote sustainable and responsible tourism as a vehicle for social change; and lead by example through a cooperative philosophy within a local sharing economy.

Since the project's launch in November 2019, eight tours have run in Malaga: four free tours (open to everyone) and four private ones for the University of Malaga, participants of a Erasmus Plus project (European youth), the Red Cross International, and the Regional Council of Lapland – Finland; accounting for 101 people from 20+ countries.

Lessons learnt

As intended, going by the feedback collected, participants have begun connecting the dots between impacts, causes and solutions to the climate crisis; bringing it down to concrete, close and immediate issues around their own lives; understanding the positive impacts a paradigm shift would have on health, wellbeing and equity at the local level in particular; and fundamentally engaging in local, collective and transformative action.

Also, thanks to Malaga's 'local sharing economy' vision, the city is contributing both with revenue and visibility to boosting its collaborators' projects, such as urban gardens, neighbourhood associations, social & cultural centres, and responsible eco-shops.

Locally, it has become important to diversify beneficiaries and start working with schools, high schools and businesses. The portfolio of itineraries will be expanded both in Malaga and its rural surroundings. In a more advanced stage the city would like to develop simulation and augmented reality technology to help with the visualisation of climate impacts and future projections.

Recommendations

- Climate awareness is raising rapidly, mostly on the impacts side, pushing many people to want to act. But the majority don't know how to engage in solutions within their capacities, so providing ways to contribute to local, collective, transformative action is key.
- The local community and all its key stakeholders need to be involved in both the design and implementation of the journeys from the very beginning, and also benefit from it both tangibly (% of revenue for local partners) and intangibly.
- Take time to involve all the key local stakeholders of the different areas of the city. It requires plenty of engagement and co-creation efforts, which takes time, but in the end it's all worthwhile when it becomes a genuine shared project with a city-wide mission.

Management

The Climate Journey began in Malaga, propelled by three complementary co-founders: Explora Malaga (responsible tourism), Futuros Locales/SIC4Change (local wellbeing economies), and Líbero (citizen participation and youth empowerment through environmental education). The plan is to expand to other cities through a collaborative network of independent local chapters. The Climate Journey is also supported by global partners such as IUCN, Local Futures, Sustainability Observatory, and the Nature-based Solutions Cluster.

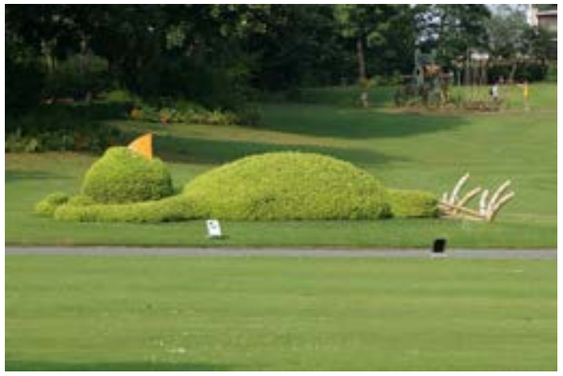
Budget

The project is self-financed via a balanced mix of revenue streams coming from a variety of direct beneficiaries/clients: residents, tourists, schools and academic institutions and companies. Public funds sometimes complete funding for certain activities, especially to reach schools with few resources.

Nantes, France

309,346 inhabitants

REEVE empowers green events



Local context

In 2013, Nantes became European Green Capital. Award-winning for its quality of life and its involvement in sustainable development, Nantes then began a sequence of six years of high points that allowed it to reinvent and progress in the eco-design of its events: Vélo City, the Climate Chance world summit, Green Week, the Nantes Métropole debate on energy transition and finally the 2019 European Capital of Innovation.

A sustainable events' network

Since 2012 the waste prevention and climate and sustainable development coordination departments of Nantes Métropole have offered support systems for around 30 events each year. A tailor-made support system called the '1001 eco-events' challenge focuses on an eco-responsible action plan with a focus on waste reduction and mobility. These support actions can take place over one, two or three editions to allow the events to become more autonomous. An 'eco-event competence path' has been created. In addition, an autonomous and sustainable structure, the 'eco-event network (REEVE)' association has emerged to amplify actions beyond the scope of Nantes Métropole's support services.

In 2020, after seven years of support, there are more than 150 accompanied events on the territory. A real change in practice is visible: reusable cups, waste sorting, but also the emergence of bicycles as a prioritised transport mode, ingredients served during parties, energy consumption etc. There are more and more public policies initiated or renewed in the Nantes conurbation area (which includes 24 municipalities) and beyond. The REEVE network has taken on a leadership role in the region with the support of regional funding. This has led to the creation of structuring tools such as the 'eco-committed event' label and a national study day for local authorities 'Responsible events territories'.

Some upcoming challenges for the network:

- Involve more and more organisers (eco-events are still a drop in the bucket of all kinds of events that can be held);
- Mobilise event sites, which have a primary influence on the impacts of events;
- Foster the creation of public policies in other territories
- Strengthen REEVE's ability to measure and synthesise the data created to activate the territory

Lessons learnt

The design of sustainable events has long been an adjustment variable in a sector that is already under pressure. It has been necessary to re-affirm the responsibility of the organisers for the ecological transition, and not only that of the local authorities.

Key figures: Seven annual meetings since 2013; 150 events have been supported by the programme over seven years; 250 participants in the eco-event skills trail in 2019; 100 REEVE members in 2019.

By 2030, the objectives are to reach 1001 committed events, apply the charter to all events and develop over 50 eco-responsible pieces of equipment and infrastructure.

Recommendations

- Each actor starts from a different level. It is therefore essential to propose a progressive and step-by-step course.
- Everyone must be allowed to take the plunge, the smallest events and organisations.
- It is also necessary to know how to reward the most involved.
- The pooling of ideas and materials is essential. Collective dynamics are efficient.
- You have to know how to link positive messages and binding rules.

Management

Elected officials and agents of Nantes Metropole and service providers of the support system, other local authorities (region, …), governance of REEVE (members, volunteers, etc.)

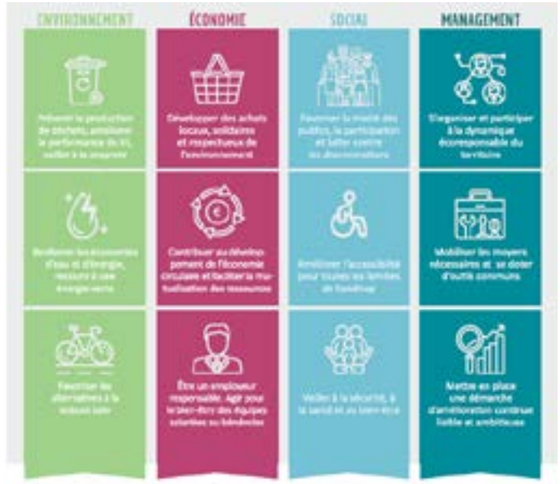
Budget

€500,000 by Nantes Metropole over five years

Rennes, France

215,366 inhabitants

Charter for a responsible local cultural policy



Local context

Rennes Métropole's cultural strategy asserts its willingness to take up ambitious measures and tackle concrete challenges of sustainable development in cultural policies. The adoption of the local plan for climate, air and energy has created the framework for a double ambition: A territory halving its carbon greenhouse gas emissions per capita by 2030 and the association of all actors to meet this challenge.

Eco-responsible cultural actors

The approach undertaken in 2017 by Rennes, shared and co-created with local stakeholders, has led to an eco-responsibility system that involves every actor of the cultural sector, whatever their nature: infrastructure overseer, event organiser, or local authority. The objectives are to preserve the resources and environmental quality of the territory, to promote a circular and responsible economy, and to strengthen solidarity within the local cultural ecosystem. The approach has been designed with a desire to combine high standards and dialogue, commitment and pragmatism, innovation and evaluation.

Based on a self-diagnosis that takes into account the various pillars of sustainable development (environment, economy, society and governance), the system allows the construction of a simple action plan, adapted to each local cultural actor and agreed with the local authority. The commitment should be progressive and long-term, with annual improvement objectives. The level of support from local authorities to the cultural actors of the territory will now take into account actions implemented and results obtained in terms of eco-responsibility.

The process had two successive phases from May 2017 to March 2018. The first phase focused on a review of the state of the art, collecting case studies and comparable experiences and performing a set of interviews and an inventory. The second phase served to define a shared operational action plan and develop practical tools to serve the system. The 2018/2019 season was a year of experimentation that allowed the city to adjust certain aspects of the system.

All local cultural actors applying for funding from the local authorities were called to commit to a minimum of three of the five proposed objectives:

- Contribute to lighter, carbon free mobility
- Reduce waste production, including food waste
- Pay attention to cleanliness and organise sorting of recyclable waste
- Buy responsibly
- Promote social and physical accessibility

To make this commitment a reality, local cultural actors had to check off a roadmap and attach it to their grant application. For the most advanced, they completed a self-diagnosis of 85 items classified in 12 categories and committed to an annual action plan and the production of a report.

Lessons learnt

The process was welcomed by the actors, and 250 participants took part in the annual exchange forum and other collective workshops to build up their expertise and learn from each other. In 2019, 23 venues and cultural events were at an advanced level already, with their self-diagnosis done and an action plan implemented. The objective for the coming years is to bring more venues, events and actors on board, including those active in the sport sector, and to touch upon more themes linked to sustainability and eco-responsibility (e.g. water, digital, circular economy).

Recommendations

- Involve local cultural actors: they have a responsibility and a role to play in favour of sustainable development, in particular in terms of prescriptions and behavioural changes.
- Don't let them do it on their own: Rennes organised stakeholders' consultation with six workshops throughout the process, mobilising equipment, cultural events and services of different local authorities. Local cultural actors were able to share their experience during an annual forum for exchange and thematic workshops four times a year.
- Financial support should include criteria linked to eco-responsibility of local cultural actors.

Management

Elected officials and agents of Rennes and Rennes Metropole and service providers of the support system, other local authorities (region, etc.)

Budget

Support service for the realisation of a diagnosis, the structuring of the approach and the tools by a design office: €27,000; support for expertise and support for actors: €6,000 per year; organisation of the annual forum and workshops: €5,000 per year; deployment of the approach, support for the actors (mainly on culture and sustainable development facilitation): 1/2 full-time equivalent employee.

Turin, Italy

875,000 inhabitants

Monitoring noises of nightlife and concerts

Local context

Recreational noise is one of the main issues for event sustainability. Major outdoor events are often accompanied by difficulties related to acoustic quality in cities: despite noise permits and noise monitoring, requests for a reduction of annoyance have always been an open issue.

In Turin this relates to areas such as streets, squares and terraces, where thousands of people meet during the evening and night, as well as to music concerts in parks and green areas surrounded by residential buildings, in particular with a lot of low-frequency noise (e.g. electronic music festival). Therefore, as part of MONICA EU, Turin focused on the San Salvario district, one of the hearts of the city's nightlife, and on FuturFestival, a multi-stage electronic music festival. MONICA is funded under the Horizon 2020 research programme of the European Union to develop an integrated solution of monitoring and reducing noise, increasing quality for spectators, residents and organisers.

Open-air nightlife and festivals

Movida means open-air nightlife, a recurrent and long-term part of the city's cultural life in which sources of noise are mostly people. Turin has chosen a data-driven approach for planning, communication, monitoring, and policy assessment. A long-term monitoring system couples technologies such as noise sensors and crowd monitoring sensors. Such data supported the Urban Space Hackathon, within the MONICA project, to design new business models which engage users of urban spaces for a better balance between amusement, safety and quality of public spaces.

With different city departments, using suggestions from citizens, Turin designed an action plan for noise reduction in social gathering places. Turin tested new monitoring protocols and developed communication campaigns in different areas, using strategies such as empathy or irony, fun and games through to street art performances, dance, costumes and whispered songs. Trying to avoid both commanding or paternalistic approaches, these methods suggest a quieter and gentler way to behave in public spaces, to avoid noise caused by unaware noisy behaviour.

Noise annoyance related to music festivals can be mitigated by optimising the performance of audio systems, in particular low frequencies emitted from the back of the stage. During the FuturFestival, priority was given to the reduction of the off-site noise levels, with special regard to low-frequency noise. An extensive assessment of state-of-art loudspeaker solutions looked for the best combination of stage location, setup and direction. The final setup was supported by environmental noise simulations, optimised on the basis of monitoring campaigns.

A continuous monitoring campaign, inside and outside the festival venue, using 10 IoT sound level meters, allowed real-time control of LeqA (usually used for environmental noise), LeqC (low frequencies) and spectra levels of each of the four stages and at the nearest dwellings in the four directions around the concert area. This real-time monitoring system at the sources (stages) and at receivers (dwellings) allowed full control of the event, and better management of noise permit rules. As a result, the city council updated the implementation rules of the Municipal Noise Act, introducing the real-time low frequencies dBC monitoring for all relevant music festival and concerts.

Lessons learnt

For nightlife districts, a data-driven approach can help the discussion between stakeholders, while communication through artistic performances creates good acceptance, with expected long-term positive impacts. Sustainability of nightlife and big events in cities is still an open issue, as overcrowding, waste and noise problems affect residents. The gap between the rhythm of events and the need of rest of families requires an integrated approach with an active role for entrepreneurs working in culture and leisure, as technologies and communication strategies are only a part of the solution.

Recommendations

- Joint monitoring (noise, crowd, video) can help the analysis of the open-air nightlife while real-time noise monitoring at source and at dwellings allows good noise management of events, also in multi-stage scenarios.
- Communication through empathy, art and fun is well accepted by nightlife users, but needs long-term projects and active involvement of local entrepreneurs.
- Active control systems for low frequencies (e.g.: end fire, gradient array) could reduce off-site noise impact of concerts and festivals.

Management

MONICA project noise implementations and deployments in Turin were supported by the 29 partners from nine countries of the consortium. In particular the city of Turin was deeply involved with its international affairs, local police and environmental departments together with Movement Entertainment Srl, a non-profit association based in Turin, whose business is the production of clever entertainment formats of digital arts and electronic music. The local development agency of San Salvario supported the dissemination regarding nightlife and a private company specialised in developing business models using new technology and communication supported the Urban Space Hackathon.

Budget

European funding support via the MONICA project (H2020 research and innovation programme), city budget supported the long-term monitoring network deployed by the Regional Environmental Protection Agency.

Vienna, Austria

1.9 million inhabitants

Kultur Token

Local context

Following an intense preparation phase by the team of the chief information officer of Vienna and the information and technology municipal department, Vienna's executive city councillor for cultural affairs officially launched the development of the world's first 'culture token' in spring 2019. The culture token is, in part, an art project. To reflect this, Vienna worked with the institution KÖR Kunst im Öffentlichen Raum (Public Art Vienna). The visual design of the smartphone app was by Viennese street artist Frau Isa who was appointed art director. Her design represents a crystal that is filled as you move and can be exchanged for tickets via four leaves that symbolise the four participating cultural institutions: Volkstheater, Wien Museum, Kunsthalle Wien and Wiener Konzerthaus.

From CO_2 emission to cultural experiences

This pilot project uses digital technology to reward environmentally friendly behaviour with free admission to cultural events. In exchange for actively reducing CO_2 emissions by walking, cycling or using public transport, users receive a virtual token that they can exchange for tickets to renowned cultural institutions. After the first evaluation process, more cultural partners will join the programme. Nine other cultural institutions have already announced their interest in participating.

The smartphone app uses motion tracking to measure the distances users travel in active travel modes and calculates their personal CO_2 balance (CO_2 saved by walking, cycling or using public transport compared to travelling the same distance by car). This allows users to collect tokens. Users get one token for each 20 kg of CO_2 saved. That usually takes two weeks. Each user can collect a maximum of five culture tokens. Then they have to use one before they can get any more.

Users need to provide their name and email address to sign up for the pilot app. By installing the app, test users give permission for the involved research institutions (WU Wien) to receive their data for use in a scientific evaluation study. At the end of the pilot project, all accounts will be deleted. The data collection is gamified using blockchain technology in a purely administrative process.

Lessons learnt

The culture token is an innovative way of linking climate-friendly mobility in the city with selected cultural events. The culture token app connects travelling and strolling through the city with cultural experiences, exemplifying digital humanism. Together with the University of Vienna, TU Wien, the Institute for Advanced Studies (IHS) and the University of Konstanz, as well as a legal working group, the team of WU Wien addresses questions regarding the security, legal considerations, and other aspects of the cultural token. A core question of the research project is how digital technology can be used while preserving privacy. After the test phase, the scientific reports will be used to make decisions about developing the app further and making it available to more users and cultural institutions.

Recommendations

Starting in February 2019, the culture token was tested in a closed beta test community. After passing a thorough evaluation process, the app will be made available to the public in autumn 2020 with more cultural partners.

The Research Institute for Cryptoeconomics of the Vienna University of Economics and Business (WU Wien) has been involved from the beginning to provide scientific support and evaluate the pilot project.

The city's administrative group for the environment is also involved in the project. For a certain number of tokens collected, an additional tree will be planted during the annual reforestation event for families.

Management

The City of Vienna: Administrative Group Culture and Science, CIO of the City of Vienna, MA 01 – Information Technology, Upstream Mobility, and KÖR. In cooperation with: Research Institute for Cryptoeconomics / WU Wien, Dr Raoul Hoffer (BINDER GRÖSSWANG Rechtsanwälte GmbH), Changers.com (Berlin), University of Konstanz (external evaluation), Frau Isa, Wien Museum, Kunsthalle Wien, Volkstheater, and Wiener Konzerthaus.

Budget

The project is funded from the digitalisation and innovation budget of the City of Vienna.

6

Checklists

Governance Checklist:

- Ensure you have a clear ambition (e.g. all events on public land to use reusable cups by 2021, events to measure and report their carbon footprint by 2021, events to be carbon neutral by 2030). Understand what that ambition means in practice and the resources required to get there (e.g. time, financial, expertise), including how you will monitor and report against progress.
- Understand city environmental policies and targets, and how they link to and can be translated to events – for example, on emissions reductions or citizen engagement. Use city targets to set targets for your events.
- Engage stakeholders in your environmental aims and objectives through working groups, digital communications, and other consultation activities.
- Develop an action plan to deliver your environmental ambitions ensuring it covers all key impact areas.
- Assign roles and responsibilities, outlining what needs to be achieved, how, and at what stage of the event planning. Create budgets and/or time resources where necessary.
- Organise regular reviews throughout planning and delivery to assess progress against aims and objectives.

Energy Management Checklist:

- Engage the power contractor early on and engage end-users to plan and understand event energy requirements, estimate how much power will be needed where and when, and ensure power provision is matched to actual requirements.
- Centrally control supply rather than allowing individuals (traders, concessions) to source their own.
- Use the 'power management hierarchy' to reduce energy and diesel use[1]:
    - Prevent/avoid: do you actually need power in this location or for this application?
    - Efficiency: use less and more efficiently. For example, use energy efficient equipment (like LED site and stage lighting) and optimise generator use.
    - Sourcing: shift away from diesel generators where possible, in order:
        1. Assess whether it is possible to plug into a mains electricity supply at the outdoor event site, how much mains grid power is available, and what kind of tariff it is on (e.g. is it generated by renewable sources)? Note: urban events which require local mains connections may need permits and evidence which ensures the event will remain within the capacity of the local grid.
        2. Use renewable energy where possible – e.g. mobile solar power
        3. Integrate battery technology into the system to reduce fuel use where possible.
        4. Use alternative fuels – such as HVO (hydrotreated vegetable oil) – following best practice on sustainable sourcing
- Monitor and analyse energy use through contractual agreements with power companies and use this data to set reduction targets and engage stakeholders.
- Use on-site renewable energy micro-generation installations to engage the public

Waste Management Checklist:

- Go through the different areas of your event and identify any opportunities to avoid waste, for example, by banning promotional give-aways (this might include merchandise that is labelled as 'eco-friendly': most people don't need another cotton bag!) and reducing the amount of printed promotional material and banners.
- Avoid purchasing new items: try hiring, reusing from previous events or sharing resources with other events organisers.
- Introduce reusable cups at bars. Unbranded cups that can be collected and reused at other events are preferred. Introduce reusable/washable serve-ware for food where possible.
- Avoid drinks served or sold in single-use packaging wherever possible if they can be served in reusable cups instead. For example, instead of serving soft drinks in aluminium cans or plastic bottles, equip bars with post-mix dispensers and serve in reusable cups.
- Find out what materials can be recycled by waste management facilities in the local area, or with your chosen waste management contractor. As far as is possible, try to match the materials bought and used by the event to what can be composted, recycled, and otherwise processed locally.
- Provide a checklist of preferred and banned materials and information about the recycling systems in place to traders and other key partners likely to generate waste (also ask them about what kinds and amounts of waste they expect to create from their operations so you can plan ahead).
- Ban certain kinds of single-use products, such as individually wrapped servings of salt/sugar/condiments (provide bulk dispensers instead), or plastic straws (ensure alternatives or a limited number are available on request for those who require them for accessibility reasons).
- If reusable is not possible, use disposable serve-ware that is compostable, or made from renewable sources or recycled plastic (r-PET) – but check first with waste management contractors that they can handle a specific material stream. You may want to create an approved supplier or product list for common items (like cups or food serveware) for food traders and other event partners.
- Have clearly labelled recycling bins for segregating waste streams (at least plastic bottles, cans and glass) and clear signage located frequently across the event site, or work with the city waste authority to make sure enough additional bins are in place for events taking place in public spaces across the city centre.
- Consider working with volunteers to help audiences use the correct bins, and use colour-coded and clear signs to let people know what can go in which bin – consider that international visitors may not be familiar with local waste management systems and practices!
- Provide specific recycling options 'back of house' for traders and contractors e.g. batteries, food waste, used cooking oils and fats. Include training on waste management and separation as part of crew and staff inductions, especially traders and bars.
- Provide accurate information about expected audience numbers to food traders to avoid food waste from over-supply.
- Organise collections of any surplus food from traders at the end of an event and donate to charities and food banks where possible.
- Ask suppliers/production designers to use hired, borrowed, reclaimed or recycled materials rather than buying new; and to design and build temporary structures, stands, and stages for reuse and recycling.
- Gather accurate data on your waste footprint through working with your waste contractor, production company or local authority. Understanding quantities and types of waste streams and how each one is currently treated will form an important first step to improving your waste management systems in future years.
- Work with the waste contractor to analyse waste samples to understand the make-up of waste from certain sources (e.g. bagged waste from traders). This will help you understand the potential for improving recycling rates and the materials you are dealing with.
- Don't forget about build and break periods (pre/post event) – production can also create significant amounts of waste. During this time, a lack of signage or training for employees and contractors can contribute to higher levels of general waste and ineffective segregation.
- Explore opportunities to make waste management a visible activity on site – for example, by separating materials in view of audiences, or organising activities to engage audiences with topics around materials, recycling, and the circular economy.

1 UK Events and Diesel Use (Hope Solutions, 2019) https://issuu.com/hopesolutionsservices/docs/uk_events_and_diesel_use_factsheet

Procurement Checklist

- Ask suppliers to share their environmental policies and credentials.
- Local suppliers may not be able to offer the most sustainable solutions on the market – however, you may be able to use your relationship with them to engage them in improving their environmental credentials in the longer term and help invest in a local green economy.
- Set minimum sourcing standards in different areas: for example, specify certifications or accreditations on how the product was grown (e.g. organic), harvested, processed/manufactured, considering social and environmental claims; human rights (e.g. Fairtrade); release of chemicals to the environment; forest sustainability (e.g. FSC certified).
- Give preference to hired, reused, reclaimed, and recycled materials and products.
- Beware of greenwashing! Ask follow-up questions to claims that are not specific or hard to verify: for example, what does 'sustainable' mean? Compostable in what conditions?

Food and Catering Procurement Checklist:

- Consider making your event menu and catering entirely vegetarian (or vegan!): the highest food-related greenhouse gas emissions come from animal products.
- You can also set a policy for the ratio of vegetarian to meat-based dishes to be provided by vendors – as a minimum, specify that traders must serve at least one vegetarian option.
- Avoid unseasonal produce, foods grown in greenhouses or air-freighted produce.
- Sourcing food as locally as possible will reduce emissions from food miles and boost the local economy (although note that food miles are less important than how food is grown when it comes to the carbon footprint of food – for example, food grown locally in a greenhouse may have a higher carbon footprint than the same produce grown in open fields but transported a longer distance!)
- Local, cultural, heritage foods will be appealing to visitors and tourists. Supporting heritage varieties of vegetable and fruit produce can also help support biodiversity and the resilience of global food systems.
- Support local initiatives and existing campaigns e.g. local cooperatives or grower's associations, permaculture projects, allotments and urban farms, food redistribution charities, etc.
- Consider making Marine Stewardship Council certified fish, Fairtrade, certified organic, RSPO-certified Palm Oil, and Rainforest Alliance Certified standards a requirement of food sold at your event.

Transport management checklist:

- Encourage audiences to use public transport: share clear information about stations, routes, and times, and provide incentives such as reduced event entry prices or free food/drink vouchers.
- Partner with public transport providers to offer free or reduced transport tickets, and (for larger events) expand capacity and/or running times to enable audiences to take public transport
- Make cycling or walking to the event as stress-free and attractive as possible e.g. share information on local cycling routes, provide access to secure cycle storage, organise group rides or walks, provide on-site cycle maintenance services or workshops.
- Limit car travel and encourage car sharing e.g. if possible, reduce the availability of parking spaces, use a lift-share platform for people to find others to carpool with, and make parking more expensive.
- Create a transport plan by mapping the areas where contractors, goods or equipment are coming from or going to, ask contractors whether they can share loads, and ask them about their own investments and practices (e.g. fuel-efficient driver training, electric vehicles, etc)
- Look for equipment, production materials and food that can be hired or bought locally to minimise transport delivery distances.
- Collect qualitative and quantitative data on audience travel to improve your event travel plan year on year. For example, ask people where they travelled from, how they travelled, what would help them to use public transport.
- For events that need on-site transport, consider electric vehicles (or even bicycles!)
- Consider prioritising booking local artists or those that can travel by train. Financially, consider increasing the artist travel budget to allow for train over air travel.
- Offsetting should be a last resort not a solution. Consider including an offsetting agreement in artist's contracts, or enabling audiences to make a donation to an environmental cause on the ticket booking page to account for their travel.

Water management checklist:

Water conservation:

- Increase water efficiency through using water saving devices on taps, showers etc.
- Regularly check water systems for leaks.
- Capture, treat and reuse grey water (relatively clean water from washing, showers etc) for non-contact purposes or collect rainwater using tanks.
- Use waterless toilets and urinals (e.g. compost toilets).
- Provide hand sanitiser (natural and alcohol free).
- Don't allow hoses for cleaning or catering, instead have central water points that require physical transport of water to discourage excessive usage.
- Use a non-hazardous, organic dust settling agent to reduce the amount of water used.

Biodiversity and Ecology Checklist:

- Avoid holding events close to or in high value habitats or areas of conservation concern.
- Employ an ecologist to assess trees, hedges and buildings for presence of bats or nesting birds designing the event to avoid impacts on any high value habitats.
- Design lighting to avoid light spill or excessive/unnecessary lighting that can disturb wildlife.
- Consider fencing off areas or controlling pedestrian flow to prevent overcrowding or damage to sensitive areas.
- Find out what wildlife is using the area and engage audiences and visitors in your local ecology, consider partnerships with local wildlife charities to aid engagement.
- Create habitats such as invertebrate homes, bird or bat boxes, involving audiences.
- Consider growing food on site as part of larger sustainable food initiative or city policy.
- Consider longer term plans for the green space/land used, especially where an event may take place on a regular or repeat basis; look for areas you could plant pollinator friendly plants which would improve the aesthetics and wildlife value of the site, this could include small spaces such as window boxes, verges or rooftops.
- Consider site connectivity, are there biodiverse areas nearby and if so, how might wildlife be using the surrounding areas or green spaces? Is there potential to increase connectivity or enhance connecting areas perhaps aligning to the city's biodiversity or environment plan.

Noise management checklist:

- Create a noise management plan detailing the type of music, the type and size of event and duration. Collaborate with venues and festivals (and the night sector for what concerns nightlife).
- Determine the local decibel limits for the nearest offices and residential buildings and adapt the design and noise levels of your event accordingly.
- Consider contracting a consultant and adopting a modelling software which can map noise prediction taking into account your sound system and the topography of the local area. This can help to plan the location and angle of stages.
- For large events consider investing in a Sound Management Tool to be used on-site during your event. These can allow event organisers to monitor multiple sources of noise, reach the limits of amplitude without compromising sound quality or breaching legislation through close real time monitoring and controlling different frequencies of sound.
- Be prepared for environmental factors such as cloud over or strong winds which may cause sound to travel further or interfere with the audience's ability to enjoy live music.
- Green spaces can provide a less disruptive location for loud events with live music where sound can be buffered by green infrastructure.
- Adapting the location of speakers can also help to modify the amount of sound escaping, or using sound absorption and anti-vibration materials below or above stages.

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ROCK

EUROCITIES

Julie's Bicycle

CREATIVE • CLIMATE • ACTION