Green Music

Taking action on climate change

JULIE'S BICYCLE
TAKING THE HEAT OUT OF MUSIC

MAYOR OF LONDON

Greater London Authority
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1.Forewords
Boris Johnson, Mayor of London

Tackling climate change is one of the toughest challenges to our future development. But we can make a difference.

Reducing our carbon emissions is the surest way to prevent climate change, and I am committed to a 60 per cent reduction of London's carbon emissions from 1990 levels by 2025.

This plan will help the music industry to reach that target and avoid some of the potentially disastrous consequences of carrying on 'business as usual'. It provides practical actions for all aspects of the music industry, from venues to festivals, studios to merchandising.

The London music industry is estimated to contribute around 465,000 tonnes of carbon dioxide equivalent gases each year – which is equivalent to the energy use of all of the homes in Islington.

The scale of the challenge is large, but impressive leadership and innovative practices are already inspiring change. Leading performers such as KT Tunstall and Radiohead are setting an example by reducing the environmental impact of their tours, and using their influence to communicate with audiences.

At a time when many organisations are struggling to make ends meet, the environment might not be at the top of everyone's agenda. But as well as reducing emissions, several of the ideas in this plan – switching to greener equipment, reducing energy consumption, reusing materials – will, in the medium term, save you a considerable amount of money.

The changes we make do not have to be expensive or difficult to manage to have a huge impact on our purses as well as the planet.

Boris Johnson
Mayor of London

Jazz Summers, Chairman Julie's Bicycle

The problem with climate change is its scale: huge, complex, unwieldy, a problem that no single person, government or state can solve alone. Six billion people are busy contributing their pennyworth of CO_2, and global emissions are growing.

The music industry is small and our emissions the merest sliver on the global pie chart of CO_2 contributors. So it's easy to think that what we do won't really make a difference. But it does. In fact the music industry can make a difference disproportionate to its size, and we intend to.

In 2007 the then Mayor of London announced a 60 per cent London reduction target by 2025 and, despite a change in administration, that target remains. We, as an industry, are proud to sign up to it.

Green Music has been designed to take the size, complexity and clumsiness out of the problem and find straightforward solutions, which, together, will make the difference. Most parts of the industry can get involved by reading this guide and using it at work.

If we all did this, we could reduce our CO_2 by almost 60 per cent in line with London's overall ambitions.

Problem solved.

Jazz Summers
Chairman Julie's Bicycle

2.Context

The UK music industry is world class and its artists and entrepreneurs include some of the best creative talents in the world. London occupies a unique place both in the UK and internationally. Home of most of the music industry's institutions, London has been the chosen destination of artists and businesses for decades. Music plays a unique role in people's lives and has an enviable capacity to take a lead. In tackling climate change, Julie's Bicycle supports the Greater London Authority's (GLA) ambitious and inspiring **Climate Change Action Plan**, and is working with the Mayor of London to help make London one of the best cities in the global effort to reduce greenhouse gas emissions and promote sustainability.

Julie's Bicycle was established to help the UK music industry reduce its greenhouse gas (GHG) emissions and develop a business with sustainability at its heart. In 2008 the Environmental Change Institute, Oxford University, on behalf of Julies Bicycle, produced **First Step: UK Music Industry Greenhouse Gas Emissions 2007**, a pivotal report that scoped the carbon impacts of the UK music industry and provided recommendations for reductions[1]. This research found that the music industry is creating at least 540,000 tonnes (t) CO_2e a year and London contributes approximately 465,300 CO_2e of that total.

[1] C Bottrill, M Boycoff, G Lye, D Liverman. (2008) **First Step: UK Music Industry Greenhouse Gas Emissions 2007**. Environmental Change Institute, Oxford University, Oxford. www.juliesbicycle.com/publications; www.eci.ox.ac.uk/publications/2008.php

Why act now?

1. Play your part

Scientific consensus across the globe concedes that we urgently need to stabilise greenhouse gas emissions and that industrialised countries such as the UK have the greatest responsibility to act. While the London music industry is not a large contributor of emissions overall, it plays a substantial role in the cultural life of the city. The potential to influence public awareness and action means playing your part can have a significant impact.

2. Save money

Being more efficient with transport and energy – and even potentially generating your own energy – can save you money and strengthen a company in the face of volatile fuel prices and availability.

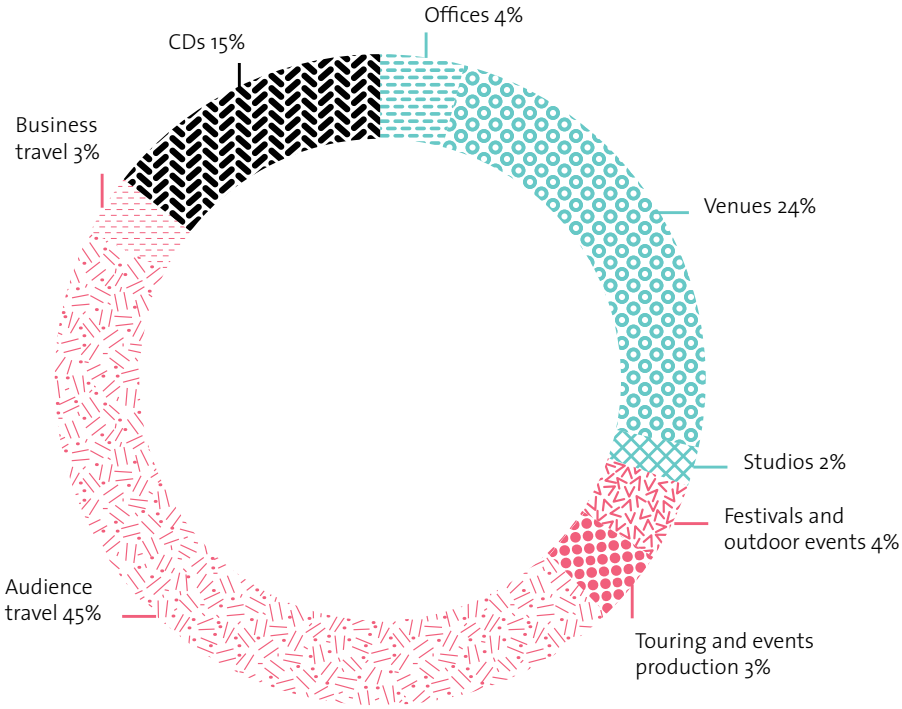
3. Stay ahead of regulation

Future legislation, taxes and trading schemes will inevitably drive the cost of carbon up. Staying ahead of legislation can allow you to exploit financial incentives, such as trading, and build in prudencies.

4. Gain competitive advantage

Companies that demonstrate climate responsibility can gain a competitive advantage with environmentally concerned clients, consumers and staff.

Figure 1: **London music industry's greenhouse gas emissions**[2]



[2] This report focuses on the major greenhouse gases (carbon dioxide (CO_2), methane (CH_4) and nitrous oxides (N_2O). Measurements of methane and nitrous oxides are converted to their equivalent global warming potential compared to carbon dioxide. For the science, methodology and assumptions behind these figures and the reductions described in figure 2, table 1 and table 2 please see the Science section of the **Further Information** document that accompanies the **Green Music** Guide - available for download at www.juliesbicycle.com/green-music-guide or www.london.gov.uk/mayor/publications/

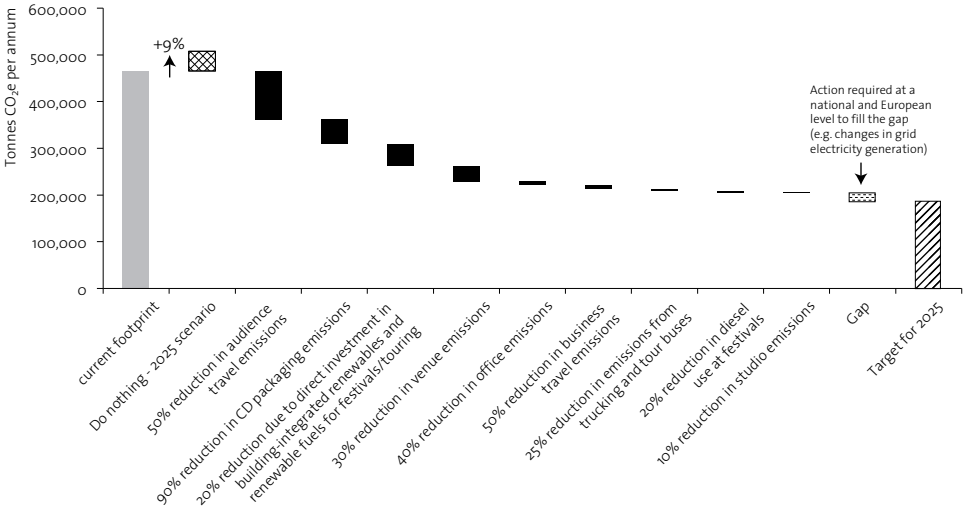
The main things you can do:

- carry out annual greenhouse gas audits of your business activities so you have a picture of where you are and the reductions you need to achieve each year
- measure, manage and reduce building energy use
- get your supply chain involved in reducing emissions
- switch to a low-carbon emissions electricity supplier.

This guide provides information about what you can do – and how to meet the GLA **Climate Change Action Plan** target of 60 per cent reductions by 2025[3].

[3] In line with the **Green Theatre Action Plan**, Julie's Bicycle is using current emissions figures as the baseline for reductions to 2025, as sufficiently robust data from the music industry in 1990 was not available.

Figure 2: **Waterfall chart of current London footprint showing percentage reductions leading to 2025 reduction of 60 per cent from 2008 baseline** [4]



[4] The 'Do nothing' scenario assumes music industry emissions increase in line with growth projections for London's commercial and public sector in the Mayor's **Climate Change Action Plan**.

What have we left out and why?
Although merchandise is not included in the emissions figures for the UK or London, advice is included in this guide as the sector contributes a significant amount. Also ticket production has not been researched to date. 'Paper-free' is a real option for an increasing number of tickets but, due to commercial confidentiality, we do not have actions or information that we can share at this stage.

The emissions produced by music distribution centres, CD transportation logistics and the digital download master were excluded as they are supply chain emissions and not under the direct control of the music industry. Retailing is excluded as it is included in London's retail sector. However, we have included some basic advice on these areas.

The manufacture, marketing, distribution and retail of music listening devices and music instruments and equipment are not covered by the First Step report and are excluded from this report. General advice is available from relevant industry bodies and the Carbon Trust (www.carbontrust.co.uk).

Table 1: **Comparative emission reductions and their sources by sector.**

Sector	2008 emissions tonnes CO_2e	2025 emissions tonnes CO_2e	Description of reductions
Offices	19800	11880	20% reduction through efficiencies such as behaviour change and retro-fitting, a further 20% through capital investment
Venues	112500	78750	10% reduction through efficiencies such as behaviour change and retro-fitting, a further 20% through capital investments
Studios	9000	8100	10% reduction through efficiencies such as behaviour change and retro-fitting
Festivals and outdoor events	18000	14400	20% reduction through fuel efficiency - ensuring they operate at maximum load and updating generator stock
Touring and events production	16200	12150	25% reduction through more efficient driving behaviour, more efficient vehicles and improved logistics
Audience travel	207900	103950	50% reduction through changed locations, increased car occupancy and more public transport
Business travel	14400	7200	50% reduction through better driver behaviour, better journey planning, video conferencing, fewer journeys and switching to more public transport, cycling and walking
CDs	67500	14647	90% reduction of packaging through 100% switch to card or equivalent low-impact packaging alternative
Sub-total	465300	251077	46% reduction of 2008 total emissions

Table 2: **Further emissions reductions and their sources across the industry.**

Further reductions	2008 emissions tonnes CO_2e	2025 emissions tonnes CO_2e	Description of reductions
Due to direct investment in renewables		204781	20% of office, venue and studio electricity from building-integrated renewables. All festival power and trucking requirements met from renewable sources
Sub-total			10% reduction of 2008 total emissions
Due to decarbon-isation of National Grid		185035	25% of UK electricity from renewable sources by 2025
Sub-total			4% reduction of 2008 total emissions
Total			60% reduction of 2008 total emissions achieved

3.How to use this guide

This plan is divided into four sections: Buildings, Performances, Travel and Products. We suggest you check all relevant sections.

This guide should be seen as the starting point for any number of low-carbon initiatives in the music industry, and as such it will be a dynamic document. Please visit www.juliesbicycle.com/green-music-guide or www.london.gov.uk/mayor/publications/ for further information including resources, sample letter to suppliers, sample green rider, case studies, advice on green electricity tariffs, lower-impact vehicles, small-scale renewables, offsets and the science behind this guide.

Buildings
Venue owners and managers, and their clients: artists, managers, tour managers, promoters, agents and labels, studio owners and managers, as well as their clients: artists, managers, engineers, producers, labels and publishers.

Performances
Festival and event promoters and producers, artists, managers, tour managers, agents, labels, as well as venue and festival owners and managers.

Travel
Everyone!

Products
Record labels, replicators, manufacturers, artists, merchandisers, promoters, managers, artists, publishers.

> Climate change is undoubtedly the most urgent and compelling problem of our age, and we are compelled to do what we can to help solve it.
>
> **Tony Wadsworth, BPI Council Chair**

Taking action:
Where possible, for recommended actions we have estimated the carbon saved, capital cost, payback period and effort required (based on a medium-sized company/veneue/event).

These are identified with the following symbols:

- = CO_2e savings achieved by the action
- = capital cost of the action
- = time it will take to realise a saving on the capital investment
- = effort required to implement the action

4.Buildings

> “Music is aspirational and Live Nation – in our position as leaders in venue operations and concert promotions – hope to set an example by showing how seriously we are taking carbon emissions.”
>
> **Paul Latham, President, UK Music and Venues, Live Nation**

Offices

Current impact: 19,800 tonnes.

Possible reductions: 3,960 tonnes in energy efficiency and 3,960 tonnes through investment. Even more could be achieved by direct investment in building-integrated renewables.

>Who is it for? Everyone!

Where to start

Area	Action
Measure energy use	Carry out an energy audit to give you a picture of your energy use and how to manage and improve it. Create a formal energy management policy and action plan. Keep accurate records of energy consumption. Where building management systems are installed, use these to record plant operation. Ensure capital expenditure considers the financial savings from energy efficiency measures – look at least three years ahead.
Reduce energy use C 2,000	**Heating, cooling and ventilation** Avoid areas being heated and cooled simultaneously. £ no cost ↓ in 6 months e continuing light Ensure heating and cooling switches on and off at the appropriate times. £ no cost ↓ in 6 months e one off Ensure that temperature settings are appropriate: • establish a 'dead-band' control between heating and cooling so that neither is turned on until temperatures are outside acceptable levels of comfort (typically 18–24 degrees Celsius) • avoid over-ventilation in cooling • reduce heating settings in summer and overnight • reduce your immersion thermostat (if you have one) to 60°C. £ no cost ↓ in 6 months e minimal Locate thermostat away from draughts, direct sunlight, or sources of heat. £ <£100 ↓ in 6 months e one off Install thermostatic valves in wet radiators. £ <£100 ↓ in 6 months e one off

Area	Action
Reduce energy use continued c 2,000	**Heating, cooling and ventilation** continued Avoid using electric heaters. £ no cost ↓ in 6 months e continuing light Regularly check airflows from ventilation systems. Clean filters in air-handling units. £ <£100 ↓ in 2 years e continuing light **Lighting** Switch all lights to low-energy bulbs or LEDs. £ <£1,000 ↓ in 6 months e one off Switch off lights in areas when not occupied and install motion sensor switches in less frequently occupied spaces such as toilets. £ <£100 ↓ in 6 months e continuing light **Equipment** Set appliances to energy-saving mode. £ no cost ↓ in 6 months e continuing light Switch off all equipment at source at the end of the day, such as computers, monitors, printers and photocopiers. £ no cost ↓ in 6 months e continuing light
Improve energy efficiency c total: 2,000-4,000	**Install insulation in/around:** • hot water storage (tank and pipes) and electric heating cupboards £ <£100 ↓ in 1 year e one off • external walls where practical • windows and doors • roofs and under floor. £ >£1,000 ↓ in 1 year e one off **Boilers** Check your boiler's efficiency rating. A is the most efficient. e one off Switch to high-efficiency/condenser boilers. New boilers are over 15 per cent more efficient. £ <£1,000 ↓ in 1 year e one off

Area	Action
Improve energy efficiency continued C total: 2,000-4,000	Convert oil boilers to gas. £ <£1,000 ↓ in 2 years e one off Service your boiler annually. The typical cost is between £50 and £100 but a well-serviced boiler can be 20 per cent more efficient than a poor one. £ <£100 ↓ in 1 year e one off If you have a large air-conditioning system or run other large machinery, talk to your energy adviser about conducting a power factor survey to assess and correct the power factor of the electricity used in the building. £ <£500 ↓ in 1 year e one off If you have cooling motors, fit a modern variable-speed drive (VSD). £ <£500 ↓ varies (6months - 2 years) e one off
Support renewable energy	Buy 'green tariff' renewable electricity. If the landlord has control over the electricity supplier, ask them to switch. Join forces with other tenants if possible (on this and other issues). C £0 £ varies (0-20 per cent more) e one off Investigate fitting your own renewable energy, e.g. solar thermal, photovoltaic, heat pumps, or wind power. Interest-free loans are available from the Carbon Trust. C £2,000 £ varies (£2,000 for solar thermal to £20,000 for PV) ↓ varies widely (6months - 20 years) e one off Depending on the scale of your buildings and activities, installing combined heat, cooling and power (CHP) may be appropriate. C £4,000 £ varies ↓ varies e one off
Reduce waste, reuse and recycle [5]	Compost food waste – use a super-efficient system in the workplace or encourage employees to take it home to their compost bin. Use an environmentally friendly office supplier and use recycled materials, especially 100 per cent recycled paper. Use paper and other stationery fully and responsibly: print double-sided, use electronic rather than hard-copy mailouts and invitations.

[5] A good reason to reuse materials is that this saves embedded carbon, i.e. carbon that would otherwise have been released to the atmosphere but is instead contained for the long term (for example in wood and plastics).

Area	Action
Reduce waste, reuse and recycle continued	Operate a binless office with central recycling points. Ensure recyclable items are separated and collected. If the landlord has control over waste management, petition for better recycling services. If your office provides catering facilities, work with the contractor to reduce waste to landfill and increase the local, seasonal, meat-free, dairy-free and organic choices. Check regularly for dripping taps and fit washers where needed. When refurbishing water fittings choose: • low-content cisterns • dual-flush toilets • flow restrictors on taps • aerating taps and showers. Use filtered drinking water from the mains rather than bottled water and use washable glasses instead of plastic cups. Adapting buildings to help deal with the effects of climate change, such as an increased likelihood of extreme weather, is also important. Investigate installing green roofs and rainwater harvesting systems when carrying out refurbishment.
Get staff involved	Communicate energy management policy to staff and allocate clear energy management responsibilities. Establish an energy management team with regular reviews and action planning. Provide staff training and communications around energy efficiency practices. Start up a 'green' staff newsletter or add updates to the staff intranet. Communicate cost savings to motivate and maintain action and provide incentives to staff who reduce their energy usage. Designate 'environmental champions'. Give 'green' responsibilities and additional training to specific staff members. Work with specific departments to implement sustainable procurement policies.

Area	Action
Supply chain and procurement	Use environmentally friendly cleaning products wherever possible. Use sustainable, local food and fair trade where you can. Sign up to London Remade's **Green Procurement Code** at www.greenprocurementcode.co.uk. This can have a significant impact through your supply chain, on the use of resources and materials, with little cost to your company. Procurement code tips include: • incorporate green procurement criteria into all key contracts, starting with those that are high spend, have a high environmental impact and are easily influenced • award new contracts on the basis of value for money and whole life costing, not the lowest price; green purchases may have lower operating or disposal costs.

Working from home?*

Most of the office tips will be relevant to your home space as well. However, you should also:

- choose household appliances, such as fridges and washing machines, that have an A++, A+ or A energy efficiency rating; laptops use less energy than desktops; choose screens with an energy star rating
- compost your food waste
- only print when necessary, use recycled paper; set your printer to use both sides and recycle it along with whatever else your local authority provides facilities for
- recycle printer cartridges and mobile phones; dispose of your waste electrical equipment and batteries responsibly

*See the **Further Information** document that accompanies the **Green Music** Guide for resources that can help you develop and manage an action plan for carbon reductions in your home - available for download at www.juliesbicycle.com/green-music-guide or www.london.gov.uk/mayor/publications/

Case Studies: Offices – White Light

White Light has supplied the entertainment industry with creative lighting for nearly 40 years. It employs over 100 people in its office and warehouse facility in South Wimbledon.

Energy

White Light has begun weekly energy use monitoring and has installed energy efficiency measures, including:

- motion sensor lights in toilets
- low-energy fluorescents in existing lighting
- time switches on coffee machines and printers
- mains-fed water heaters on timers
- a culture of 'switching off'.

Staff engagement

The company's environmental policy is part of the staff handbook and induction.

A staff 'green team' meets every couple of months. Company directors have found engagement levels and effectiveness improved since the directors took a step back from active participation.

Staff behaviour and ideas on issues such as commuting and waste are regularly surveyed. The results and related information are shared via monthly staff briefings, on the intranet and on the 'Green notice board'.

Waste and recycling

White Light has completed a full waste audit as they work to achieve environmental management standard BS8555. They recycle and reuse paper, cardboard, cans, wooden palettes, plastic cups and packing material. Remaining waste is primarily non-recyclable packaging, and White Light is purchasing a waste compactor to process this. A compactor will

reduce waste collection costs by 75 per cent and deliver payback in under 12 months.

Client and supply chain engagement

Whilst the majority of lighting design decisions are still made based on finances, taking a lead in supplying low-carbon lighting has opened doors. Lower-carbon lighting also brings internal benefits: it requires less power and maintenance.

White Light has found that demonstrating certified environmental performance (such as BS8555) is an increasingly important criterion in public sector contract tenders – and the corporate world is close behind.

For more information

www.whitelight.ltd.uk

www.bsigroup.com

Current impact: 112,500 tonnes.

Possible reductions: 11,250 tonnes in energy efficiency. A further 22,500 tonnes through investment. Even more reduction could be achieved by direct investment in building-integrated renewables.

Venues

>Who is it for? Venue owners and managers, as well as their clients: artists, managers, tour managers, promoters, agents and labels.

*See the 'Offices' section for general advice.

Area	Action
Measure energy use	Carry out an energy audit to give you a picture of your energy use and how to manage and improve it.
Reduce energy use C total: 10,000	**Heating, cooling and ventilation** Introduce zonal controls: • set your thermostat for lower temperatures in workshops and storage areas £ No cost ↓ in 6 months e continuting light • turn on auditorium heating later in the day (closer to performance time) £ No cost ↓ in 6 months e continuting light • review operational times and parameters for heavy use equipment, including chillers (e.g. install automatic controls to reduce over-ventilation) £ <£100 ↓ in 6 months e one-off • install timers where required. £ <£500 ↓ in 6 months e one-off **Lighting** Switch off the lighting rig when not in use. £ No cost ↓ in 6 months e continuting light When not required for actual performance, switch off discharge lighting between the end of the reset or rig check and at the half-hour call. Reduce exterior lighting hours and switch off exterior lighting in the daytime. £ No cost ↓ in 6 months e continuting light

Area	Action
Reduce energy use continued c total: 10,000	**Lighting** continued Use motion sensors and timer switches to switch off lights when not in use. If installing motion sensors, consider using them to switch off heating and ventilation in some areas. £ <£500 ↓ in 1 year e continuing light Rewire so that areas and equipment can be isolated and turned off when not required. £ >£1,000 ↓ in 1 year e one-off
Improve energy efficiency c total: 10,000	**Heating, cooling and ventilation** Install air quality and temperature sensors in the auditorium to enable the system to run at a reduced rate when the auditorium is not fully occupied. £ >£1,000 ↓ in 1 year e one-off Fit an 'optimiser' for heating and hot water control systems to adjust for when the venue/work space is open. £ <£500 ↓ in 1 year e one-off **Lighting** Choose energy-efficient bulbs in exterior lighting, hoardings, front of house and backstage. Retrofit external lighting schemes with LED lights where possible. £ >£1,000 ↓ in 6 months e one-off
Support renewable energy	Large-scale venues in particular could benefit from installing renewable energy capacity. c 1,000-20,000 £ varies ↓ varies e varies Arenas could investigate using biodiesel to power units such as forklifts. c 1,000 £ varies (£500-£1,000) ↓ in 6 months e continuing light

Area	Action
Reduce waste, reuse and recycle	Reuse materials wherever possible, or implement recycling schemes for: • sets • batteries • lamps • plastic glasses and consumables • waste produced by bar • furniture, carpets, timber, metal after a refit. Install urinal motion sensors to control flushing. Use 100 per cent recycled paper wherever possible. Ensure your waste management contractor is doing as much recycling and composting as possible. Promote recycling in front-of-house areas.
Procurement and supply chain	Build environmental guidelines into contracts with artists, contractors and suppliers, which: • specify that production companies comply with the venue's energy, recycling and waste management practices and policies • create financial incentives to reduce energy consumption with visiting shows. More accurate meter measurements would enable venues to factor energy consumption by equipment and lighting into the costs allocated or charged to the tour/production • help production teams to recycle and manage their waste by giving them access to the contracts you have set up with recycling and waste firms, even if this means a charge.

Venues – Who is doing what?

Music venues are among the most significant contributors of emissions within the music industry footprint. While some arenas have statutory obligations to measure, report and cut emissions under the Carbon Reduction Commitment, most venues fall outside this remit. Reducing their impact on climate is voluntary.

Examples

The Royal Albert Hall is trialling smart metering and piloting the Environmental Change Institute's 'SMEasure' software that tracks building energy performance.

- The Academy Music Group (which, in London, owns O2 Academy Brixton, O2 Academy Shepherds Bush Empire and O2 Academy Islington) is measuring energy use in all its venues and putting in place reduction plans.
- Philips is developing a software tool that will enable music venues to audit non-stage lighting use in venues and identify lower-energy alternatives.
- Audience travel projects are underway at O2 Academy Brixton and Kentish Town Forum, working with Julie's Bicycle, Transport for London and local councils.
- 93 Feet East on Brick Lane has installed LED lighting throughout its main bar area and is investigating double glazing.
- KOKO in Camden has shifted to a renewable energy supplier, supplies electricity to tour vehicles to reduce local emissions, and offsets its emissions with SolarAid.

For more information

www.royalalberthall.com

www.academy-music-group.co.uk

www.philips.co.uk

www.kentishtownforum.com

www.93feeteast.co.uk

www.koko.uk.com

Current impact: 9,000 tonnes.

Possible reductions: 900 tonnes in energy efficiency. Even more could be achieved from direct investment in building-integrated renewables.

Recording Studios

Who is it for? Studio owners and managers, as well as their clients: artists, managers, engineers, producers, labels and publishers.

*See the 'Offices' section for general advice.

Area	Action
Measure energy use	Carry out an energy audit to give you a picture of your energy use and how to manage and improve it.
Reduce energy use	Carry out an energy audit to give you a picture of your energy use and how to manage and improve it. Turn equipment and heating and cooling off when you can. C 200 £ no cost ↓ in 6 months e continuing light
Improve energy efficiency	Fit energy-efficient heating, cooling and ventilation systems. Employ building service engineers to investigate heat recovery, heat pumps and absorption chillers. C 700 £ > £1,000 ↓ in 1 year e one off
Support renewable energy	Investigate whether your studio is suitable for fitting solar thermal, photovoltaic, heat pumps or wind power. **Studios can benefit particularly from renewable installations as they are energy intensive and high profile.** C 1,800 £ varies ↓ varies e varies
Get staff and clients involved	Specify that clients comply with the studio's energy, recycling and waste management practices and policies. Ensure studio engineers are aware of the studio's policy on equipment switch-off. Create financial incentives to reduce energy consumption with clients. More accurate meter measurements would enable studios to factor energy consumption by equipment into the costs allocated or charged to the client.

Case Study: The Premises

In 2006, The Premises Studios built Europe's first solar-powered recording studio, a state-of-the-art facility with a 100 per cent secure and stable energy flow. Their decision was based on environmental concerns and solid business reasoning : to increase trade and reduce running costs.

To determine the system requirements, the Centre for Sustainable Energy conducted an energy audit, and the flat roof and photovoltaic (PV) system were added by Chelsfield Solar. The capital cost was £20,000, half of which was funded by a government grant.

Energy efficiency was built in: the main SSL mixing desk and air-conditioning units are low energy, and there is no need for heating due to the high level of sound insulation even in the middle of winter.

The UK Government's decision to incentivise renewable energy producers via 'feed-in tariffs' may mean The Premises could halve their payback period, initially calculated at ten years. After this, their PV system will turn into a profit stream from the excess energy they sell back to the grid.

The shift to solar has generated a higher public profile and new business. The Premises has worked on successful campaigns with Friends of the Earth and is now widely seen as a first-choice studio for environmentally aware recording artists including Lily Allen, Hot Chip, Bloc Party, Alphabeat and the Klaxons.

For more information

www.premisesstudios.com

www.cse.org.uk

www.chelsfieldsolar.co.uk

Case Study: Live Nation

Live Nation produced a series of events in Hyde Park in London in summer 2008, including the multi-day festivals Hard Rock Calling and O2 Wireless. This is what they did:

Waste and recycling

- All waste was sent to an offsite sorting company, which extracted and recycled over 30 per cent of festival detritus.
- A local charity collected curtains, drapes and wood from the site to be reused locally.
- Over 400 litres of used cooking oil was converted into sustainable biodiesel.
- Over 300m of plastic fencing used on site was produced from recycled PET bottles.
- Temporary water fountains were installed in the park as an alternative to bottled water.

Artist engagement

Live Nation distributed an information sheet to artists that outlined sustainability initiatives.

Audience travel

In addition to promoting public transport via the event websites, Live Nation provided an offset service for audience travel emissions via Emission Statement. This cost 40p per person, and over 7,000 people from O2 Wireless and Hard Rock Calling offset over 220 tonnes of CO_2 with Gold Standard certified projects in Malawi and Taiwan.

For more information

www.hardrockcalling.co.uk

www.O2wirelessfestival.co.uk

www.emissionstatement.co.uk

www.cdmgoldstandard.org

5. Performances

> “I want to be part of the solution, as we are already part of the problem. To be part of a stronger group in order to help fight for and implement some of the ideas I’ve already had, and to learn more about what I’ve not even thought of.”
>
> **Rob Hallett, Presidential International Touring, AEG Live**

Current impact: 18,000 tonnes.

Possible reductions: 3,600 tonnes by diesel efficiency measures. Even more reduction could be achieved by direct investment in waste vegetable oil (WVO) biodiesel and other renewables.

Festivals

Who is it for? Festival and event promoters and producers, artists, managers, tour managers, agents.

Did you know?
A large bank of tour buses can require a greater power load than the main stage.

London hosts a variety of music events in parks and open spaces. These differ from 'greenfield' festivals that are held in more rural locations around the UK, both in their set-up and the impact they have. This advice is specifically aimed at London events, although generally applies to greenfield sites as well.

*See the 'Offices' section for general advice.

Area	Action
Measure energy use	Carry out an energy audit to give you a picture of your energy use and how to manage and improve it.
Reduce energy use C Total: 1,600	Ensure site lighting is switched off during daytime hours and install light-sensitive switches where possible e.g. for festoon lighting on pathways, which is only required during hours of darkness. £ <£500 ↓ in 6 months e one-off Minimise the time that staging equipment is left running. Provide central facilities for artists and crew so that tour buses aren't required to run air-conditioning and appliances when on site and encourage artists to use smaller tour buses with lower power requirements. A 32amp, 3-phase bus uses six times the power of a 16amp single phase bus. If power load can be reduced, tour buses could be powered by solar or wind power while on site. £ no cost ↓ in 6 months e continuing light
Improve energy efficiency C 1,000	Choose energy-efficient bulbs and LEDs for security lighting, stage lighting, bar lighting etc. Use new efficient generators. £ >£1,000 ↓ in 6 months e one-off

Area	Action
Support renewable energy C 14,400	Run diesel generators on waste vegetable oil (WVO) or sustainably sourced biodiesel. £ varies ↓ varies e continuing light Hire portable renewable energy infrastructure, such as solar showers, solar toilets and photovoltaic arrays. Use lower-impact vehicles for on-site transportation (shuttle vans, golf buggies etc). Investigate opportunities for turning waste to energy, e.g. by using an incineration and energy recovery plant. £ varies ↓ varies e one-off
Reduce waste, reuse and recycle	Work with suppliers to reduce waste from lighting and staging. Work with suppliers to reduce bar and food waste, including using biodegradable or reusable/washable containers, cups and cutlery for food and drink. Ensure your waste management contractor is maximising opportunities for recycling and composting. Improve the facilities for waste segregation if needed. Incentivise concert-goers to recycle by introducing cup and bottle deposits, siting well-positioned collecting tents, as well as providing free beer tokens and prizes for recycling cans, paper, card and plastic. Disseminate event programmes via mobile phone download instead of physical print. Use recycled materials including paper and paper products on site.
Get staff and audience involved	Specify that productions, contractors and suppliers comply with the event's energy, recycling and waste management practices and policies. Promote public transport and liftshare options to get to your venue (see 'Audience travel' section). Tell your audience about your commitment to go green: make your events a source of inspiration and a showcase for better thinking and technologies.

Current impact: 16,200 tonnes

Possible reductions: 4,050 tonnes by diesel efficiency measures. Even more could be achieved by direct investment in waste vegetable oil (WVO) biodiesel and other renewables.

Touring and Event Production

Who is it for? Promoters, tour managers, managers, artists, agents, labels, as well as the owners/managers of the host venues and festivals.

Many tours are designed in London before heading around the UK, Europe and the rest of the world. Over the last ten years, touring logistics has become significantly more efficient through route- and load-optimising software programmes, and artists are increasingly aware of the impact of their tours.

*See the 'Offices' section for general advice.

Area	Action
Measure energy use	Carry out an energy audit to give you a picture of your energy use and how to manage and improve it. Place energy consumption explicitly within the tour budget (diesel spend, generator hire, venue energy expenditure etc).
Reduce artist travel and infrast-ructure transport C Total: 1,000 plus savings from fewer flights	Minimise the party and entourage that needs to travel. £ no cost ↓ in 6 months e continuing Plan tours to minimise flights. Simplify staging requirements and specify materials to reduce the weight and volume for transport. £ no cost ↓ in 6 months e continuing light Use local lighting and backline supplies to duplicate rather than freight production systems. £ varies ↓ varies e continuing

Area	Action
Reduce impact of travel and infrast-ructure transport C Total: 3,050 plus savings from fewer flights	Minimise private jet, first class and business class flights. Ensure land vehicles are efficiently driven. Use smaller tour buses with lower power requirements and negotiate with festivals and tours to use on-site backstage space rather than tour buses, eliminating the need for a heavy power draw. A 32amp, 3-phase bus uses six times the power of a 16amp single phase – and a large bank of tour buses can require a greater power load than the main stage. If power load can be reduced, tour buses could be powered by solar or wind power while on site. When you do have to run on site, use trucks and buses with mains connectors and inverters so that they can run off venues mains to reduce engine idling. Get fans involved in minimising their travel impacts (see 'Audience travel' section). £ reduced cost ↓ in 6 months e continuing
Reduce venue/site energy use	Design low-carbon lighting and special effects (using LEDs and other energy-efficient lights). Specify new and efficient generators. Size demand and supply to reduce wasteful over-production. Liaise with venue/festival production to make as much use as possible of lighting rig already in place and communicate what is not required from existing rig. C See savings identified in 'Venues' and 'festivals'
Support renewable energy C 12,150	Use lower-impact vehicles. Specify waste vegetable oil/sustainably sourced biodiesel for generators (where used). Agree hireage of portable renewable installations with venues, festivals or other local operators. £ varies ↓ varies e varies
Reduce waste, reuse and recycle	Use sustainable set design to not only reduce transport impacts but also reduce waste at the conclusion of the tour. Source set timber from certified sustainably managed forests.

Area	Action
Reduce waste, reuse and recycle continued	Source low zero VOC (volatile organic compound) paints for sets. Use catering provided on site and only request what you need. Use backstage recycling facilities.
Get staff and audience involved	Communicate your commitment to lower-carbon touring to fans: make your events a source of inspiration and showcase better thinking and technologies.
Procurement and supply chain	Include environmental performance targets in contracts and riders for venues, festivals and suppliers. Encourage innovative improvements also listed in the 'Venues' and 'Festivals' sections of this action plan. Choose sustainably and locally sourced merchandise. Choose low-carbon CD packaging for music sold at events (see the 'CD' section for more information). Select hotels based on environmental guidelines/performance.

> "Carbon conscious touring is no longer just an artist ideal, however we still have a long way to go. The hardest part was to distinguish between what would actually make a difference, and just 'green washing'."
>
> Richard Young,
> Catapult Productions

Case Study: Touring – Radiohead

Radiohead's 08/09 world tour was footprinted by Best Foot Forward and the resulting report inspired CO_2 reductions for audience travel, freight, venues, energy and lighting.

Audience travel

BFF: Findings: audience travel in the US made up 86 per cent of the theatre tour's CO_2 footprint and 97 per cent of the amphitheatre's. The report findings provided straightforward ways to cut emissions. For example, if average car occupancy increased from 2.2 to 3, the tour's CO_2 output would reduce by 22 per cent. If 10 per cent of car users travelled by bus, it would reduce CO_2 by 7 per cent.

The tour website hosted a carbon calculator for fans and the information Radiohead's future emissions monitoring.

Location and public transport links became a significant factor when planning the route:

- For the London concerts Victoria Park offered excellent public transport links (tube, overground rail and buses).
- The absence of parking provided an added incentive to travel by public transport.
- A secure bike park was used by 50 users per night

Lighting

Radiohead used perhaps the first exclusively LED lighting touring system. The system used 140amp 3-phase (420amp in total) when turned on fully. (Note: LEDs rarely draw full power, and when they do it is still a fraction of traditional stage lighting demands.)

Digital lighting company i-pix designed and produced a new fixture to use on tour in just five weeks, and the whole project came in within a

budget for a conventional lighting system.

Alternative power

Using an LED system also makes alternative power sources more viable, and the production team worked hard to source an alternative non-combustible power supply.

Initially, they investigated solar-powered batteries, but these were not portable enough for a show that required 200amp 3-phase output, 4.5hrs of autonomy at full load, and a component weight limit of 2,000kg. The alternative 'big battery' charges up, and powers the lighting and video on alternate nights. This system uses the generator capacity efficiently and reduces idling as it can cover low power demands during off-peak usage, then charge from the spare capacity of the generator during peak usage.

The system, pre charged at festivals in Germany, debuted at the London show. The first night of the Victoria Park shows ran the lighting and video off the battery from load-in, show, to load-out.

For more information

www.radiohead.com/the-mostgiganticflyingmouthfor-sometime

www.radiohead.com/deadairspace/index.php?a=310

www.bestfootforward.com

6. Travel

> “With Radiohead, the most shocking yet most obvious thing we discovered was that the way people travelled to our shows has the biggest impact. So we now play in venues that are supported by public transport. We have a new lighting rig that is powered by super-efficient generators and we’ve made deals with trucking companies to cut their emissions. These changes might be small but they are in the right direction.”
>
> **Thom Yorke, Radiohead**

Current impact: 14,400 tonnes.

Possible reductions: 7,200 tonnes by reducing private travel.

Business Travel

>Who is it for? Everyone!

Area	Action
Measure travel behaviour	Carry out a travel audit to give you a picture of your company's travel behaviour and how to manage and improve it. Create a travel plan for your organisation's staff travel. The Mayor of London's A New Way to Work scheme provides a tailored workplace travel plan, and can support initiatives such as installing bike racks (see www.anewwaytowork.org.uk).
Reduce travel use C Total: 2,000	Encourage flexible/homeworking. Plan business activities and meetings more efficiently. £ no cost ↓ in 6 months e continuing Use tele-, desk-top or video-conferencing. £ £500 > £1,000 ↓ in 1 year e continuing light Rationalise use of couriers. In particular, try to avoid last-minute supplier calls, which will usually require a dedicated trip. £ reduced cost ↓ in 6 months e continuing
Reduce the impact of necessary travel C Total: 4,200	Reduce or eliminate business class, first class and private jet travel. £ reduced cost ↓ in 6 months e continuing Substitute domestic and European flights with train journeys. £ >£1,000 ↓ in 5 years e continuing Substitute public transport for taxis or cars within London – public transport is faster during peak times. Ensure taxis are not kept waiting for the customer. £ reduced cost ↓ in 6 months e continuing Use low-carbon taxi and courier companies that use lower-impact vehicles. £ >£1,000 ↓ in 1 year e continuing Use pushbike couriers when possible. £ reduced cost ↓ in 6 months e continuing

Improve efficiency Total: 1,000	Choose lower-impact vehicles when replacing. £ reduced cost ↓ in 1 year e continuing light Improve staff driving efficiency in both fleet and personal vehicles. £ <£1,000 ↓ in 6 months e continuing light
Involve staff	Provide showers, storage space and other services to encourage staff to walk and cycle. Offer staff access to tax-reducing schemes such as CycleScheme (see www.cyclescheme.co.uk). Make it company culture to arrive for London-based meetings on foot or bike.

Current impact: 207,900 tonnes.

Possible reductions: 103,950 tonnes by reducing private travel.

Audience Travel

>Who is it for? Venue managers, promoters, festival managers, artists, agents, tour managers, managers.

Audience travel to venues and concerts is not in the direct control of the music industry, but the fact that audience travel emissions are the largest single contributor to the music industry's footprint – a massive 45 per cent – means there is huge potential to make savings in this area.

London benefits from an excellent public transport system. However there is still more to do, much of which will require partnerships with local authorities, travel operators and Transport for London (TfL).

Area	Action
Measure current impact	Carry out a travel audit to identify impacts and prioritise the mot effective actions.
Inform your audience Total: 103,950	Provide travel information at the point of booking and with the ticket. Provide greater visibility and links to Transport for London's (TfL's) journey planner (http://journeyplanner.tfl.gov.uk) on the venue, promoter and artist websites. Make real-time information about public transport services available at the concert. Provide links to walking maps, walking buddy initiatives and car sharing schemes on venue, promoter and artist websites.
Encourage public transport use	Work with TfL's Oyster team and Visit London's Oyster Plus programme to promote Oyster and offer '2 for 1' deals. For more information, email marketingstrategy@tfl.gov.uk. For events and venues outside London, work with the relevant local partners. Provide extra stewarding and security so people feel safe at and around tube stations and bus stops.

Area	Action
Encourage public transport use continued	Provide coach facilities and agree deals for special coach transport services to events. Increase car park charges. Secure special ticket discounts for people arriving via public transport.
Encourage walking and cycling	Secure special ticket discounts for people arriving on bicycle. Provide secure bike storage at venues, festivals and concerts.

Case Study: O2 Academy Brixton

In 2008, Julie's Bicycle facilitated a project between O2 Academy Brixton and Transport for London (TfL) to work out how to make sure those attending events could get there quickly, safely and conveniently whilst minimising the damaging impacts on the environment. TfL works with a wide range of organisations to implement travel plans to improve travel for people living, working and visiting London.

The first stage involved interviewing concert goers to understand current travel patterns and any potential to increase sustainable modes. The research, conducted by Buckinghamshire New University and Mott McDonald, demonstrated that 68 per cent of visitors were already travelling by tube, train, bus, walking or cycling, but showed potential for even greater levels of sustainable travel.

TfL has worked with the Brixton academy to provide real-time information about tube, overground and bus networks screened at the venue, and improved travel information provided on the academy's website. The travel plan has contributed to Lambeth Council's efforts to provide coach parking, pedestrian signing and cycle stands in the area around the venue as part of the Brixton Town Centre improvement scheme.

The Brixton academy aims to increase the proportion of visitors travelling by public transport, walking, cycling and car sharing by a further 6 per cent.

For more information

www.o2academybrixton.co.uk/

www.anewwaytowork.org

7. Products

> “I have a pretty environmentally unfriendly job. The CD production, the travelling, thousands of gig-goers getting to venues, it all takes its toll, so it feels like I should do my best to try and turn the tables.”
>
> **KT Tunstall**

Current impact: 67,500 tonnes.

Possible reductions: 52,852 tonnes due to switching from plastic packaging to card.

CDs

Who is it for? Record labels, artists, managers, designers, brokers, replicators, packaging suppliers, manufacturers and distributors.

CD packaging is the greatest contributor of greenhouse gas (GHG) emissions in the life cycle[6] of the CD product. The GHG emissions for entirely plastic 'jewel' case packaging options are significantly higher than for the pure card and even mixed plastic and card options.

Other significant GHG emissions sources in the CD product life cycle are CD manufacturing, distribution logistics, CD materials, and energy used by manufacturers, retailers and studios. The GHG emissions from digital storage and delivery are much wider than the music industry and currently not well researched.

*See the 'Offices' section for general advice.

Area	Action
Measure energy impacts	Conduct a life-cycle analysis of your product, which includes its GHG emissions profile.
Reduce energy use C Total: 52,852	Shift from plastic to low-impact packaging by: • moving to a pure card option (or equivalent low-impact alternative), which would reduce the greenhouse gas emissions by around 95 per cent • moving to a combined card and plastic option, which would reduce greenhouse gas emissions by over two-thirds. Maintain plastic jewel case proportions of 142mm x 125mm x 10mm to ensure ease of distribution, racking at retail and shelving at home.
Improve energy efficiency	Replicators should automate process for assembling CDs into card-based packaging options. Retailers, labels and distributors should rationalise distribution logistics where possible.

[6] Sometimes called a cradle-grave or cradle-cradle study, life cycle analysis will calculate all the material inputs to the manufacture, distribution, use and disposal of your product.

Area	Action
Improve energy efficiency continued	Distributors should shift to environmentally friendly vehicles where possible.
Reduce waste, reuse and recycle resources	Labels should reduce overspecification of CD runs and ensure any excess product – both disc and packaging – is fully recycled. Labels should request recycled card except where the timber is sustainably sourced and the production processes create lower emissions, e.g. virgin board sourced in Scandinavia. Labels should specify reduced booklet sizes. Labels should work with media and press to increase the uptake of digital download promos rather than the physical product. Retailers should ensure boxes used for product distribution are recycled or used for returns. Packaging printers and suppliers should use lower-impact printing processes for card, booklets and inlays, such as: • vegetable inks • reduced water use processes • vegetable-based sealers and water-based varnishes, which also enable the product to be fully recycled.
Staff, artist and management engagement	Labels should ensure that a shift to low-carbon packaging is included in company environmental policy. Labels should work with marketing and procurement to ensure company policy is understood and actioned. Labels should offer artists a financially viable basic lower-carbon packaging option.
Procurement and supply chain	Labels should work with replicators to identify preferred low-carbon packaging and improve automation and economies of scale. Ensure that the cost comparisons between jewel case-packaged products and card-packaged products are fair: compare jewel case with inlays and booklet versus fully printed card option.

Case Study: CD Packaging

First Step identified CD packaging as the largest direct source of greenhouse gas (GHG) emissions for the record industry, accounting for about a third of the recording sector's emissions.

While a number of labels are individually addressing their packaging, the scale and nature of the issue warranted a joined-up approach. Julie's Bicycle convened a working group of industry, science and specialist experts who commissioned leading consultancy Ove Arup to analyse the impacts more closely. In July 2008, Arup produced a detailed analysis of packaging options and a startling result: that the recording industry could reduce its packaging emissions by up to 95 per cent by switching from the plastic jewel case to pure card.

Two further pieces of research were undertaken with the support of the Entertainment Retailers Association (ERA), BPI, Purchasing for Profit and the Environmental Change Institute, to identify tolerance levels amongst CD buyers for card packaging, and the market readiness of the manufacturing sector. Both surveys revealed an appetite and readiness for a shift to card.

Early 2009 has seen record labels commit to an initial 10 per cent reduction in packaging, and continuing year-on-year reductions. Using the Julie's Bicycle's Industry Green Standards Framework, a standard for packaging has been developed, acknowledged by the use of 'ig mark' branding that signals to the wider world that the UK music industry has already taken a lead in dealing with climate change.

For more information
www.juliesbicycle.com/publications

www.industrygreen.co.uk

Case Study: Continental Clothing

Continental Clothing is a business-to-business (B2B) wholesaler of blank t-shirts for customers primarily in the music and advertising industries. It has four sustainable apparel lines, including its leading brand EarthPositive®, launched in 2007, which is 100 per cent certified organic cotton produced using natural irrigation.

The production facility in India is powered by a local wind farm; cotton waste generated is either used as an organic fertiliser or for other textile and upholstery products manufactured locally. Dyes are made in a controlled environment where wastewater is thoroughly treated. All shirts are packaged using biodegradable or 100 per cent recycled materials. A 'no airfreight' policy ensures that all goods are shipped by sea. This has a considerable carbon benefit, and offers a substantial cost benefit as well.

In 2008 Continental participated in the Carbon Trust's carbon footprinting pilot using the PAS2050 standard.

The company structure and locally sourced supply facilitated a rapid footprinting exercise,which confirmed significant carbon savings. Using renewable energy reduced the carbon footprint by nearly 90 per cent, from 6.5kg to 0.65kg for a men's large white t-shirt. Continental Clothing is a market leader as sustainable products become a consumer choice and its pre-footprinted component products create competitive advantage with B2B customers. It is helping to educate consumers by sharing carbon footprint information and tips to reduce emissions of the t-shirt's life cycle, labelling the garments 'SAVE THE CLIMATE – WASH COOL – LINE DRY'.

For more information

www.continentalclothing.com

www.carbontrust.co.uk

Merchandise

Who is it for? Merchandisers, labels, promoters, managers, artists, publishers and any business producing merchandise.

*See the 'Offices' section for general advice.

Area	Action
Measure energy impacts	Conduct a life-cycle analysis of your product, which includes its GHG emissions profile.
Reduce the footprint of your product	Reduce material inputs and use materials that are: • local • renewable • organically produced • low embodied impact • reused • recycled • compostable • reusable • recyclable • hard wearing • fairly traded (such as products that have the Fair Trade Mark or FSC certification). Avoid air-freight distribution of products.
Reduce other negative environmental impacts	Avoid the following: • polyvinyl chloride (PVC) • volatile organic compounds (VOCs, such as formaldehyde) • phthalates • heavy metals • halogenated flame retardants • perfluorocarbons.

8. Thank You

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9. Further Information

Please visit www.juliesbicycle.com/green-music-guide or www.london.gov.uk/mayor/publications/ for further information including resources, sample letter to suppliers, sample green rider, case studies, advice on green electricity tariffs, lower-impact vehicles, small-scale renewables, offsets and the science behind this guide.

Other formats and languages

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Chinese
如果需要您母語版本的此文件，
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Hindi
यदि आप इस दस्तावेज की प्रति अपनी भाषा में चाहते हैं, तो कृपया निम्नलिखित नंबर पर फोन करें अथवा नीचे दिये गये पते पर संपर्क करें

Vietnamese
Nếu bạn muốn có văn bản tài liệu này bằng ngôn ngữ của mình, hãy liên hệ theo số điện thoại hoặc địa chỉ dưới đây.

Bengali
আপনি যদি আপনার ভাষায় এই দলিলের প্রতিলিপি (কপি) চান, তা হলে নীচের ফোন নম্বরে বা ঠিকানায় অনুগ্রহ করে যোগাযোগ করুন।

Greek
Αν θέλετε να αποκτήσετε αντίγραφο του παρόντος εγγράφου στη δική σας γλώσσα, παρακαλείστε να επικοινωνήσετε τηλεφωνικά στον αριθμό αυτό ή ταχυδρομικά στην παρακάτω διεύθυνση.

Urdu
اگر آپ اس دستاویز کی نقل اپنی زبان میں چاہتے ہیں، تو براہ کرم نیچے دئے گئے نمبر پر فون کریں یا دیئے گئے پتے پر رابطہ کریں

Turkish
Bu belgenin kendi dilinizde hazırlanmış bir nüshasını edinmek için, lütfen aşağıdaki telefon numarasını arayınız veya adrese başvurunuz.

Arabic
إذا أردت نسخة من هذه الوثيقة بلغتك، يرجى الإتصال برقم الهاتف او مراسلة العنوان أدناه

Punjabi
ਜੇ ਤੁਹਾਨੂੰ ਇਸ ਦਸਤਾਵੇਜ਼ ਦੀ ਕਾਪੀ ਤੁਹਾਡੀ ਆਪਣੀ ਭਾਸ਼ਾ ਵਿਚ ਚਾਹੀਦੀ ਹੈ, ਤਾਂ ਹੇਠ ਲਿਖੇ ਨੰਬਰ 'ਤੇ ਫ਼ੋਨ ਕਰੋ ਜਾਂ ਹੇਠ ਲਿਖੇ ਪਤੇ 'ਤੇ ਰਾਬਤਾ ਕਰੋ

Gujarati
જો તમને આ દસ્તાવેજની નકલ તમારી ભાષામાં જોઈતી હોય તો, કૃપા કરી આપેલ નંબર ઉપર ફોન કરો અથવા નીચેના સરનામે સંપર્ક સાધો.

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