

# Pillar of the circular economy

Keith Riley gives his view on why energy from waste is fundamental to achieving a circular economy

We hear and read a lot about the circular economy. It is almost a stock item on the conference agenda and features large in journals such as this. There is no need to describe what it is here, because readers of this article will already know. Yet if we were to go out into the streets and ask the average person about the circular economy, they probably would have no view.

People with an interest in recycling and waste management are familiar with circular economy thinking because its promotion has largely been focused on this sector of the economy. The basics are simple: buy goods and use them, then recover materials from the goods once they are used to manufacture new goods. Without doubt, capturing discarded material and recycling it is an important and necessary part of the cycle, but it is not on its own sufficient and is probably not the most difficult part of the circular economy cycle to achieve.

## Real economic value

The physical and chemical properties of materials are a fundamental factor in the design and function of most products, and the greater the value added of the product, the more important those properties are likely to be. Recovering paper to make protective packaging is relatively simple and it does not matter too much what the fibre length, colour or strength of the end product is – but the real economic value is not in that packaging, it is in the product that is being protected. There can never be a circular economy based on producing packaging, but there can be on the product inside – and this is the case with many of the items that are recycled.

So the prime focus in achieving the circular economy must be on the properties manufacturers need from the use of recovered materials and developing product designs and manufacturing techniques to use those recovered materials effectively.

Yet while the EU's action plan on the circular economy refers to production processes and product design and gives a narrative on consumption, around two-thirds of the document is about waste management and materials recovery. Even the website of the UK's respected WRAP organisation states the first reason for a circular economy is to "reduce waste". This is a trivialisation of the reason for the circular economy and the focus is in the wrong place. While dealt with at this level, it will never be achieved.

The reason why waste and recycling is the centre of attention is that it is the easy way out. Devising and implementing strategies that will change product design, manufacturing industry and consumer demand is a difficult and complex thing to do.

It is easier to focus on waste and encourage recycling, have targets on packaging and have a limited producer responsibility on certain products. It gives a political justification to what is being done, and enables us all to complain about the things that stand in the way – people's behaviour, inconsistent collection systems, and the *bête noir* of them all, energy from waste (EfW).

Having declined due to increasing prosperity following World War II, recycling of waste was nearly defunct by the late 1980s. EfW was equally non-existent, with just a handful of plants operating in the country, reducing waste to ash. So it was not incineration stopping recycling, because there effectively was none. What was stopping recycling was a lack of infrastructure.

Separate collections, allowing recycling to develop, started to re-emerge during the last five years of the 20th century. Landfill tax was introduced in 1996, but initially was too low to be the economic driver that it is today. As the millennium arrived, recycling levels started to plateau once again and concepts such as 'resource management' emerged to find a strategy to continue the growth. It was, however, the Landfill Allowance Trading

Scheme (LATS) in 2004 that really moved recycling of household waste along. It took producer responsibility and a few more years of increasing landfill before recovering materials for recycling became a feature of commercial and industrial waste.

Targets for recycling levels in the public sector have gradually increased. At first, the UK met these targets, but as they became more challenging, it became apparent that the task was not so easy. Today, the Waste Framework Directive sets 50%, and the EU now has 65% in view; but the UK is nowhere near achieving either of those.

Resource management broadened the concept of the capture and use of recovered materials and this gave way to circular economy thinking – a holistic approach that involves the complete economic cycle, but one

that extends far beyond just source segregation of a select list of easy-to-deal-with materials used in relatively low-grade, low-value-added products.

## Check the facts

So why is EfW a pillar of the circular economy? To answer that, we just need to look at the evidence. Between the early 1990s and today, we have seen household waste recycling develop from around 5% of arisings to its peak (to date) in 2014 of nearly 45%. We have also seen EfW increase over the same period dealing with below 1% to about 23% of arisings. So there remains 25% of the waste stream still available, and far from the growth of incineration restricting the growth of recycling, they have been mutually supportive means of dealing with waste. The view that



[Left] Portsmouth Energy Recovery Facility [Below left] Sorting out materials [Below right] The Integra South West (Marchwood) Energy Recovery Facility at Southampton



“The view that incineration of waste prevents recycling is just another of those misperceptions that is divisive and serves only to slow progress”

incineration of waste prevents recycling is just another of those misperceptions that is divisive and serves only to slow progress.

The role of EfW goes further than that, however. It is a basic scientific law of the universe that it is impossible to recover and recycle everything. Unfortunately for us, everything degrades and chaos – known as entropy – increases. So what we see as the creation of energy is actually only the conversion of energy from one form to another, and it can never be totally efficient. This is the case with material recovery processes and all we can do is our best. It can never be perfect and there will always be something left over on which we will need to expend even more effort if we try to recover it. This is all rather intellectual, but the implication is that without a means of removing from the system materials that cannot be economically recovered, then the world will gradually just fill up with junk.

EfW removes the junk and converts it into useable energy, and its role is fundamental to achieving a circular economy. Far from it being ignored, as is the case with some prominent models of what the circular economy is, EfW needs to be recognised as an essential part of the circularity and be developed in that context. The presence of EfW has now at least been recognised by the EU in one of its communications.

## Circular economy and EfW

What, then, does the circular economy do for EfW? As the circular economy develops, the volume of material available for thermal

treatment will inevitably reduce – so is the circular economy not the nemesis of EfW?

In the UK we are now in a world of merchant EfW development. For the foreseeable future, these plants will be built and financed by the private sector within a competitive market. The development of facilities will only occur in response to the waste that is available, and as the quantum of material available for energy recovery declines, then so too will the number of new developments.

But this will not be tomorrow, nor even next month. As stated above, taking the easy path of promoting the circular economy from within the recycling and waste industry is the wrong way, and until this focus has shifted, progress is going to be slow. It has taken nearly 30 years to get recycling to where it is today, and it will probably take another 30 years before we see a circular economy functioning properly. Such a timescale is the design life of a typical EfW plant anyway, so there will be plenty time for the industry to adapt to the change in manufacturing and consumer demand. EfW is essential to the development of the circular economy, and while it cannot bring it about, it should engage with it, because the circular economy can offer the chance for EfW to at last take its rightful place in society as an essential service. **RWW**

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