



# Julie's Bicycle Practical Guide:

## Productions and Exhibitions



The arts and creative industries are ideally placed to lead on environmental sustainability; with creativity and inspiration they can champion a greener economy, energy efficiency, challenge our reliance on fossil fuels, make creative use of otherwise wasted materials and open new ways to greener production and living.

Productions and Exhibitions: Version 2014

# Julie's Bicycle Practical Guide: Productions and Exhibitions

## What this guide will cover

This guide is designed to help arts organisations and artists reduce the environmental impact of productions, performances and exhibitions.

It covers the key delivery stages of your production, mapping out sustainable actions you can take from conception to take down, covering design, construction, furniture, props, lighting and sound.

## Who is this guide for?

This guide is for anyone involved in producing or designing shows, exhibitions, festivals and other cultural work; especially production/installation managers, designers, curators and makers.

## What this guide will not cover

This guide will not go into extensive detail on the practicalities of touring a production or exhibition. For more in-depth information on sustainable design for touring, see the Julie's Bicycle Practical Guide on Touring.

Further artform-specific information, case studies, and support can be found on the Julie's Bicycle website: [www.juliesbicycle.com](http://www.juliesbicycle.com)

## Creating the Conditions for Change

There are four key stages to taking action on environmental sustainability:



- **Commit:** put in place the structures, resources, policies and responsibilities necessary to support and action your initiatives.
- **Understand:** understand your impacts and establish systems to measure and monitor them continually.
- **Improve:** implement an action plan to reduce your environmental impact.
- **Communicate:** involve your team, suppliers and audiences; share and exchange knowledge with others.

Your key ingredients are: **knowledge; skills; time and enthusiastic people.**

Your success at integrating environmental sustainability into your workplace is often dependant on the internal culture of your organisation and the resources available to you.

Without people buy-in, you will at best limit, and at worst fail, to achieve your goals. It's important that the whole organisation should be involved in the process; this is an opportunity to test new ideas, build support and use existing experience.

And finally, some dedicated, even if modest, budget is also helpful!

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## Introduction

Every production, performance and exhibition requires forward planning and decision-making. This is where you will build the infrastructure of your production, and make decisions based on artistic and financial criteria. Integrating environmental awareness into these decisions is a powerful tool to influence positive change from the get-go and great for involving all team members and collaborators in the process.

We need to continue to demand sustainable options. The bigger the demand for environmentally conscious products and services, the bigger the market for these will grow, resulting in more options and potentially reduced costs.

Yes, some sustainable choices can cost more. However, through applying green design principles and following the rules of salvaging, recycling and then purchasing, you will be able to balance out your savings elsewhere. In some cases, savings have actually been significant enough to pay for additional creative and crew salaries.

Who wouldn't prefer to pay for people rather than stuff?

# How to Sustainably Manage a Production or Exhibition

## Key Areas of Impact



Identify your key areas of impact across the production/performance/exhibition:

Energy	Sound, lighting and AV equipment; appliances; automation; venue/site power
Materials	Staging; sets; costumes, drapes, props and decor; treatments and coatings; marketing materials
Waste	Production/exhibition waste; general and food waste
Transport	Freight; personnel; couriers and deliveries; touring

Consider sustainability from the beginning, roughly 80% of a production's environmental impact is locked in by the decisions you make at this stage. So, with each decision you make, ask yourself:

- Which environmental impacts are affected by this decision?
- How can I reduce the amount of resources (energy, materials, and transport) I use?
- How can I maximise opportunities to reduce, reuse, repurpose and recycle? This includes sourcing second-hand, or working with teams and collaborators who have materials in storage that can be used.
- Where can I get sustainably sourced resources if I have to buy new?
- What sustainable alternatives exist for any finite, man-made, or hard-to-recycle resources that I want to use?
- How far will materials have to travel?
- Where will materials go after I've used them and what waste will I create?

## Design Principles



Look at existing materials and resources as untapped potential. Think creatively; how might items be used differently?

- How can I design for easy dismantling and material separation, to aid recycling?
- How can I design for efficiency? For example, if a show is going on tour, how can it be designed to fit into the smallest transport mode possible?
- How can I design for reuse and effective storage?

If you are designing a production or exhibition for tour, arrange for only essentials to travel with you, and everything else to be provided for you at each venue.

See the [Julie's Bicycle Practical Guide on Touring](http://www.juliesbicycle.com/resources/touring-guide) for more in-depth information on sustainable design for touring: [www.juliesbicycle.com/resources/touring-guide](http://www.juliesbicycle.com/resources/touring-guide)

## Define Your Aims and Involve Your Stakeholders



Draw up a clear plan of what you want to achieve and how you will do so, and how you will track progress:

- Develop an environmental statement for your work and share with key stakeholders.
- Set targets for the environmental impacts you'd like to reduce in each area. For example, using only recycled steel and reducing transport emissions by 50%.
- Set a carbon budget for the project.
- Allocate time to research, test and identify sustainable products and processes.
- Collect your data and then use the Julie's Bicycle Creative IG Tool for Production to understand what the carbon emissions of your work will be, and prioritise areas for improvement.
- Put in place processes to monitor and track your environmental impacts. For example, track delivery distances and vehicle types to measure transport emissions via the Creative IG Tools later.
- Make environmental sustainability a standing agenda item for all project meetings.
- Build green clauses into contracts and riders when contracting staff, artists and crew, and when liaising with venues. Use the Julie's Bicycle Green Rider template: <http://www.juliesbicycle.com/resources/green-rider>
- Talk to the building or site manager about how you can reduce energy use. For outdoor events, talk to suppliers about renewable energy solutions. Consider experimenting with solar, wind, or even cycle power.

### HighWaterLine, Bristol:

HighWaterLine was brought to Bristol in September 2014 as public intervention artwork created with flood-risk communities of the city. Invisible Dust and Creative Catalysts presented it. The aim was to spark conversations and action towards resilience to flooding and sea-level rise in the city. On 9th-21st September 2014 people from across Bristol used a sports-pitch marker to demarcate the flood-zones where they live. They created the line in their own neighbourhoods or community spaces and then passed the marker to the next neighbourhood, creating a chalk-line approximately 32 miles long. The idea is to chance to connect and share ideas and experiences with each other, surrounding the issues of flooding and sea-level rise. Since December 2013, the project has brought together people from across Bristol, with different backgrounds, ideas, and local experience to learn which changes need to happen, and what tools they already have for resilience.

[bristol.highwaterline.org](http://bristol.highwaterline.org)

## Sustainable Design: Peter and The Starcatcher

Donyale Werle is a set designer based in New York. She led the set design team for Peter and The Starcatcher at the New York Theatre Workshop (then transferred to the Brooks Atkinson Theatre on Broadway). The design team attempted to use reclaimed and recycled materials as much as possible, from a variety of interesting sources. When it was necessary to buy new, they tried to do so from ethical sources. In terms of disposal, Donyale's project partners, Paper Mâché Monkey, aimed to send as little waste to landfill as possible. Even the sawdust that was created in the studio made its way into the set, and once the production was over remained key to them that the recycling loop remains closed. This project also overcame the idea that sustainability costs: Peter and the Starcatcher, saved an estimated £22,623.23 by not buying materials new. Labour costs did rise, but the production still made a significant saving.

[www.juliesbicycle.com/latest/case-studies-sustainable-design-peter-and-the-starcatcher](http://www.juliesbicycle.com/latest/case-studies-sustainable-design-peter-and-the-starcatcher)

## After Miss Julie: Production Reductions

After Miss Julie was the first of the Young Vic's Classics for a New Climate productions - a series designed to investigate approaches to making more ecologically sustainable theatre. Post-production analysis showed that After Miss Julie achieved a 34% reduction in relative energy emissions per audience member, and a reduction of 68% in transport emissions, producing in an overall reduction of 38% towards their target 60%. The marketing department also achieved an overall 99% reduction in absolute emissions from paper use compared to previous shows in the Maria auditorium. Productions in the Maria sometimes build back walls or other set elements, but After Miss Julie's designer avoided that and simply painted the studio's wall. The set was completed by the kitchen furniture props, which were sourced second hand, while the floor, and stairs were reused from a previous production. The only set element created from scratch was a large table and bench made from reclaimed scaffolding timbers. Production materials were estimated to be 5% of the carbon footprint of a theatre in the Green Theatre Guide (2008) and in After Miss Julie's case they were minimised to almost nothing through designing out and reusing set elements.

[www.juliesbicycle.com/latest/case-studies/after-miss-julie-at-the-young-vic](http://www.juliesbicycle.com/latest/case-studies/after-miss-julie-at-the-young-vic)

## Sustainability from Start to Finish



Think about the life cycle of your materials. Ideally, you want to know what will happen to your sets, costumes, props etc. as this has a significant impact on the overall sustainability of your production.

Make a waste management plan to make sure as little goes to landfill as possible at the end of the production:

- Liaise with the building or event manager to find out about the available recycling facilities at the venue.
- Look for local suppliers that can recycle 100% (or as close to this as possible) of your production waste.
- Research local recycling centres, charity shops, freecycle networks, schools, or community groups you can donate any materials or props to.
- Look for Community Repaint or paint donation schemes in the area.
- Contract a supplier to safely dispose of any toxic chemicals (e.g. acetone, methylated spirits, etc.).
- Factor in any potential time required to dismantle sets etc. back into component parts.

## Sydney Theatre Company, Greening the Wharf:

The STC's sustainability programme, Greening the Wharf, has enabled them to explore and implement best practice for environmentally sound production, and research everything from the latest LED lighting technology to sustainably sourced timber available to Australian theatre companies. They have developed a comprehensive Green Production Policy, which can be seen along with other resources documenting their learning online:

[greeningthewarf.com/projects/theatre-production](http://greeningthewarf.com/projects/theatre-production)

## Working with Suppliers



Choose suppliers and productions with good environmental credentials.

- Create a procurement policy outlining the 'must have' credentials from your suppliers. For example, to favour local business or only use sustainably sourced products.
- Ask new suppliers to show you their environmental policy, if they have one.
- Include environmental criteria in tenders and contracts.

- Talk to your existing suppliers about what green services and products they can offer.
- Combine hires and product deliveries to minimise transport.

For more detail, see the Julie's Bicycle Practical Guide on Procurement: [www.juliesbicycle.com/resources/procurement-guide](http://www.juliesbicycle.com/resources/procurement-guide)

## Greener Working Practices



Work with everyone on site to make the day-to-day practices of your production as sustainable as possible:

- Communicate locations of recycling bins and what can/cannot be recycled.
- Encourage the use of reusable drinking bottles and/or mugs (and make sure there's filtered water available to refill them!).
- Provide reusable plates and mugs for staff and crew.
- Implement a switch-off policy for all lights, heating/cooling, equipment etc. that's not in use.

For more detail, see the [Julie's Bicycle Practical Guide on Greening the Office](#).

Work with your marketing and PR team to find ways to communicate your actions to audiences and others who might be interested, including funders:

- Document sustainability initiatives as you go along, through photos, videos, testimonials and statistics.
- Display information on your environmental sustainability initiatives front of house, in the programme, and/or digitally on your website.
- Tell audiences how they can help green your show through communications leading up to their visit, such as using public transport, car pooling or cycling to the venue.
- Explore paperless ticketing options, such as reusable tokens or electronic tickets. For more detail, see the [Julie's Bicycle Practical Guides on Marketing and Communications and Audience Travel](#).

### Dave Matthews Band, Water on Tour:

Dave Matthews Band reportedly saved approximately £5,769 in a single tour just by using fewer (or no) plastic water bottles for the band and crew.

[davematthewsband.com](http://davematthewsband.com)

### Empowering Audiences: Cheese

Working with pedal-power specialists Magnificent Revolution, theatre company fanSHEN customised four gym machines to generate energy to power their production of Cheese (September 2013). The machines were placed in London gyms not far from the performance venue in Oxford Circus, and were linked to a battery which stored energy as people used the machines to get fit. Each night, the batteries were transported to the performance venue and used to power the show. Each person contributing to the energy generation process was able to measure their workout in terms of household energy usage, for example, "You've now generated enough electricity to have boiled a kettle for two cups of tea," and got discount on their ticket to see Cheese, depending on how much power they pedalled. fanSHEN documented the whole process of customising the machines, developing the show and researching resources available for making their work more sustainable via a dedicated blog, [pedallingpower.wordpress.com](http://pedallingpower.wordpress.com), and organised three post show talks focusing on environmental themes relevant to the show and their energy generation experiment.

[fanshen.org.uk/current/cheese](http://fanshen.org.uk/current/cheese)

### The Lyric Hammersmith: Bottled Water

The Lyric Hammersmith is fully committed to reducing its impact on the environment. "We provide all actors and staff with a re-usable Lyric water bottle and encourage them to use these as an eco-friendly alternative to buying water. Did you know it takes seven litres of water to produce a one litre bottle? This links to another important element, which is communicating about our green campaign. We send monthly updates on things like our paper usage, energy consumption and recycled waste. It is important to keep these considerations at the forefront of everyone's thoughts to get everyone to think green and change their habits. We also tweet about green issues regularly, with lots of pictures, so our audiences know how committed we are."

Kim Grant, Green Champion, Lyric Hammersmith

[www.lyric.co.uk](http://www.lyric.co.uk)

## Specific Production Areas

### Construction of Sets, Exhibition Walls, etc.



- If you are using an external workshop, ask for their environmental policy and share your environmental objectives.
- Build resourcefulness into your design brief to enable easier local sourcing, reuse, and repurposing, for sets, exhibition walls, stages etc.
- Construct sets, walls, and displays that can be easily dismantled, recycled or repurposed afterwards.
- Use glue and nails sparingly (as they make disassembly more difficult).
- Avoid hard-to-recycle materials like plastics, polystyrene and PVC.
- Experiment with sustainable materials.
- Reuse metals, or use metals made of at least 75% recycled content.
- Choose timber over metal where possible (unless using recycled metals).
- Always use FSC certified timber with a proven chain of custody.
- Avoid lauan or tropical hardwood/plywood and explore alternatives. If you must use it, ensure that your supplier can provide you with a chain of custody that proves the timber is sourced from sustainably managed forests.
- Avoid timber products such as MDF that are treated with a high content of toxic chemicals, such as formaldehyde.
- Use unfinished materials or try to use natural, low-toxicity alternatives to treatments. For example, use natural varnishes and lacquers, raw oils like linseed, wax made from natural sources (petroleum free), and PVA adhesives.
- Use non-toxic and water based paints with low levels of volatile organic compounds (VOCs).
- Use a painting wash up unit that separates out the wastewater into paint waste and reusable washing water.
- Keep track of the materials and amounts you use (particularly timber and steel) so that you can measure the environmental impacts of your set using the Julie's Bicycle Creative IG Tool for Production.

### BALTIC

BALTIC, Newcastle has written a specific policy document for creating a sustainable exhibition. Within this, they addressed their exhibition build, where they have developed a system of re-useable wall panels, design exhibitions with minimal construction, re-use wood and steel where possible and procure FSC certified wood. In the case of transporting artworks; they manage the geography of exhibitions intelligently so that objects are not transported needlessly, consolidate shipments, re-use crates and choose sea or rail freight options over airfreight where possible.

[www.balticmill.com](http://www.balticmill.com)



## Action Space

ActionSpace is an independent arts charity based in London. ActionSpace supports the development of artists with learning disabilities in a professional studio environment and creates innovative projects for people with learning disabilities to engage with the visual arts. Action Space is a member of the Work and Play Scrapstore in Tooting. This enables them to source and exchange unused materials with other organisations. The Scrapstore provides ActionSpace with access to a wide variety of high quality art materials that might otherwise be thrown away. They also have an eclectic range of recycled materials that has inspired ActionSpace artists to create innovative, cutting edge artwork that has been shown in exhibitions around the UK.

[www.actionspace.org](http://www.actionspace.org)

## Pentabus Theatre

Pentabus Theatres' artistic approach to environmental sustainability began with their Village Hall production of 'For Once' in 2013 when the artistic director encouraged the artistic team to make use of their existing stores. They made partnerships with organisations such as the Shropshire Furniture scheme to borrow props for the show, which were returned to the scheme after the tour ended. With their 2014 touring production of Each Slow Dusk by Rory Mullarkey, the entire set apart from the purchase of one antique stool has been recycled. The floor has been cut up and repurposed from another theatre floor from our previous production of Blue Sky by Clare Bayley, the back cloth re-sewn from a previous and much loved show entitled Tales of the Country, where it was a tent. The prop ladder, WWI helmets and items of the costume were from our prop store, with other costumes sent on loan from a Bristol costume firm. The innovative and contemporary set design by Ellan Parry also includes lighting stands that are part of the set, these have been made from scaff poles that were in our store, cut to size and aged with paint. This environmental approach sets a creative challenge for designers and helps them reimagine what they already have in their stores.

[www.pentabus.co.uk](http://www.pentabus.co.uk)

## Cell Project Space

Cell Project Space has found a method of fixing plasterboard sheeting onto timber stud wall frames, so that walls can be dismantled with minimum damage enabling 70% of the material to be reused. The gallery invests in purchasing high quality specification screws at a 25% cost increase. The durability of the product enables them to be reused repeatedly.

[cellprojects.org](http://cellprojects.org)

## Working With Fabrics, Costumes, Drapery, Etc.



- Build a degree of flexibility into your design brief to enable easier local sourcing, reuse and repurposing for costumes and drapes.
- Prioritise alternatives to making costumes from scratch – there is an incredible pre-existing stock of costumes, clothing, off-cuts and fabrics available in storehouses, hire shops, charity shops, etc. that can be reused or repurposed. Also check what you have stored in-house.
- When buying new fabric, look for certified organic textiles with a majority percentage of organic content.
- Purchase fabrics that will be suitable for machine-washing to reduce the need for dry cleaning.
- Buy fabric manufactured and located as close to you as possible to reduce transport emissions.
- Look for greener alternatives to plastic and metal accessories, e.g. coconut shell buttons.
- Avoid using toxic dyes and fabric paints – use natural dyes where possible.
- Use environmentally conscious suppliers who are committed to improving the sustainability of their production and operational processes, and the welfare of workers across their supply chain. Ask to see their environmental policy if it's not on their website, and look out for certifications like GOTS, GRS and OEKO-TEX® Standard 1,000. See the Julie's Bicycle Practical Guide on Procurement for more information.
- Launder clothes, drapes and other material at 30°C to save energy.
- Use a detergent with the AISE sustainable cleaning charter logo or EU Ecolabel.
- Drip dry material and avoid using tumble dryers.
- For dry clean only fabric, use alternatives like hand washing or steam cleaning, or find a dry cleaner that uses lower impact methods such as wet cleaning and CO2 solvents, or any other methods that avoid the chemical Perchloroethylene (PERC), which is hazardous to health and the environment.
- Don't throw unneeded hangers into the general waste. If they're broken see if they can be repurposed.
- If they're undamaged and you no longer need them, donate them a local charity shop.

## Community RePaint

Community RePaint schemes collect reusable, leftover paint and re-distribute it to individuals, families, communities and charities in need across the UK, in partnerships with a variety of organisations such as local councils and refuse centres. In 2012 the Community RePaint network collected 387,495 litres of paint donated by both householders and businesses that would otherwise have gone to waste, and redistributed over 218,000 of those litres at a fraction of the cost of new paint. The scheme is managed by environmental consultancy, Resource Futures.

[www.communityrepaint.org.uk](http://www.communityrepaint.org.uk)

## Furniture, Objects, Props, etc.



- Look for furniture, objects, props, etc. that can be reused, repurposed or recycled from other places or bought second-hand. Possible sources include: the venue's own storage space, partner storage space, charity shops, reclamation centres, networks like Freecycle or eBay, and/or specialised arts/creative industries networks like Scenery Salvage ([www.scenerysalvage.com](http://www.scenerysalvage.com)), Set Exchange ([www.set-exchange.co.uk](http://www.set-exchange.co.uk)) or Drèsd ([www.dresd.co.uk](http://www.dresd.co.uk)).
- When making/building new furniture, objects, props etc., follow the guidelines for choosing sustainable materials in Sections 5 and 6 of this guide and try to use reclaimed, recycled or repurposed materials where possible.

**Scenery Salvage**, are based in Buckinghamshire. They use an alternative model of set storage, re-use and recycling for theatre and TV industries. These involve buying props from companies that no longer have a use for them, and re-sell them at reduced prices online. They also pick-up, store and recycle sets, which customers pay for per tonne of weight.

[www.scenerysalvage.com](http://www.scenerysalvage.com)

### Festive Road, Walking with Giants:

Now in its third year, the annual Walking with Giants was once again a huge success this year. Festive Road worked with many local partners, sought sponsor opportunities and delivered participatory activities like dance, music and making workshops to schools and communities in Milton Keynes, leading up to the large scale public parade on 20th July 2014. Walking with Giants was promoted to participants as a Green Carnival: walking, cycling or battery power only. The giants themselves were created out of recycled materials and there were no vehicles or generator-powered sounds. This was effective in that local event organisers (particularly in carnival) could envisage alternatives to flat bed trucks, generators and PAs.

Festive Road is very keen to promote Green Carnival and to use the Walking with Giants parade, creative workshops and street theatre to introduce themes like global citizenship, local responsibility, recycling and sustainability as well as create an example of good practice within the Carnival and Outdoor Arts sector.

[www.festiveroad.org](http://www.festiveroad.org)

## Lighting and Sound



Stage lighting is responsible, on average, for around 9% of a theatre venue's overall energy use, though for some venues this can be much higher. Concert halls and galleries have different lighting requirements, but the energy use is still high. For outdoor arts and unconventional, site-specific performances, lighting can be responsible for 19% of electricity consumption. There is therefore substantial potential to reduce both energy usage and carbon emissions associated with lighting, in particular for production companies that are not permanently venue-based and have more control over their lighting choices than they do over the energy efficiency of the buildings in which they perform or stage exhibitions.

- Choose tungsten over discharge lighting.
- Explore the creative potential of LEDs; for example for stage lighting design a mixed rig of LED and tungsten lamps, or a 100% LED rig depending on the effects you're trying to achieve.
- Set a power limit for your lighting rig or exhibition plan before it's designed, to encourage a more energy efficient design.
- Monitor the energy use from lighting and sound during set-up for a new show, concert or exhibition. Keep a track of peaks and troughs and analyse the causes. There are several monitoring options: work with the venue's technician/building manager to sub-meter the rig, or use cue-by-cue power calculation software such as FocusTrack. Identify which activities are using the most energy and discuss ideas for minimising them.
- Install easy controls for turning the power off (e.g. combine multiple fixtures on one switch), as the standby power of even LED fixtures can be considerable.
- Dim lights as much as possible.
- Conduct rehearsals under working lights where possible.
- For theatre/concerts, after the rig check, douse stage lighting until half an hour before the performance. A number of lighting manufacturers have confirmed that not only is it more energy efficient to switch stage lights off when they are not in use, but it is also better for a bulb's useful lifetime.
- Make sure all equipment is properly serviced and set up, and regularly clean the lenses of lights and polish reflectors.
- Recycle any blown bulbs or other electronic equipment. Most lighting suppliers will collect and recycle bulbs.
- Communicate to all technicians and suppliers that you want lighting and sound power demand to be minimised and equipment used efficiently in set-up and rehearsals.
- Establish a 'switch off' campaign to ensure lights and equipment are switched off when not in use. Do spot-checks to make sure it's being followed.
- Find out from your venue what in-house lighting stock and sound equipment is available, and use this in your designs instead of hiring extra equipment. This saves transport emissions. If you need to hire, find a local supplier and combine deliveries to reduce transport emissions.
- Ask your supplier about what low energy products they offer, and whether their business has an environmental policy for their business.
- Invest in fit-for-purpose LED fixtures for your house stock/space/gallery (if venue-based).
- Design the lighting rig or exhibition space to use the least amount of light fixtures possible to achieve the desired effect.
- Choose the lowest wattage light for the job you need it to achieve.



- File stage lighting gels for reuse on future productions/ events/concerts. Look for local schools or groups who may be able to reuse materials such as gels, practicals and even the back of large format lighting plans.
- Change to switch-mode amplifiers for your PA and switch from analogue to digital sound desks. Use low-wattage and energy efficient products.
- Make use of natural acoustics and use the most energy efficient equipment available to achieve the desired effect. The better the acoustic design, the clearer the sound and the less temptation there will be to add unnecessary speakers and/or crank up the volume.
- Use rechargeable batteries for all portable equipment wherever possible. Label all new rechargeable batteries with their start date, so that you know when to replace them.
- Create a routine for recharging batteries after each show/at the end of the working day.
- Make sure you know the correct charging cycle for your rechargeable batteries for radio mics and other portable equipment, and don't over-charge.
- Recycle batteries after use. Use a collection scheme like Battery Back.
- Use Velcro, bungee cords, fabric ties or other alternatives to PVC tape, which releases toxic chemicals into the environment during production.
- Keep up-to-date with emerging technologies in your area of productions that are more energy efficient more environmentally sustainable in other ways than what is currently the norm.

### Wicked at the Apollo Victoria Theatre:

The West End company of Wicked have been using rechargeable batteries since June 2011, inspired by the Broadway company of the same show who, with the help of the Broadway Green Alliance, have been using rechargeables since 2008 and achieving cost savings of over £2,600 a year. Wicked uses 32 battery cells per performance and the show runs twice a day for matinee and evening performances, so they have two full sets of batteries (64 cells in total) that are used alternately to allow time to fully recharge. A show with only one performance a day could recharge their batteries overnight and use just one set. To eliminate confusion, each set of battery cells is colour coded with a sticker - one red set and one yellow set - and each cell is marked with the date it went into operation to keep track of roughly how many charge cycles it has undergone. Cell age is an important factor in the performance of rechargeable batteries as most manufacturers will recommend that cells be renewed after a particular number of charge cycles and/or length of time. Until the end of August 2011, Wicked saved over 2,560 batteries by using rechargeables - financial savings of £500. The rechargeable system paid for itself within 15 weeks of use (around mid-September 2011).

[www.apollovictoriatheatre.org](http://www.apollovictoriatheatre.org)

### Festive Road

Festive Road have a policy of using recycled, reclaimed and sustainable materials as much as possible for the work they do. They have been involved in a number of projects dealing specifically with eco-learning and sustainability issues. One such project was 'Green Journey', developed with Ashcroft High School in Luton and supported by the UK Centre for Carnival Arts, as part of their 2011 Creative Partnerships programme. It sought to encourage students to participate as effective global citizens in their local community. Festive Road sourced a 'retired' London double-decker bus which students helped to transform into a 'Green Classroom'. This not only provided an alternative teaching space but also became a showcase for demonstrating work done on green technologies and renewable energy sources, including a wind turbine and cycle power generator that had been developed with the school's science department. They also worked with the art department to create a bicycle-powered entry to the Luton International Carnival using exclusively recycled materials. Another off-shoot of the project was the construction of a greenhouse fashioned from recycled plastic bottles, which Ashcroft students helped to construct in the garden of a neighbouring special needs school.

[www.festiveroad.org](http://www.festiveroad.org)

### Milk Presents:

For their 2012 show, A Real Man's Guide to Sainthood, Milk Presents worked with cycle power aficionado Adam Pride from the Veteran Cycle Club to build three sophisticated bicycle generators, which powered three overhead projectors used during the show. To keep their energy use down they chose to use acoustic live music instead of recorded sound.

[www.milkpresents.com](http://www.milkpresents.com)

LEDs can last up to 20 times longer than incandescent lighting, and use up to 85% less energy.

The much higher upfront cost of LEDs can make investment prohibitive despite the fact that they offer payback on energy bills in the long term if purchased as part of a venue's in-house stock. They can also save money in others ways (e.g. the labour involved in exchanging bulbs at height). Prices are dropping at a rate of about 20% per year, so they are becoming increasingly affordable.

## Monitor and Evaluate



Information is power – monitoring your energy use and the carbon emissions of the key materials you use over time can identify priorities for where savings can be made, or new ideas tested.

### Julie's Bicycle's Creative IG Tools

The Julie's Bicycle's Creative IG Tools are a unique suite of carbon calculation tools designed specifically for creative and cultural organisations to help you measure your carbon footprint. There is a Tool for Production, which allows you to see and compare your carbon impacts on a per-production basis as well as per m<sup>2</sup>; per staff member; and per £1,000 of budget.

The Creative IG Tool for Production covers impacts from: set design (types and quantities of timber and disposal, quantity of steel, etc.); and lighting, sound and effects (rehearsal and show rig energy consumption; sound system, automation, and projection wattage; etc.). It can also be used during the production planning stages to analyse the carbon implications of different types or quantities of materials, helping you make environmentally informed decisions about your production design.

If you're looking to take the production on the road, also check out the Creative IG Tool for Touring.

[www.juliesbicycle.com/industry-green/ig-tools](http://www.juliesbicycle.com/industry-green/ig-tools)

- Decide on some measurable indicators to establish a baseline and measure the success of your environmental initiatives. Use these to set targets for your production, and to compare your 'green' performance for different productions.
- There are several ways of monitoring the environmental impacts of your production, including the Julie's Bicycle Creative IG Tools (see above). Other useful tools include sub-meters; FocusTrack software for your lighting rig; and budget columns to track delivery distances, the sustainability credentials of materials and products purchased (i.e. whether it is new or recycled, or sourced in an environmentally sustainable way), and any other useful notes. Think about what will be most relevant and useful to you.
- Delegate responsibility for data collection to the most relevant team member.
- Keep records of your data for year-on-year comparisons.
- At the end of a production, have a team de-brief on environmental sustainability and evaluate key successes, what worked, what needs improvement, and good opportunities to build on.
- Document good practice and learning for future productions.
- Agree what you'll roll out for future productions and what new methods or processes you'd like to explore.
- Share any relevant feedback with all concerned stakeholders including artists, technicians, venues, workshops, suppliers, etc.
- Use the project's carbon footprint as a baseline against which to improve your next project.

## Further Reading & Resources



- [Julie's Bicycle Creative IG Tools](#)
- [Julie's Bicycle Benchmarks](#)
- [Julie's Bicycle Practical Guides](#)

The following guides would be useful to read alongside this:

- [Touring](#)
- [Procurement](#)
- [Communications and Marketing](#)
- [Team Engagement](#)
- [Audience Travel](#)
- [Greening the Office](#)

[FocusTrack](#)

[Scenery Salvage](#)

[Set-Exchange](#)

[Drèsd](#)

[Freecycle](#)

[Battery Back](#)

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# Julie's Bicycle

SUSTAINING CREATIVITY

## Julie's Bicycle

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