

УПРАВЛЕНИЕ НА ОТПАДЪЦИТЕ И КРЪГОВА ИКОНОМИКА
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WASTE MANAGEMENT AND CIRCULAR ECONOMY
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Abstract

The central theme of this issue is waste management in relation with circular economy. The circular economy is geared towards extending the added value of products and even eliminating the production of waste as far as possible. The business concept of a Circular Economy is based on an idea: learn from natural processes and “get back” to a circular use of resources, inspired by the way it was naturally designed.

In this regard, waste management plays a striking role, determining whether materials are deprived in definite disposal or recovered and reintegrated into the economic cycle. In a circular economy the value of products and materials is maintained for as long as possible; waste and resource uses are minimized, and resources are kept within the economy when a product has reached the end of its life, to be used again and again to create further value.

Key words: waste management, circular economy, added value, waste, resource, naturally designed

JEL Codes: Q53, Q57

INTRODUCTION

In the past twenty years, the emphasis of the waste and resource management sector has moved from landfill to recycling, and there is now a

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growing and increasingly powerful argument that the Circular Economy will increasingly dominate over the next decades. This will involve substantial changes to the culture, principles and practice of the current waste and resources sector and bring new challenges and opportunities. The circular economy concept really entered the mainstream when championed by the Ellen McArthur Foundation starting in 2010. Now, the UK Government, the European Union and many other academic institutions, non-profit organizations and NGOs have produced significant documentation supporting and promoting the approach.

The term Circular Economy is a comparably new concept within the sphere of sustainability. According to the Ellen MacArthur Foundation, Circular Economy is focused on eco-effectiveness rather than on eco-efficiency and on a holistic optimization of all components, making it a framework which places great focus on design and on systems thinking.

Circular Economy supporters portray it as an existing and whole new way of transforming the economy in to a regenerative economic system that will, as a base line, exist within planetary limits. Circular economy with its 3R principles of reducing, reusing and recycling material clearly illustrates the strong linkages between the environment and economics.

In the linear economy, fossil resources are extracted, used to fuel processes and generate products and afterwards disposed of in a short period of time. Economic development and wealth are reflected in a rise of consumption and waste generation.

If the urban metabolism is regarded holistically, synergies can be found between the different flows. The aim is to reprocess outputs locally to serve as new inputs. Organic waste and wastewater treated together can yield energy and nutrients for the urban gardening, captured rainwater can be used in toilets and industry processes, saving freshwater. In contrast, the conventional central discharge of sewage and disposal of waste are linear solutions, because the value that lies in the waste resources is transported away. The circular economy needs large quantities of quality raw materials.

The following key elements are identified within a circular economy: use waste as a resource, design for the future, collaborate to create joint value and prioritize regenerative resource. Of central importance is to view a circular economy not as an environmental issue alone, but as an integral part of humanity's long-term economic viability. The circular economy transition interacts with other economic transformation, like sharing economy, the increasing transparency of externalities and disruptive business models.

The ultimate goal of the circular economy is to evolve into a society where residual waste is reduced to a minimum with high levels of capture and reuse via a combination of eco-design, new business models (including rental, repair and reuse) and new recycling technologies.

By maximizing the recovery and recycling of materials, waste management has to contribute significantly to minimizing primary resource use. The better the quality of resources provided from recovery, the better prepared for reuse, the more likely the producing industry will reintegrate them into the primary production process. However, minimized primary resource use also places demands on the waste management operations themselves. Process efficiencies are demanded, for instance, shifting the vehicle fleet to run on green gas from the own organic waste recovery.

In a circular economy, products and the materials they contain are valued highly, unlike in the traditional, linear economic model, based on a 'take-make-consume-throw away' pattern. In practice, a circular economy implies reducing waste to a minimum as well as re-using, repairing, refurbishing and recycling existing materials and products. Moving towards a more circular economy could deliver benefits, among which reduced pressures on the environment, enhanced security of supply of raw materials, increased competitiveness, innovation, and growth and jobs. However, it would also face challenges, among which finance, key economic enablers, skills, consumer behavior and business models, and multi-level governance.

METHODOLOGY

To achieve the object of this paper, the circular economy and waste management data has been collected. The primary information is mostly from websites, books, journals, etc. Also, a lot of facts and date from waste management and circular economy literature are taken into consideration.

ANALYSIS AND DISCUSSION

From families that recycle diligently to businesses operating more sustainably, the world is beginning to view waste differently. So is Waste Management. Increasingly, there is an attention to giving that waste new life — contributing to a circular economy where more waste has a chance to be reclaimed, re-entering the supply chain as recycled material, electricity or fuel. Much of what

gets thrown away can have a second act. However, extracting the most value from waste requires exploring possibilities throughout the full value chain.

Operating more sustainably is a goal for many Waste Management customers. Sustainability goals can be as complex as addressing climate change or as simple as increasing recycling. Every day, countless tons of valuable materials are sent to a landfill instead of being returned to the value chain. The reasons for this are many. Sustainable design initiatives often focus on reducing the amount of material and embedded energy in a product, but not on making the product — and its packaging — recyclable. Designers may work with traditionally recyclable materials but combine them in ways that make them difficult to disassemble, compost or recycle at end-of-life. “Design with intent” aims to make products more sustainable and recyclable from the outset, taking a systems-thinking approach to product design. This approach considers three factors: material selection, ease of disassembly, and recycling infrastructure capabilities. The ultimate goal is to ensure that resources return to the value chain after a product’s use.

Table 1. WASTE MANAGEMENT’S ENSPIRE™ BUSINESS INTELLIGENCE PLATFORM TRACKS SUSTAINABILITY GOALS

<p>MATERIAL STREAMS</p> <ul style="list-style-type: none"> ➤ Waste stream detail analysis ➤ Diversion ➤ Tonnage trends ➤ Compactor average tons and service frequency ➤ Waste reduction program implementation
<p>PEOPLE, PLANET, PROFIT METRICS</p> <ul style="list-style-type: none"> ➤ Sustainability project analysis ➤ Cost trends ➤ Savings trends
<p>ENVIRONMENTAL FOOTPRINT</p> <ul style="list-style-type: none"> ➤ Energy and water consumption and intensity tracking ➤ Normalized comparison across portfolio ➤ Certification tracking ➤ Pre-certification gap analysis ➤ Portfolio performance ➤ Zero waste initiatives

➤ GHG calculation
ENTERPRISE-WIDE SUSTAINABILITY PLANNING <ul style="list-style-type: none"> ➤ Frameworks for GRI standards ➤ Scorecards ➤ Supply chain management (key performance indicators)

Source: https://www.wm.com/sustainability/pdfs/2014_Sustainability_Report.pdf

In December 2015 the European Commission adopted an ambitious Circular Economy Package, a strategy that included revised legislation on waste and is specifically designed to stimulate Europe's transition towards a circular economy through a range of measures aimed at increasing resource efficiency and minimizing waste. The Circular Economy package includes specific proposals to amend the EU's waste legislation, seeking to improve waste management practices, stimulate recycling and innovation in materials management, and limit the use of landfilling. The proposals will provide a clear and stable policy to allow long-term investment strategies focusing on prevention, reuse and recycling.

The EU has proposed higher recycling targets in a bid to transform Europe's economy into one where nothing is wasted, supporting sustainable growth and a zero-waste economy (circular economy).

Under the new targets, European countries will:

- ✓ Ban the burying of recyclable waste in landfill after 2025;
- ✓ Recycle 70% of municipal waste (everyday rubbish) and 80% of packaging by 2030; &
- ✓ Reduce marine litter and food waste.

Anticipated benefits of a zero-waste economy (circular economy) include:

- ✓ An economy with a lower environmental impact and reduced CO₂ emissions;
- ✓ Less demand for costly, scarce resources; &
- ✓ New jobs in waste management, recovery & reuse.

A target ratio of an economy's Gross Domestic Product to its consumption of raw materials (resource productivity) could be set as part of strategic waste management plans.

The EU says the move towards a circular economy can be driven by:

- ✓ Designing products that are easier to repair, upgrade and recycle.
- ✓ Creating better performing products that last longer, and more efficient production processes.
- ✓ Reducing the use of materials that are hazardous or difficult to recycle.

- ✓ Providing incentives to reduce waste.
- ✓ Turning waste into a resource through technical advances.

The proposals come alongside a series of EU initiatives to seize the growth and employment opportunities offered by greening the economy, and to make new buildings more environment-friendly.

Given that the UK's policy on waste management comes from the EU, this new legislation was particularly important as it introduced a common EU target for recycling 65% of municipal waste and 75% of packaging waste. It also set a binding target of a maximum of 10% of all waste to be achieved by 2030.

Waste prevention, eco-design, re-use and similar measures could bring net savings of €600 billion, or 8% of annual turnover, for businesses in the EU, while reducing total annual greenhouse gas emissions by 2-4 %. In the sectors of re-use, re-manufacturing and repair, for example, the cost of remanufacturing mobile phones could be halved if it were easier to take them apart. If 95% of mobile phones were collected, this could generate savings on manufacturing material costs of more than €1 billion.

A shift from recycling to refurbishing light commercial vehicles, where collection rates are already high, could save material inputs by €6.4 billion per year (about 15% of material budget) & €140 million in energy costs and reduce GHG emissions by 6.3 million tons.

Business driven studies based on product-level modelling demonstrate significant material cost saving opportunities for EU industry from circular economy approaches and a potential to boost EU GDP by up to 3.9% by creating new markets and new products and creating value for business.

Economic growth in emerging markets has helped to raise living standards—but inevitably it has also generated massive consumer and industrial waste. Many municipalities in these markets spend up to half their budgets on solid-waste management. Innovative businesses, however, drawing on circular-economy principles, are finding ways to convert trash into income streams. By aggregating volumes substantial enough to justify business investment, they are able to create the infrastructure to organize and manage waste supply chains.

In emerging economies, there are two keys to success for waste-management systems. The first is to aggregate waste flows into meaningful volumes around which businesses can be developed. The second is to organize efficient supply chains that operate at a high level of environmental and social effectiveness.

Improving waste management could deliver positive effects for the environment, climate, human health and the economy. As part of a shift towards a circular economy, the European Commission made four legislative proposals

introducing new waste-management targets regarding reuse, recycling and landfilling, strengthening provisions on waste prevention and extended producer responsibility, and streamlining definitions, reporting obligations and calculation methods for targets.

CONCLUSION

Waste is a necessary part of modern day living, but by relying on recycling or incineration, we miss out on the opportunity to utilize waste as a resource. Businesses are ready to capitalize on this opportunity - capturing the value of waste and making money from it, while providing the goods that people need. Some of the large waste management companies have adopted the circular economy as a guiding principle for some time now, recognizing the need to be ahead of the game in refocusing and redefining what they do in a changing environment.

The circular economy will clearly bring new opportunities to the resource management industry. There will be a requirement to move beyond materials recycling and embrace reuse and refurbishment practices and a need to develop collection and sorting systems to capture even more value from recycling processes.

Over time, as a circular economy becomes more established, the industry can expect to see a further decrease in landfill and the introduction of advanced material recovery and recycling processes (as products designed for recycling become the norm).

Recycling rates will increase, but eventually recycling will be seen the last option after repair, re-use, re-distribution and re-manufacture. Materials technology will evolve and enable a move from non-renewable materials to the production and use of high levels of renewable materials in finished products.

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