

Chapter 5

PP5 LWARB

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1. Overview

LWARB has analysed evidence from across all sectors of London to identify key benefits and opportunities that the circular economy will offer London. This work began in 2015 and LWARB's existing knowledge, and that gathered from stakeholders has been fed directly into the CircE project and the CircE tool.

Analysis by LWARB has identified that a transition to a circular economy could create net benefits of £7bn a year by 2036. There are several key sectors which should be the initial focus of this work, and several cross cutting themes which will enable this transition.

Methodology

LWARB drew on previous work to identify opportunities for London including the publications "Scoping study for a route map to a circular economy in London" , "Towards a Circular Economy in London" and "employment and the Circular Economy – job creation through resource efficiency in London".

The creation of the London Circular Economy Routemap included the creation of stakeholder groups for the 5 key sectors identified by LWARB as having the most potential to drive forward the transition to a Circular Economy in London. These sectors were built environment, food, textiles, electricals and plastics. These groups met for three half day sessions to discuss key issues, opportunities and potential solutions. Information gathered during these meetings was fed into the CircE tool and is included in this report.

During the first CircE Project partner event in Milan in February 2017, investigations into key sectors confirmed the 5 sectors already identified through the route map work, and also highlighted the importance of enabling sectors such as the transport sector for London.

The analysis within the CircE tool consolidated LWARB thinking on the key areas which can be influenced and policy tools. This includes the London environment strategy and London Plan which were already identified as a key policy instruments. The tool identifies several enabling plans and strategies such as the jobs and growth plan for London ,and several existing funding opportunities such as European Structural and Investment Funds and the Sustainable Urban Development Strategy for London which are aimed at innovation and adoption of low carbon and resource efficiency.

1.1. RIS3

Concerning the Smart specialization strategy, the most strategic innovation areas in the Region in view of supporting the transition to circular economy and developed a SWOT analysis have been identified. Within London these were identified as professional business services, construction, information economy and to a lesser extent life sciences and agriculture.

The SWOT analysis highlights the opportunities that a vibrant and innovative finance and technology sector will be able to provide. There are already many specialist organisations located in London developing innovative solutions for the built environment such as the Alliance for Sustainable Building Products. London also has one of the largest markets in the world for clothing, and a highly regarded fashion sector. It also highlights many of the key environmental issues faced by a City which a move to a more circular economy could help to tackle including carbon reduction targets, recycling targets, and population growth which will not only mean increased waste production but also a need for rapid construction of new infrastructure and housing.

LWARB procured Amec Foster Wheeler to assist in completing the Circe tool, allowing earlier work by LWARB to be fed in, and to provide additional expertise to refine LWARB thinking. Amec completed steps 1-3 of the tool. This in turn enabled the LWARB circular Economy Route Map to be added to and refined before publication in June 2017. The route map can be found at <http://www.lwarb.gov.uk/what-we-do/circular-london/circular-economy-route-map/>.

1.2. Sectors

The focus sectors of built environment, food, textiles, electricals and plastics will be the focus of LWARBs work on the Circe project. These focus sectors have been chosen because of their high environmental impact, their retained financial value and potential for re-use. These areas could benefit London to an estimate of at least £7 billion annually by 2036.

The following NACE codes were identified as relevant within London industrial stakeholders :

Built Environment

F41 – Construction of buildings

N81 – Services to buildings and landscape activities

M71 – Architectural and engineering activities; technical testing and analysis

L68 – Real estate activities

C32 – Other manufacturing

D35 - Electricity, gas , and air conditioning supply

N81 – Services to buildings and landscape activities

H49 - Land transport and transport via pipelines

Food

I56 – Food and beverage service activities

Textiles

N77 – Rental and leasing activities

M74 – Other professional, scientific and technical activities

Electricals

C27 – Manufacture of electrical equipment

S95 – Repair of computers and personal household goods

Plastics

C32 – Other manufacturing

M73 – Advertising and market research

Cross Cutting

M70 – Activities of head offices; management consultancy activities

E38 – Waste collection, treatment, and disposal activity, material recovery

C29 – Manufacture of motor vehicles, trailers and semi trailers

G47 – Retail trade (except for motor vehicles and motor cycles)

S94 – Activities of membership organisations

2. Good practices

Good practices have been collated in section 4 of the tool. This data has come from the experience and expertise of the LWARB team, stakeholder engagement, and research carried out by Amec Foster Wheeler for the CircE tool.

2.1. Built Environment

BREEAM (BRE Environmental Assessment Method), BRE

BREEAM (BRE Environmental Assessment Method) is the leading and most widely used environmental assessment method for buildings and communities. It sets the standard for best practice in sustainable design and has become the de facto measure used to describe a building's environmental performance.

SMARTWaste, BRE

A tool for measuring all kinds of construction site impacts, as well as waste. Users benefit from a regularly updated tool, which offers, reporting and support in preparing and implementing Site Waste Management Plans and waste reporting, as well as the ability to measure on site energy, fuel, timber, water and more.

GlobeChain

An online platform which allows businesses and charities to share and reuse items rather than dispose of them or purchase new.

Major Infrastructure Resource Optimisation Group, Aecom

A group comprised of key national infrastructure operators which aims to collaborate on circular economy issues.

2.2. Food

Love Food Hate Waste, WRAP

WRAP's Love Food Hate Waste (LFHW) campaign provides useful reference and communications material that local authorities can draw on to promote food reduction in their area. LFHW has its own dedicated consumer facing website containing a wealth of detailed ideas to help individuals, communities and organisations reduce food waste as well as the LFHW partner website containing free materials, templates, and resources for local authorities.

Social supermarkets, Mayor of London/GLA

In May 2015, the Mayor announced £300,000 of funding to establish at least two new social supermarkets in London that reduce food waste and sell stock including residual food waste at low prices to local people on low incomes and struggling with food poverty.

FoodSave, Sustainable Restaurant Association and Sustain

FoodSave is a project to help small and medium-sized food businesses in London reduce their food waste, put surplus food to good use and dispose of unavoidable food waste more responsibly, through processes such as composting or anaerobic digestion.

Growup Farms

An SME which lowers the environmental impact of agriculture by building and operating farms that take unused urban space and use it to grow produce. Through the use of aquaponic technology and protected cropping, they produce a year-round harvest of fresh, leafy vegetables and fish.

Snact

An SME which creates healthy snacks from waste fruit.

2.3. Textiles

Love Your Clothes, WRAP

A campaign to encourage consumers to change how they buy, use and dispose of clothes. Originally launched in 2014 with industry organisations. It aims to reduce the environmental impacts of clothing and influence a more circular approach to clothing globally

Alexandra Wood

A bespoke London tailor that investigated circular economy business models, and has extended their offer to customers to include suit hire for wedding parties.

Rentez vous

An online store which allows customers to hire rather than purchase clothing

2.4. Electricals

Sustainable Electricals, WRAP

WRAP partners with businesses in the electrical and electronics industry to identify opportunities for business growth through adopting sustainable business practices which put the lifecycle of products and customer experience at their heart.

The Restart Project, Restart

The project helps communities, schools and companies to repair electrical items and document barriers to using electricals for longer.

2.5. Plastics

#squaremilechallenge, Hubub

A collaboration with coffee retailers, businesses and public spaces in the centre of London to offer coffee cup recycling.

2.6. Cross Cutting Good Practices

Recycle for London, WRAP

A campaign to encourage consumers to recycle rubbish rather than just dispose of it to landfill. Provides useful materials for local authorities, and a user friendly website on how and where to recycle.

Going circular, Price Waterhouse Cooper

PWC's programme to deliver circular services across operations, procurement and beyond.

London Living lab, UCL , ICL, Intel, Future Cities Catapult

London Living Labs comprise heterogeneous wireless sensor networks incorporating gateways and edge-based sensing and computing technologies to provide an end to end Internet of Things solution.

CircEL, UCL

A cross-faculty, cross-discipline initiative, aiming to use UCL's expertise to improve the design of buildings and products, their re-use and recycling, and the return of their constituent materials back to the economy.

3. Opportunities

3.1. The overall results

LWARB has utilised the CircE tool and previous work to create the following overview of key opportunities for London to grow the circular Economy.

Enabling Sectors

Policy

The Mayor of London is currently producing new policy and plans concerning environment, economic development, transport, and planning as identified in the toolkit. These will allow London to integrate circular economy across many sectors.

The Mayor's policies provide policy and guidance to the 33 municipalities of London who also play a key role in local development and planning.

There will also be opportunities to lobby national government through the consultation on strategies such as the industrial strategy.

Procurement

Within London the Greater London authority group is responsible for almost £11bn spending a year, and London municipalities are responsible for £20bn of procurement each year meaning there is a huge opportunity to integrate circular economy into the London supply chain through public purchasing power.

The Mayor and Greater London Authority have just announced a new responsible procurement strategy, and there will be opportunities to ensure the relevant parts of the policy are being used by the GLA group and all municipalities.

Finance

London has a vibrant and diverse economy with a strong finance sector. The availability of affordable capital will be critical to move to a circular economy.

London has a large and entrepreneurial concentration of small and medium size enterprises. By helping to accelerate growth of SMEs and identify how they can adopt circular business models. They will need assistance in accessing finance and business skills.

LWARB intend to assist in taking this opportunity forward through the Advance London programme which includes an investment strategy and business support.

Collaboration

Several of the Ellen MacArthur Foundation CE100 companies have headquarters in London, and will be useful in driving supply chains within London and beyond. Collaboration will be essential to take the opportunities the circular economy presents forward. There is an opportunity for LWARB to facilitate new partnerships and projects through facilitating and coordinating such collaborations.

Innovation

London has a well developed technological and digital sector which will be an essential driver for the circular economy through innovations such as big data analytics, the internet of things and cloud technology. This can be utilised to drive new consumer behaviour such as the sharing economy and products as services.

The tool illustrates the strengths of higher education within London many of which already have established research programmes focussing on the circular economy. Working alongside private sector and higher education will be essential in ensuring London maximises the opportunities innovation can offer the circular economy.

Transport

The Mayor of London's transport strategy was launched for consultation on 21st June 2017. The strategy draft includes the aim to ensure London's transport system is zero emission by 2050, and that 80% of Londoner's trips by 2041 will be by foot, cycle or public transport.

There are opportunities to ensure the transport infrastructure considers circular economy within the materials used , and within vehicles used through procurement practices adopted by Transport for London.

New taxi's licenced after January 2018 will need to be zero emission capable. New investment in rapid vehicle charging points for electric vehicles will be rolled out across the city. There may be opportunities to work with the supply chain for vehicles and street furniture including vehicle charging points to embed circular economy. The mayors strategy includes a requirement for all new double decker busses to be hybrid, electric or hydrogen. These requirements should be included alongside other circular economy procurement requirements for new buses, and could look at other options such as products as service models.

Development of transport infrastructure in London is a high priority. Cross Rail, and the Thames Tideway Tunnel are currently being built. There are also planned extensions to the Northern and Metropolitan underground lines. These opportunities link to the built environment opportunities identified above i.e. use of circular economy materials, design for disassembly etc.

Better use of apps could make car sharing, and short-term lease of cars and bikes easier, cutting congestion and pollution across the city. Bike hire already exists in many parts of inner London, but there is potential for outer London boroughs to also adopt this opportunity.

As there is increased demand for fast home delivery of goods ranging from food to clothing, research is currently being undertake on ways to reduce congestion and demand for use of polluting delivery vehicles. Municipalities of London such as Greenwich are exploring new innovations such as small, unmanned electronic delivery vehicles that travel on pathways rather than roads. Such innovations may need further exploration and testing in other municipalities to identify if they are suitable for use across London.

3.2. Built environment

London's population was 8.78 million in 2016, and is expected to grow to 10 million by 2029. This means London faces pressure to build new infrastructure and housing rapidly. The 2015 London plan (London's spatial planning strategy) identifies that over 40,000 units of housing will need to be built per year over the next 10 years, and London's office space will increase by 5million m² by 2030.

This provides a huge opportunity to integrate circular economy within construction and development. The London Plan and associated guidance documents could be used to ensure planning and development within London follows the principles of circular economy.

LWARB's report – Towards a Circular Economy for London identified that the build environment offered the opportunity for GDP growth of between £3bn and £5bn annually by 2036. In 2011 the GLA identified that 48% of all waste in London is from construction , excavation and demolition. Through reducing and reusing construction materials , large financial savings can be made.

It will be possible to help protect organisations from volatile material costs if they are able to reduce materials used , and reuse resources.

There is also the opportunity to create new jobs through areas such as reuse, remanufacturing, repair and maintenance.

Through better use of buildings and products and use of new technology it will be possible to make better use of existing assets – exploiting and sharing wasted capacity, and ensuring refits which incorporate products as services. This will also allow retention of a building or materials value after its initial life through designing for adaptability, disassembly or reuse of materials and ensuring high quality for recycling. Use of unused space created during redevelopment of areas could also positively demonstrate circular economy opportunities. Through research it should be possible to identify targets for reuse and reclaimed materials in construction projects.

To exploit the existing circular economy expertise within London, and to allow the construction and design sector to take forward opportunities, it will be important for skills and training to encompass circular economy principles.

Within London the mayor selects key areas for development and regeneration which are known as opportunity areas. Within Old Oak and Park Royal sites there will be opportunities to examine how circular economy principles can be applied to major developments at a larger scale.

Potential Solutions Identified:

Design

- Introduce circular economy principles into relevant university courses.
- Carry out a scoping study into how circular economy can be delivered through the development and regeneration of the Old Oak and Park Royal sites in north west London.
- Promote novel technologies that enable circular economy within the built environment.
- Incorporate relevant circular economy principles into London Plan and local plans.
- Invest in innovative circular economy building design and products.

Materials

- Identify material requirements of major infrastructure and other developments in London.
- Work towards setting a re-use target for construction projects in London – carry out research on developing the market in re-used/reclaimed products including space and logistics required.
- Seek funding to ensure that London is home to projects that demonstrate circular economy, building on learning from ongoing research projects.
- Research constraints on refit, re-use and demolition activities.

Building Operation

- Carry out research on under-utilisation of public and private buildings in London.
- Share good practice amongst facilities managers to implement circular economy principles in the running of their buildings.
- Use 'meanwhile' spaces (unused spaces created during redevelopment that can be used for temporary positive uses) to demonstrate circular economy work.
- Pilot new circular economy business models in the operation of buildings.

3.3. Food

With a large population comes a large demand for food, and large volumes of food waste. In 2002 over 8 million tonnes of food were consumed by London per year. Towards a Circular Economy Report identifies that adopting a circular food economy could add £2-4bn GDP for London by 2036. The average household in London could save £470 a year through reducing the amount of food it throws away. In London businesses also have a large potential to save money with “FoodSave” illustrating that small hospitality/food businesses can save up to £6,000 a year by reducing food waste.

In London there are emerging entrepreneurs making use of waste food to create new products, and there will be many more opportunities to exploit.

Education and behaviour change programmes will promote prevention of food waste. Local authorities can help with reducing household food waste through offering kerbside collection for households.

Within London Food poverty (residents having to go without food due to poverty) is a growing issue. There are opportunities to increase redistribution of food from retail and hospitality to provide emergency help to these residents and reduce food waste. Other uses for redistribution or reuse of food are being investigated and should continue for example Glasgow has established beer from bread and bread to beer circular food loops within the city.

There is a need to provide the best outcome for unavoidable food waste too through use as feedstock for anaerobic digestion and conversion into renewable energy.

There are opportunities to reduce transport and increase the shelf life of fresh food through local food production in London. The London Plan and local municipal plans can include promotion of the use of land for food growing.

Community gardening has social and environmental benefits and can act as an important tool to educate residents about food waste. New opportunities to utilise wasted space should be exploited by community groups and commercial operations. Several examples already exist where new food growing developments such as aquaponics are being used to make best possible use of available space. Higher education institutions will be important for encouraging developments in food science such as extracting useful chemicals from food waste.

Potential Solutions Identified

Avoidable Food waste

- Promote and build on existing voluntary agreements, consumer and business campaigns.
- Support public authorities and private companies to procure catering contracts that promote the food waste hierarchy.
- Explore opportunities to increase recyclability of food packaging.

Value from Food waste

- Use edible food surplus as a way of contributing to the alleviation of food poverty.
- Raise awareness of options for using food waste as a valuable resource e.g.as animal feed, to create a new product or as an input for other industrial processes (e.g. bio-refining).
- Achieve maximum tonnage of food waste collected through local authority and business waste collection services.

Urban Food Growing

- Advocate for the continued protection and promotion of land for food growing in the London Plan and Borough Local Plans including the use of green belt and ‘meanwhile’ development sites to host food- growing and/or allotments to help increase the supply of local sourced produce.
- Promote the inclusion of space for food growing in the plans for new housing developments.
- Explore technologies to increase urban growing potential including aquaponics and vertical growing.

3.4. Textiles

In 2013 London had the third largest consumer clothing market , and this is expected to rise to become the largest by 2030 with a predicted value of £29.5bn a year. In this millennium there has been a growth of “fast fashion” leading to clothing being brought and discarded after a very short time, or not worn at all. Within the UK WRAP have identified that more than 30% of unwanted clothing goes to landfill or incineration meaning there are large opportunities for reuse, remanufacture or recycling.

Often clothes and textiles are designed and created with mixed fibres and materials which makes reuse or recycling more difficult. Circular economy design courses offer the opportunity to overcome this issue.

Research and development is enabling new uses for used textiles. Small scale recycling of textile to textile recycling is available but there are opportunities for this work to be scaled up. Investment in new technologies and new entrepreneurs can bring these products to market.

There are growing opportunities on offer for Londoners to access clothing through avenues other than up-front purchase for example Rentez-vous allows customers to rent or borrow other people’s clothing through an online site. Companies are also offering rental of clothing which encourages manufacturers to increase the durability of items.

The public sector and service industry purchase large volumes of corporate uniforms of which there are large opportunities to recycle. Guidance and assistance with procurement and different operating models could help reduce this waste stream. In France extended producer responsibility covers textiles, the application of such an approach for London/England could be explored. Also there are successful examples of take-back schemes which encourage customers to bring back items of clothing to stores in exchange for rewards. This benefits the business and the customer, and other organisations could learn from businesses already successfully using this business model.

Many people now no longer know how to repair their own clothes. Often it is cheaper to buy new clothing then to pay for someone to repair it. Opportunities to educate residents about repair could increase the lifetime of clothes.

Potential Solutions Include:

Design

- Increase knowledge and expertise by incorporating circular economy design into relevant textile design courses and create design competitions to incentivise and promote innovation.

Supply Chain

- Offer business support to textiles industry start-ups and existing SMEs to help them transition to more circular economy business models.
- Invest in circular economy textile SMEs and in technologies that allow for more sustainable textile manufacture.
- Look at opportunities to 're-shore' textiles manufacture and production in the capital from overseas.
- Encourage large textile brands and manufacturers to use more circular business models.
- Lobby for extended producer responsibility for textiles, as happens in France.
- Provide procurement advice and support to organisations to help them procure textiles more sustainably, using circular economy business models such as increased percentage of recycled content.

Reuse and Recycling

- Continue to influence consumer behaviour through the Love Your Clothes campaign.
- Assess how collections and infrastructure for textile re-use could be improved.
- Invest in fibre sorting and fibre-to-fibre recycling technologies.

3.5. Electricals

LWARB's Towards a Circular Economy report identifies that utilising circular economy opportunities in electricals in London could create up to £900m net benefits by 2036. Electricals contain many different rare materials which are only found in other countries. This leaves electric businesses and consumers vulnerable to price volatility which could be overcome through better recovery of materials in electrical items.

In the UK WRAP identified that the average UK household spends around £800 a year on new electrical goods. Less than 10% of electronic items purchased are reused. Nearly 25% of waste electronics taken to household waste and recycling centres could be reused. This illustrates a clear opportunity to reduce electronic waste and drive the circular economy.

Often residents do not take electrical items for reuse because they do not know where they can do so, or because of data safety concerns. There is an opportunity for behaviour change campaigns to help address this issue similar to the London Love Food Hate Waste campaign for food waste. Some electrical items may be repairable but the cost for repair of items is higher than the cost of replacing the item. There is also a lack of repair skills in London. This provides the opportunity for training not only for householders but also electricians, and sharing of repair knowledge digitally.

Within London businesses have a high demand for IT services and equipment. Circular economy could be introduced at procurement or disposal stage. There are also opportunities to better utilise office equipment through sharing via digital platforms, and use of smart data to ensure maintenance and replacement of failed parts rather than a whole item.

Reuse of unwanted items from homes and businesses can give a second life to electrical items and can benefit organisations such as charities, social enterprises and new start ups.

Changes to new circular business models such as sharing, renting and leasing can encourage increased longevity of items. It is clear that millennials are happy with this business model and demand is likely to grow.

Bringing together producer compliance schemes to consider service packages to local authorities could also increase recycling.

Potential Solutions Include:

Design

- Use the joint procurement power of cities to influence the design of office equipment so as to embrace circular economy principles.
- Engage with university courses to embed circular economy thinking into relevant courses on electricals design.

Extending the life of products

- Pilot a consumer campaign to promote re-use and recycling of electrical equipment.
- Develop a larger repair economy in London by raising awareness of existing repair businesses and encouraging others.
- Support local authorities, other public sector organisations and businesses to track and trace their electrical assets and use an online platform to enable re-use of items within their organisation and beyond.
- Review organisational IT strategies including procurement, replacement cycles and disposal routes.
- Support SMEs that repair, re-use or remanufacture electrical equipment or new start ups in this field.
- Invest in businesses that improve product lifetimes.

Effective collection and recycling

- Bring together producer compliance schemes to consider service packages to local authorities.
- Lobby for more stretching targets for producer compliance schemes.
- Support innovative ideas on collection, recycling and WEEE treatment.

3.6. Plastics

LWARB have identified that the net benefits from a circular approach to plastics in London could be up to £200m annually by 2036. In the UK the Ellen MacArthur Foundation estimate UK plastic waste to be 3.7

million tonnes in 2016, with plastic packaging accounting for 2.2 million tonnes. Plastics are made from fossil fuels and are responsible for huge volumes of ocean pollution. Introducing circular economy into plastics therefore has opportunities to reduce CO2 emissions, and other environmental damage.

Households are significant producers of plastic waste, and 1.5 million tonnes of packaging waste comes from households. There are opportunities to encourage residents to reduce, reuse and recycle plastic waste. All London boroughs offer kerbside plastics collection, but there are different offers in different boroughs which can confuse residents. Harmonisation of the offer across boroughs could help tackle this issue. Education and behaviour change campaigns can create significant changes to recycling of plastics.

LWARB is keen to work in collaboration with the Ellen MacArthur Foundation on the New Plastics Economy initiative which aims to transform the plastics sector globally therefore influencing the global supply chain. Within London there is an opportunity to collect more plastic packaging from commuters and city workers whilst they are out of the house. Food retailers and manufacturers could also ensure food packaging is easier to recycle, reuse or capable of being anaerobically digested/composted.

Public and private procurement practices could be used to stimulate recycled and reused plastics.

Policy could also provide opportunities to drive change for example extended producer responsibility , plastic bottle deposit schemes and France's policy to ban plastic cutlery and crockery.

Potential Solutions Include :

- Support London boroughs to harmonise collection systems across the capital, in line with emerging national and/or international standards (e.g. Global Plastics Protocol).
- Support London boroughs to be consistent in the plastics packaging they recycle so that all residents can recycle plastic bottles, pots, tubs and trays – and, in the near future, plastic film such as carrier bags.
- Give Londoners clear communications about which plastic containers and packaging they can recycle and which they cannot.
- Provide more widely available recycling services in public areas.
- Encourage and support consumers and private and public organisations to procure items that are re-usable, easily recyclable and/or include recycled content.
- Collate procurement needs across public organisations, private organisations and other cities to drive change by retailers and manufacturers.
- Work with the New Plastics Economy to develop collaborative ways of working to drive change within the global plastics supply chain.

3.7. All sectors

In this section the opportunities identified as valuable for all the sectors are reported. These results were identified from the cross sectorial analysis.

1, Increase skills in circular economy sector. As illustrated by LWARB research, there is huge potential for jobs in the circular economy in London, but unlocking this will require training in new skills across all sectors.

2, Identify metrics for baselining and monitoring performance of a circular economy. There exist tools and metrics for measuring circular economy in one organisation or for one produce, but there is so far little research on how to measure progress as a region or city.