

# From the grounds up: the coffee shop industry and the circular economy

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**Research Summary**

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### Acknowledgements

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***“Business as usual is not a sufficient strategy to secure the long-term economic sustainability of the coffee sector. Instead, systemic change is required.”***

(International Coffee Organisation, 2019a: 65)



***“From a circular economy perspective, roasted coffee grounds are the basis of some composts and are a good basis to grow mushrooms on. Moreover, coffee can be used as feed, fuel and mulch. For instance, coffee cherries, pulp and hulls can serve as animal feed on farms with livestock.”***

(International Coffee Organisation, 2019a:48)

## Overview

The coffee shop industry has experienced significant growth in the last decade in many countries across the world. The number of coffee shops in the UK has grown from 10,000 in 2007 to over 25,000 in 2019, and in Germany this has grown from 14,000 to over 31,000 in the same time period. This growth has implications for the amount of waste produced and energy consumed by this retail sector. The circular economy and its regenerative approach has been heralded as a potential route to reduce energy consumption and waste production. For each industry there will be different approaches

and actions taken to engage in the circular economy. The coffee shop industry provides a range of opportunities for engagement in the circular economy, from the recycling of coffee cups to the reuse of coffee grounds to create new products. This project explores examples of circular economy practices from actors in, and related to, the coffee shop industry in the UK and Germany. This is designed to showcase innovations in the industry from different stakeholders that are contributing to a more circular economy, and consider some of the enablers and barriers for engagement.

## The Circular Economy

*“The circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible... In practice, it implies reducing waste to a minimum”* (European Parliament, 2019).

There are many different definitions of the circular economy, which at their core they have the same thing in common: the reduction of waste, and the movement away from a linear economy which operates on a take-make-consume-throwaway model. The current linear model of production and consumption is not sustainable, and by moving towards a circular economy it is possible to minimise environmental impacts while maximising economic, social and environmental benefits. Adopting a circular economy model involves examining the different components of an industry's supply chain, in an effort to reduce the amount of new material that is used, reduce the

amount of waste produced, and reuse waste products where possible.

The movement towards a more circular economy has the potential to deliver opportunities across various dimensions, including: reduced pressure on the environment; enhanced security of supply of raw materials; increased competitiveness; innovation; growth and jobs. However, there are several challenges for the adoption of a circular economy model, including: ‘financing; key economic growth enablers; skills; consumer behaviour and business models; and multilevel governance’ (European Parliament, 2016).



Efforts to work towards a circular economy are being made at various spatial scales, from the European Union's Circular Economy Action Plan with its 54 action points to work towards a carbon neutral and circular economy, to local councils adapting their waste infrastructure to ensure less waste ends in landfill. Apparent in many of the documents from international institutions focusing on the circular economy is the diversity of approaches that need to be taken based on the materials used, the waste produced and the processes involved. This means there need to be more focused studies which explore particular industries and their approaches to the circular economy.

Figure 1: The Circular Economy



Source: European Parliament (2018)

While there has been a lot of attention concerning the circular economy in manufacturing, fashion for example (Leider and Rashid, 2016; Niinimäki, 2017), less has been written about other sectors such as retail, although this is changing. This research project was designed to explore developments in the circular economy related to the coffee shop industry.



## The Case Studies

Figure 2: The Coffee Shop Industry in the UK and Germany



Source: Authors with data for 2018 based on: (Allegra Strategies, 2019; ICO 2019; and DW, 2018).



For each country the research findings are based on a review of available secondary data on the coffee shop industry, and in-depth interviews with key stakeholders including coffee shops, roasteries and waste management organisations. This was complemented with a survey of consumers. This summary report presents some of the examples of actions taken towards a more circular economy by different stakeholders in the industry.

## Coffee shop industry and the circular economy

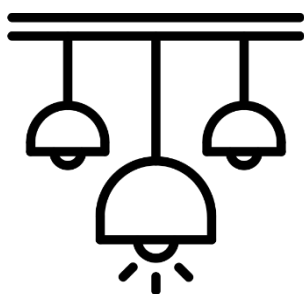
This section of the report introduces activities involving the coffee shop industry that address actions to: **reduce** consumption, **reuse** and **recycle** products and materials. It does not provide a comprehensive account of all the activities that were discovered in this research, but highlights some of the innovative examples found, some of the experiences of people involved, and the perspectives of both businesses and consumers on these issues. Figure 3 below provides a summary of key areas where coffee shops and consumers contribute to the circular economy.

Figure 3: Coffee shops and the circular economy

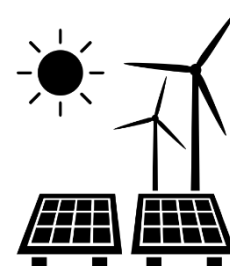


For many coffee shops the key areas that led to activities to reduce consumption were related to energy, interior fittings, furniture and the use of packaging.

### Energy



Coffee shop owners and managers were conscious of the need to reduce energy consumption where possible. While some felt they could easily make changes related such as using LED strip lighting to minimise energy consumption, others went further to explore options for using an energy provider that used renewable energy sources.





*“One of the first things I did as manager was to change all the light fittings. They were really old. A trip to IKEA and some LED lighting was a quick solution for that one.”  
(Coffee shop owner, Manchester)*

*“We operate with sustainability at our core so looking into the energy we use was important. We switched to a provider that gives us a percentage of renewable energy”.  
(Coffee shop owner, Munich)*

## Buildings and interior fittings

There have been examples of coffee shops which were designed with sustainability, and in part the circular economy, in mind. Back in 2015 Costa Coffee created an ‘Eco Pod’ coffee shop where the building was designed incorporating energy saving technologies, including materials with excellent energy retention, solar panels, under-floor heating, passive ventilation system and rainwater capture (Edie, 2015).

Many coffee shops and roasteries demonstrated an interest in being located in buildings with more sustainable features but were limited to what they could do in their existing premises. In addition, many of the same businesses made an effort to ensure that parts of their interior were made from reused or recycled materials, including:

- Upcycled second-hand furniture.
- Furniture made from waste materials.
- Refurbished espresso machines and roasters.

### Innovations in the circular economy: Extract Coffee Roasters

Extract Coffee Roasters, a coffee roasting company based in Bristol, opened a training location in sustainable Bankside, London - a location with a collection of sustainable start-ups. Demonstrating how it is possible to try and build new locations from used materials, they built the bars from an old pub floor and old bathroom fittings. Many of the materials used were obtained from scrap. The company states that it holds the value ‘Built not Bought’, which is clearly evidenced in their Bankside location (Extract Coffee Roasters, 2019).





When asked to identify the priority area for reducing consumption in the business, the reduction of plastic packaging was highly ranked by all coffee shops and roasters in both countries.

Strategies identified included:

- Find alternative packaging solutions - compostable packaging.
- Reduce packaging used in products, where possible.
- Reduce the size of packaging, and ensure no excess packaging was used.
- Switch to glass bottles, where possible.



*“We switched to biodegradable packaging. I know they still need to be composted in a commercial facility but it’s better than some of the plastic options”. (Coffee shop owner, Manchester)*

*“We were wrapping all our freshly made sandwiches in plastic. It was easier for the takeaway customers if we did it like this. We changed to have them all unwrapped on a board on the counter. We provided a paper wrap for the customers who wanted to it as takeaway”. (Coffee shop and roastery manager, Berlin)*

Many businesses were keen to explore options to address the sustainability of their packaging. Examples included:

- Using recycled cardboard for posting coffee and other items, and ensuring cardboard from the business was suitably recycled.
- Finding alternatives to cardboard boxes for sending products for commercial customers - e.g. crates or Notboxes (a reusable alternative). Several coffee roasters highlighted how the coffee sacks they receive their coffee in is reusable, and several made a point of returning them once used. Others said they found other uses for the coffee sacks, including through partnerships with local creative artists who transformed them into new products such as shopping bags, aprons and decorations.

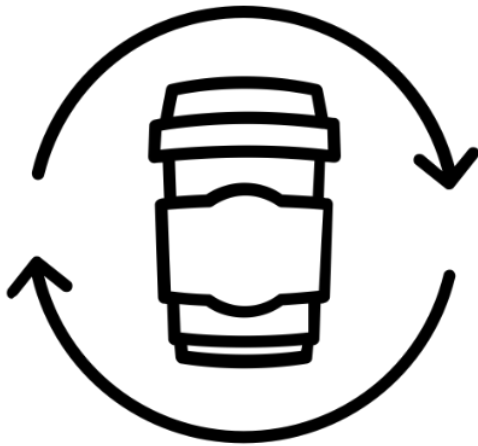


## Coffee Cups

Coffee cups are one of the visible forms of waste from coffee shops, and have been the focus of significant attention in recent years. In the UK, the issue of the amount of disposable coffee cups reached the mainstream media in 2016, after a television programme (*Hugh's War on Waste*) highlighted the scale of the disposable coffee cup issue in the UK - 2.5 million disposable coffee cups reaching landfill each year. The show targeted large coffee shop chains to encourage them take action. The issue of disposable cups became the focus of a government inquiry in 2017, and while this did not suggest that government impose a tax on coffee cups it did make a number of recommendations around improving consumer messaging, encouraging better recycling behaviour, exploring producer responsibility and setting targets for disposable cup recycling (House of Commons, 2018).

There have been a range of initiatives in the UK to try and reduce the number of disposable coffee cups reaching landfill, and increasing recycling rates, at a range of geographical scales:

- The Environmental charity Hubbub has been very active in supporting action around the reduction of disposable coffee cup waste and increasing recycling rates, from the Square Mile Challenge in 2017 - which recycled over 4 million cup in the centre of London - to partnerships with Starbucks to trial 5p charges on disposable coffee cups (Hubbub, 2018) The money raised from this charge created 'The Cup Fund', which has invested in coffee cup recycling facilities across the UK (Hubbub, 2019).
- Scotland has launched a scheme to increase recycling of disposable coffee cups. The Cup Movement, funded by the Scottish Government, Glasgow city Council, Keep Scotland Beautiful and the Paper Cup Recovery and Recycling Group aims to improve recycling facilities, educate consumers and encourage increased use of reusable cups (Glasgow Guardian, 2019).



Improving the availability of recycling points for coffee cups has been a key factor in improving recycling rates, as have partnerships between waste management organisations and some of the largest coffee chains.

The Paper Cup Recycling Recovery Group was established in 2014. It is comprised of organisations from across the paper cup supply chain, from manufacturers to retailers and paper reprocessors. In 2018 the PCRRG estimates that significant progress has been made within the industry to improve paper cup recycling from 1:400 to 1:25, with further increases predicted by the end of 2019 (PCCRG, 2019)

### Innovations in the circular economy: CupCycling

James Cropper, a waste management organisation and paper manufacturer, has been instrumental in reducing the number of coffee cups reaching landfill. The company developed the CupCycling process to turn disposable coffee cups into new paper-based materials, such as the notebooks 'Coffee Notes' shown here. Many brands have chosen to use these recycled products in their range, including Lush and Selfridges.



### Reusable cups

Increasing the use of reusable coffee cups is an alternative strategy to reduce the number of disposable cups. There are many different types on offer to the consumer, and many coffee shops offer their own-brand selection. Reusable coffee cups are seen as a more sustainable option with the potential for their use to save resources used to create disposable cups, as well as prevent more cups reaching landfill. KeepCup conducted a lifecycle analysis of a series of cups, finding that in general one of their original cups has a significantly lower environmental impact than disposable cups (Almeida, 2018).







Some coffee shops offer discounts for consumers who bring a reusable coffee cup as an incentive, and in general in both the UK and Germany there has been an increase in the use of reusable coffee cups.

Of the coffee shops included in this project, 92% in the UK and 83% in Germany had reusable cups available to purchase.

For some consumers it was considered an inconvenience to have to carry around a reusable cup and wash it between uses. A potential way of overcoming this is through closed-loop systems, which have been used in both the UK and Germany.

#### Closed-loop cup reuse: RECUP (Germany)

In Germany there is a reusable cup sharing system. You can buy a RECUP in a range of sizes from a variety of participating outlets. Consumers pay a €1 deposit to use the cup and get this back when it is deposited. Some locations also provide a discount for using the RECUP. Using an app, consumers can find the nearest participating stores and can drop the used cup off. The cups are plastic and are designed to be used up to 500 times.



#### Closed-loop cup reuse: CupClub (UK)

CupClub is a 'cups-as-a-service' start-up that was designed to be a circular business solution. CupClub provides reusable plastic cups to organisations from cafes to canteens or self-service coffee points in organisations. Customers can drop the cups off at various collection points. The cups are then taken away to be washed before being re-distributed. The recyclable cups are designed to be used 132 times, and are trackable with a unique code.





## Coffee grounds

Another result of the rise in the number of coffee shops is a growth in the amount of waste coffee grounds produced - around 500,000 tonnes per year in the UK. While this product often ends up in landfill, there are a range of innovative products and processes that have been developed to recycle and reuse the coffee grounds.

### Innovations in the circular economy: Kaffeeform, Berlin

Kaffeeform has developed an innovative process to create coffee cups from recycled coffee grounds. Coffee grounds are collected via a bicycle courier collective from coffee shops in Berlin to create a range of coffee cups, including a takeaway option, the Weducer. The coffee grounds are combined with natural glues and wood particles from sustainable sources to form a liquid that can be used in an injection mould to create the cups. It takes around six cups of coffee grounds to produce one espresso cup and saucer set.



In addition to coffee shop industry related products, various other products have been created using coffee grounds, including: jewellery, furniture, clothing, and biochemicals. A more traditional use for coffee grounds has been to use them in gardens and allotments as a natural fertiliser. Many coffee shops offer coffee grounds free to consumers. Some coffee shops have signs in their stores with details for consumers about how they can use the coffee grounds.





## Energy

There are also organisations which facilitate waste collections of coffee in order to create biochemicals and biofuels. Two examples include:

- Bio-bean: created in 2013, the company has evolved into a nationwide coffee recycling business with a range of activities based around using coffee grounds. Bio-bean created the world's first industrial scale coffee recycling factory, where it extracts compounds from coffee grounds that can be used for other products (such as natural flavourings) as well as the creation of coffee logs that can be used as fuel.
- Revive Eco: a start-up based in Glasgow developed a process to turn coffee grounds into a range of biochemicals, some of which could be used as an alternative to palm oil.





Coffee grounds and mushrooms

The coffee shop industry and the waste it produces also provides the basis for other stakeholders too: GroCycle, a social enterprise based in Devon (UK) uses coffee grounds as a base to grow oyster mushrooms, and educate others about growing mushrooms. They also produce Mushroom Grow Kits for consumers.

Food waste

A further waste product that was high on the agenda for many coffee shops included in this research was food waste. There were two key concerns:

- reducing food waste; and
- finding ways to use food waste for better uses.

There were several examples of where coffee shops had arrangements with local allotments and good growing initiatives to send suitable food waste for compost.

### Innovations in the Circular Economy: Working towards zero waste, Berlin

Isla Coffee, a coffee shop in Berlin, operates with sustainability principles at its heart, and makes a clear contribution to the circular economy as it strives to work on a zero-waste basis. The coffee shop interior was constructed using recycled furniture and materials, and as much as possible everything that is used is reclaimed, recycled or grown. They even engage in circular practices for waste products, such as using the left-over milk from making lattes and cappuccinos to create cheese.





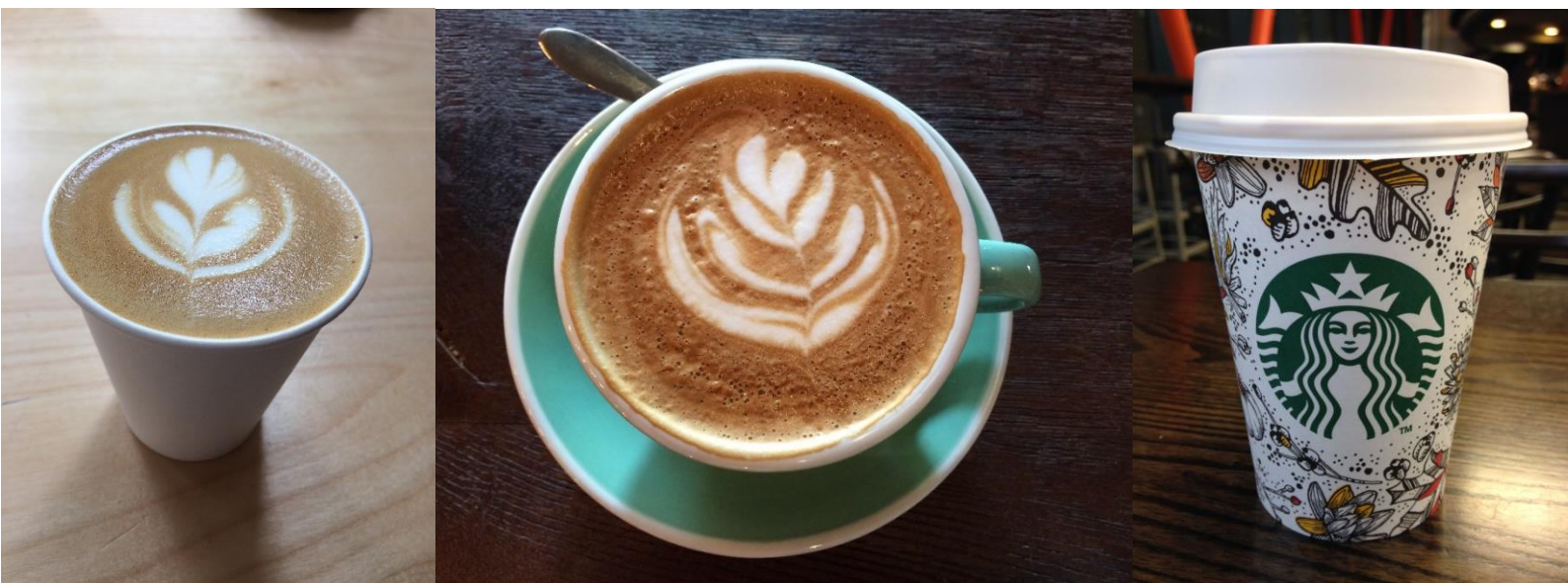
## Consumer experiences and perceptions of the circular economy

The research asked consumers (100 in each country) about their coffee shops habits and their awareness and engagement in activities that relate to the circular economy, in particular around recycling of cups and packaging. Figure 3 displays the four key themes to the response that emerged.

	UK	Germany
Consumers who owned a reusable cup	82%	70%
Consumers who used the reusable cup frequently	52%	66%
Consumers who said a discount for using a reusable cup would change where they bought their coffee	30%	20%



Figure 3 Views from consumers on coffee shops and the circular economy





Many consumers in both countries displayed a desire to be engage with the circular economy and be sustainable when visiting a coffee shop. For some, this has become part of their lifestyle:

*“It’s one of the things I can do to be more sustainable. I always take my cup into a coffee shop so it can be recycled properly.”*  
(Consumer, Manchester)

*“My KeepCup is just one of those things I have in my bag now. Keys, wallet, KeepCup, that’s just how it is these days. I like to have coffee on my way to work, and this way I can make sure I’m not creating more waste.”* (Consumer, Berlin)



Consumers indicated that cost and convenience were important influencing factors on their behaviour. Many consumers felt that carrying a reusable cup was not as convenient as carrying a reusable carrier bag because of size and the need to wash it between uses.

*“I bought a reusable cup, but have already gained my money back because of the 25p discount in my local shop, and I go regularly.”* (Consumer, London)

*“I dislike having to carry it around with me and I have to find somewhere to wash it.”*  
(Consumer, London)

*“If I use my reusable cup, I get extra loyalty stamps which means I get a free coffee quicker.”* (Consumer, London)

*“I have to make sure I clean it as soon as I get to work or end up with the leftover coffee spilling in my bag.”*  
(Consumer, Berlin)



In terms of recycling, there was still a lot of confusion among consumers about whether or not the cup could be recycled or not, and about where the cup should be taken to ensure it was recycled.





*“I never know whether I should put this in the main recycling bin on the street, or not”. (Consumer, Manchester)*

*“I put my cups in the recycling bin at work, I just assumed that would mean they get recycled.”* (Consumer, Munich)

## Barriers and Enablers

From the interactions with stakeholders related to the coffee shop industry, as well as consumers, a range of barriers and enablers for increasing engagement with the circular economy were highlighted.

### Barriers

Financial 	<ul style="list-style-type: none"><li>• Measuring financial benefits of circular economy</li><li>• Costs (and profitability)</li></ul>	<i>"I can't afford to switch the cups we use." (Coffee shop owner, London)</i>
Structural 	<ul style="list-style-type: none"><li>• Missing information</li><li>• Waste management infrastructure</li></ul>	<i>"I'd like to find a way to do something with the coffee grounds but I wouldn't know where to start." (Barista, Munich)</i>
Attitudinal 	<ul style="list-style-type: none"><li>• Perceptions of sustainability</li></ul>	<i>"We have biodegradable cups, that's our effort." (Coffee shop and roaster manager, London)</i>
Technological 	<ul style="list-style-type: none"><li>• Product design</li></ul>	<i>"We want more sustainable packaging, but the biodegradable stuff isn't actually biodegradable unless it's in a facility. We need materials that are biodegradable in any place." (Coffee shop manager, Berlin)</i>



## Enablers

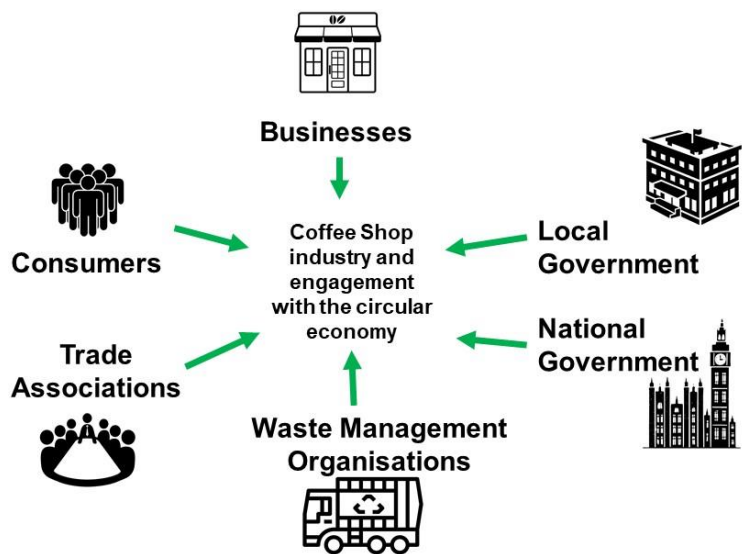
The key enablers for encouraging greater engagement with the circular economy were:

Financial		<ul style="list-style-type: none"> <li>• Initial funding needed to explore innovations</li> <li>• Support for funding to increase in 'binrastructure' and waste management systems</li> <li>• Financial incentives for consumers</li> </ul>	<p><i>"It was funding we received as a start-up that allowed us to develop this process." (Waste management organisation, London)</i></p>
Networks		<ul style="list-style-type: none"> <li>• Partnerships between organisations</li> <li>• Working groups to find support for ideas.</li> <li>• Institutional support</li> </ul>	<p><i>"We need to work with the waste management companies to make this work. If we work together, we both benefit." (Coffee shop manager, Berlin)</i></p>
Consumers		<ul style="list-style-type: none"> <li>• Awareness from consumers about schemes, initiatives and products.</li> <li>• Willingness from consumers to engage in sustainable practice.</li> </ul>	<p><i>"As a consumer I want to know more about how I can create less waste, and I want to encourage the places I buy things from to do so." (Consumer, Berlin)</i></p>



## Summary and Implications for future research

The coffee shop industry is rapidly growing in countries across the world, and in doing so it is increasing the amount of coffee shop-related waste, as well as increasing energy consumption. This research has highlighted a series of ways that stakeholders have been engaging in the circular economy, from coffee shops making efforts to reduce plastic packaging, waste management organisations transforming disposable coffee cups, to consumers using reusable cups. The research also highlights how there a range of key stakeholders that can shape the coffee shop industries future engagement with the circular economy.



Further research is needed to understand how to increase circular economy practices across the coffee shop industry, and how to overcome some of the barriers. This research explored stakeholders related to the consumption end of the coffee shop industry; further research is needed to explore the role of the circular economy across the coffee value chain, and to demonstrate the economic, social and environmental benefits of doing so. Given the global scale of the coffee industry and the range of stakeholders and processes involved, from the farmer to the consumer, there are a range of opportunities for the industry to engage in the circular economy.



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- Images in this report were created by the author apart from the image of Extract Coffee Roasters location in Bankside (p.8) which was provided by Extract Coffee Roasters, and the image of the CupClub box (p.12 provided in a CupClub press pack).
- Icons: Icons with creative commons license were obtained from the Noun project. Specifically: United Kingdom by Luke Peek; Germany by Yohann Berger; Renewable energy by Krisad; Lighting by lastspark; coffee cup by Ben Davis; Coffee by shuai tawf; coffee shop by fauzan akbar, Coffee by scott desmond; Recycle by Made; Sandwich coffee by Jay Alvarez; people by Bohegolem IT; café by Llisole; government by park jisun; big ben by Carpe Diem; waste truck by Template TH; and meeting by DanHetteix





## The Centre for Business in Society

Through understanding the impact of organisations' activities, behaviours and policies, our research seeks to promote responsibility and to change behaviours for the benefit of economies and societies.

## The Coffee Shop Industry and the Circular Economy

For more information about this research project 'From the grounds up: exploring the coffee shop industry and the circular economy in the UK and Germany', and other research on the coffee and coffee shop industries visit the research website: [www.cafespaces.wordpress.com](http://www.cafespaces.wordpress.com) or contact the Principal Investigator Dr Jennifer Ferreira: [Jennifer.Ferreira@coventry.ac.uk](mailto:Jennifer.Ferreira@coventry.ac.uk)



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