Circular Economy – what every Waste & Environmental Manager should know

On a recent Circular Economy Masterclass the key concepts and latest developments everyone should know were highlighted by Brian Mayne in an interview with Stuart Henshaw from Integrated Skills. One of the topics covered was the activities that a local authority waste manager can take to achieve a Circular Economy (CE) and the benefits that can be delivered as a result of these actions. Some of the issues discussed are set out below.

A CE is an alternative to a traditional linear economy (make, use, dispose). It is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems[1]. There are a wide range of business models being used to deliver a CE, these include organisations;

- Manufacturing products from bio-based or renewable materials
- Replacing non-renewable resources with bio-based or renewable materials
- Using end of life products and re-using them in new products
- Developing products as a service
- Offering customers products for a subscription fee or a usage based charge instead of them owning it
- Providing customers an opportunity to buy a pre-defined service and quality level, with a guaranteed outcome.

So how does that fit with the role of a waste manager delivering frontline services to the public?

The modern day waste manager has to juggle several roles including being a buyer and consumer of goods and services, a user of facilities and vehicles as well as a major collector of resources of reusable and repairable products and recyclable materials whilst not forgetting the awareness-raising role of informing the public of their role in reduction, reuse, recycling and responsible consumption.

Circular procurement

In buying works, goods and services waste managers can apply procurement principles that have an important role in supporting the move towards a CE. Circular procurement sets out an approach to green public procurement which pays special attention to "the purchase of works, goods or services that seek to contribute to the closed energy and material loops within supply chains, whilst minimising, and n the best case avoiding, negative environmental impacts and waste creation across the whole life-cycle"[2]

[1] Ellen MacArthur Foundation: What is the Circular Economy - https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy

[2] European Commission: Circular Procurement - https://ec.europa.eu/environment/gpp/circular_procurement_en.htm

There are many ways that procurement can be used to support a CE such as ensuring the longevity of items are considered when selecting goods, buying products that can be reused or refurbished, or goods that can go back to the supplier at end of life. Waste managers need to ask whether any of the goods, works and services being purchased are resource and energy efficient. They need to consider specifying recycled content or purchase reclaimed products instead of new ones. Take office furniture, for instance, there is a wide range of items made out of recycled products or alternatives such as getting existing furnishings refreshed and returned to in as-new condition.

There are also different ways of procurement rather than buying a product outright such as the 'Product-as-a-Service' business model that provides a service in areas that were traditionally sold as products. For a waste manager, an example could be buying workwear or uniforms. The uniforms would remain the property of a supplier to the end of their life cycle. As the owner, the supplier has an interest in maintaining the garments in good condition to ensure a long useful life for them. Local authorities would not have to tie up capital in work uniforms or allocate resources to their management and maintenance. This would enable them to have easy access to clean, serviced, safe clothes that meet the required quality standards for their workforce.

Market creation

There are many potential barriers to circular procurement, including insufficient market capacity to deliver CE outcomes, an immature supply chain, a shortage of necessary technical knowledge, or skills (e.g. for repairing products). Often businesses have insufficient capital to bring solutions to market, or simply because the approach is different there is a lack of demand by purchasers as they are unaware or unprepared to take risks on new products or delivery mechanisms.

Waste managers can help create and develop the market for new business models such as encouraging suppliers to develop new approaches in their production of goods, through activities such as 'Meet the Buyer' events.

Other initiatives could include developing innovative performance frameworks with suppliers that reward CE outcomes, sharing risk in bringing in new materials, end of life approaches or new service models and supporting the supply chain in the development of specific CE goods, services, or business models by helping facilitate pilots and trials.

Facilities

Waste managers are responsible for a range of facilities such as depots and offices which need to be fully utilised to maximise their efficiency. If not then there is an opportunity for collaboration between local authorities, local businesses to ensure that they are being used to capacity. Another business model of the CE is shared services. There is already a track record of authorities working in collaboration with each other. In fact, as a result of austerity measures, they have been at the forefront of finding ways to deliver effective services through cost-efficient and innovative means and shared capital and service arrangements have been one of the most popular and successful methods of retaining services while achieving efficiencies and savings. Sharing allows existing goods and resources to be used more fully, rather than letting them lay dormant.

Vehicles

One way waste managers can support the CE is by adopting technologies such as the IoT (Internet of Things). By adding intelligence to a vehicle, IoT technologies can create an asset that can signal problems, determine when it needs to be repaired, and schedule its maintenance. Predictive maintenance for vehicles, identifies issues before they occur. By reducing breakdowns vehicles are available longer and as a result more productive and replaced less, which fits with the CE principle of ensuring products to last longer.

Many Managers are already evaluating the suitability and impact of alternative fuels, including the opportunities offered by battery technology. Whichever fuel is used though, applying route optimisation to the Council's collection routes, can form part of their circular strategy to reduce their environmental impact by becoming more efficient and less wasteful.

Materials

Local authorities have long been at the forefront, often with social enterprises as their partners at HWRCs, of redistributing furniture, tools, books, CDs, DVDs, toys and games to new owners, without reprocessing to take place. They also play a key role in providing high-quality materials to manufacturers through their collection schemes ensuring the materials they collect can be used in new products reducing the consumption of fresh raw materials. Also, there are opportunities to expand the collection of more niche materials such as Absorbent Hygiene Products, mattresses and carpets which will help new businesses develop and expand.

Awareness raising

Behavioural change is key to making the CE a reality. Awareness campaigns have long been a mainstay of local government targeted at encouraging householders to ensure the correct materials are placed in the right containers so extending this to get them to stop buying things that they don't really need and stop throwing away products that still have life is well within their capability.

Another area often overlooked is that CE thinking encourages organisations to take a much closer look at the economic, employment and societal impacts of their activities as they shift towards a CE. Waste Managers will need to become the person asking the awkward questions of their service: What is the destination of this material? In what country is it processed and under what social conditions?

Benefits

The benefits that can materialise from these activities to deliver a CE can also bring advantages to a local authority, they include;

- collecting more goods for reuse or repair will reduce the amount of waste generated. The materials collected could help create jobs locally, by providing the items to local businesses.

Business models based on reuse, leasing, repair and remanufacturing could create four times more jobs than waste treatment, disposal and recycling[3].

- improving the quality of materials collected as well as the amount and variety in more efficient ways can provide economic benefits. Ensuring the quality of recyclables can help secure better prices than for poor quality material especially at times of low demand. There is also the potential of receiving additional income from the sale of recyclables, as well as savings from increased diversion from disposal and effective service design. It also offers the opportunity to support economic growth by making more materials available which linked with a local authority's circular procurement activities that exercise a preference for recycled goods, can provide the economic impetus for companies to use more recyclable materials in the production of their products.
- collecting food waste holds great potential for the CE. According to the European Environment Agency's reducing and using bio-waste could cut emissions, improve soils and provide energy[4].
- offering opportunities for collaboration and sharing between local authorities can enable efficiencies in service delivery and provide financial savings. Reduction in expenditure will enable funds to be spent elsewhere.
- providing more opportunities for repair, reuse and recycling, can conserve resources, reduce the need to grow, harvest or extract new raw materials, lessen demand for raw materials, save energy and cut carbon dioxide and other greenhouse gases being emitted into the atmosphere. All of these activities can assist a local authority in their climate change and sustainability ambitions.

The CE, according to the Ellen Macarthur Foundation, represents systemic change. It goes beyond fixing current issues and incremental improvements, to a full-scale industrial transformation[5]. Local authority waste managers by adopting new ways of thinking can help redesign the present 'take, make, dispose' system and play an important role in accelerating the change to a circular system so that we can all reap the benefits it will bring to our economy, society and environment.

Authors

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Brian is a fellow of the Chartered Institution of Wastes Management, Chartered Environmentalist, and is recognised by the International Solid Waste Association as an International Waste Manager.

Recently he was a visiting lecturer in Environmental Policy and Management at the School of Engineering, Cardiff University, and also developed lectures for BioInnovation Wales a unique partnership scheme between Aberystwyth and Swansea Universities on the circular economy. Brian has also lectured at Leeds and Reading Universities, in addition to publishing research on many waste and resource efficiency topics including the circular economy.

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[3] Green Alliance: Building a circular economy: how a new approach to infrastructure can put an end to waste - https://green-alliance.org.uk/building_a_circular_economy.php

[4] European Environment Agency: Bio-waste in Europe - https://www.eea.europa.eu/publications/bio-waste-in-europe

[5] Ellen MacArthur Foundation: Our Network - https://www.ellenmacarthurfoundation.org/our-story/our-network

Brian has extensive experience of working within the circular economy this has included business development, for Zero Waste Scotland providing advice to SMEs and Social Enterprises.

He has also developed and delivered a training course to increase awareness of the circular economy in Wales, identifying why itis important and develop an understanding of how the circular economy, and in particular reuse and recycling, can be promoted and delivered in the NHS.

He is presently a Director at HJL Environmental a boutique environmental consultancy who offer bespoke solutions.

Stuart Henshaw

Stuart is a Member of the Chartered Institution of Waste Managers. He trained as a Landscape Architect, before moving into Waste Management which has been his focus for the last 30 years. He began his career with the Tidy Britain Group, then moved to manage local authority services at Selby District Council for 15 years. He has an MSc in Environmental Policy & Management and has been Project Director at Integrated Skills for over 10 years implementing over 100 local authority projects, and recently moved to head its UK Business Development. He leads Integrated Skills monthly webinar programme.