Canning the circular economy

Steel is by far the most versatile material on the planet. Without it society would cease to exist as it can be found in use in all aspects of our daily lives – and that includes canned food. By **Alexander Mohr***

THE announcement of the European Commission's (EC) circular economy package (CEP) in December 2015 sparked a wave of debate across the packaging industry and beyond.

By catapulting sustainability, recycling and the entire culture of how Europe uses its natural resources into focus, it is widely expected to be a catalyst for change.

When it comes to the environment, the need for change is beyond dispute.

But the Commission has also recognised the outstanding economic opportunity it presents.

Promoting sustainability

Changing the way we use natural resources, manufacture goods and keep resources in the loop through recycling could promote greater economic sustainability too.

But why are we at APEAL particularly excited about the CEP?

APEAL is made up of the four major producers of steel for packaging in Europe – ArcelorMittal, Tata Steel Packaging, thyssenkrupp Packaging Steel and US Steel Košice.

Our members are confident that the package can be the key driver to make steel one of the packaging materials of the future.

So what makes steel packaging so suited to a circular economy?

A sustainable circular economy is widely agreed to be one in which society reduces the burden on nature by ensuring resources remain in use for as long as possible.

Once the maximum value has been extracted, the resources are then recovered and reused, remanufactured or recycled to create new products.

As a 'permanent material' that can be recycled over and over again without losing any of its properties, steel is the ideal packaging material to enable a circular economy.

The concept of 'permanent materials' is still relatively new, but it is gaining ground in policymaking circles backed up by new technical research.

'Permanent materials' are officially defined as materials that, once produced, can be recycled or reused without loss of quality, regardless of how often the material is recycled.

"Permanently available materials are those for which efforts are made to retain for use in society the energy and raw materials invested in their production at the end of the product life, either through reuse or recycling, with no loss of quality no matter how many times the material is recycled."

British Standards, BS 8905:20

As far back as 2012 the European Parliament voted to categorise steel alongside other metals in a new resource category of 'permanent materials'.

This new resource category effectively recognised the positive role of permanent materials such as steel in society, alongside the existing resource categories of 'renewable' and 'non-renewable'.

More recently a detailed and precise categorisation of packaging materials has been identified by the Swiss consultancy Carbotech together with an expert group from the metal packaging sector.

This 2015 Carbotech study examined both the chemical and physical properties of a material to help define what is permanent and non-permanent.

The research elaborated on the differences between materials that lose their inherent properties when recycled (ie. they degrade) and materials that do not (ie. recycle infinitely, such as steel).

This new categorisation and the technical research backing it are a breakthrough.

Furthermore, the 'permanent materials' concept of infinite recycling perfectly matches society's vision for a circular economy.

Which gives us, at APEAL, another reason to make our case for the relevance of steel as a model material for the circular economy.

Inside the recycling numbers

The CEP is currently with the European Parliament for its approval.

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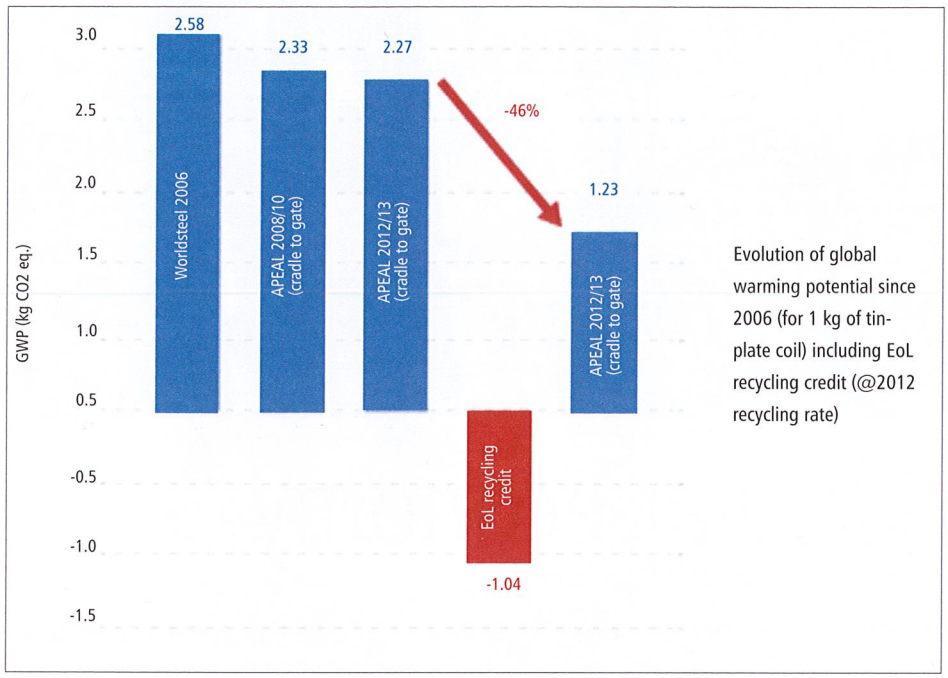

Evolution of global warming potential since 2006 (for 1 kg of tin-plate coil) including EoL recycling credit (@2012 recycling rate)

We are hoping that it will be approved in, or near to, its current form. If this happens, the CEP will give the political impetus needed to push national governments towards improving waste collection systems and recycling processes.

They will also be forced, in turn, to increase the pressure on manufacturers to privilege recyclable materials in their design and production processes.

A key component of the CEP is a higher recycling targets for packaging waste materials, notably 75% for steel packaging by 2025 and 85% by 2030.

The circular economy – getting closer

At APEAL we believe that the new steel packaging recycling targets are ambitious but achievable. Our current recycling rates show that moving closer towards a circular economy is more realistic than many think – and steel for packaging is leading the way.

The average recycling rate for steel packaging in Europe is currently 75.2% (based on 2013 figures), which makes it the most recycled packaging material in Europe.

Steel has maintained its position as the most recycled packaging material in Europe for many years now, making year-on-year improvements at a time when recycling rates for other packaging materials appear to stagnate. Plastic, beverage cartons, aluminium beverage cans and glass are recycled at rates of 35%, 39%, 69.5% and 70% respectively.

And the CEP split recycling target for metals will foster greater understanding of the recycling performance of individual metals.

We will soon announce the 2014 recycling figures. But we won't stop there.

The steel packaging industry has declared its own objective, above and beyond the CEP. We have our own industry commitment to reach an average steel recycling rate of 80% by 2020 and zero steel packaging to landfill.

And we are confident that, by sharing best practices in Europe, we can achieve that commitment too.

Some countries, such as Germany, Belgium and the Netherlands, already recycle more than 90% of the steel packaging they use, and other nations are closing in on the 75% mark.

More importantly those with lower rates, such as Poland, are engaging in the process of improving their infrastructures to help bring their recycling levels up.

Another way for the different packaging materials to position themselves effectively is through life cycle thinking and the provision of detailed, quality-reviewed and transparent life cycle inventory (LCI) data.

Creating a clear record of a material's environmental profile throughout its entire life cycle gives businesses and brands the full picture, allowing them to make informed and sustainable choices about packaging.

Since 2006, APEAL has established and communicated a comprehensive life cycle analysis (LCA) for tinplate production in Europe.

The latest figures use data collected from 2012/2013 and indicate continuous improvements in a range of areas, including a reduction of 12% in CO_2 emissions from production and a 2% drop in energy usage since 2006.

When the 2012 recycling rate of 74% is taken into account, primary energy demand drops by 30% and emissions are reduced by 46%.

The boundaries of the study can be further extended past the steel factory gate to include downstream activities, particularly in collaboration with customers who are applying LCAs to their own product systems, and the use phase of their product.

Publishing the dataset ensures steel's environmental profile is communicated in a totally transparent way and further improves the understanding of the environmental credentials of steel for packaging among key stakeholders.

The LCI dataset is available from APEAL upon request.

We don't just see the CEP as a potential positive influence on governments and manufacturers – it could also filter down all the way to the end consumer too.

Indeed, consumers are increasingly aware of sustainability issues as manufacturers and brands accentuate their environmental credentials.

Key to the ongoing success and growth of the steel packaging industry will be our ability to engage with all relevant stakeholders and advocate steel's sustainability performance.

The creation of the '*Recycles Forever*' identifier by Metal Packaging Europe, of which APEAL is an active member, is a great example of a consumer-facing focus on sustainability being met by the collective metal packaging industry.

The European Metal Packaging Industry developed the '*Metal recycles Forever*' identifier for both on and off pack use to help consumers better understand their role in keeping metal in a 'forever loop' by recycling their empty packaging.

Once consumers catch-on and drive the demand then real progress will undoubtedly be made. And our vision for a closed steel loop can start to become reality.

Protecting today, preserving tomorrow

There is a current and necessary focus from legislators, brand owners, manufacturers and consumers on food waste and food security.

Steel offers a unique total barrier against light, gas and liquids, with the overall effect of protecting products and prolonging shelf-life. It is also impact and puncture-resistant in the supply chain and single portion dispensing options are already widely used, meaning that product loss and consumer waste is also further reduced.

In addition, fruit and vegetables are canned for a maximum three hours after the crop, which avoids food waste while retaining all the nutritional benefits.

At APEAL we believe that steel packaging has an important part to play in the drive to save food.

The ability for consumers to purchase portion sizes appropriate to their needs makes food more affordable in some instances.

In addition, the vitamin content of canned food is proven equal to or better than its fresh equivalent and can ensure long-term access to healthy foods at ambient storage conditions.

An interesting new report from Germany has highlighted how steel cans protect valuable nutrients in food, retaining product freshness as well as flavour.

The research, led by the SGS Fresenius Institute in Germany, confirmed that vegetables stored in steel cans contain vitamin and mineral levels that are just as high as freshly cooked vegetables.

The 2015 study was carried out on behalf of '*Initiative Lebensmitteldose*' (food can initiative), a partnership between 10 German manufacturers in the food and packaging industries whose goal is to inform consumers and nutrition experts about the benefits of canned food. The report clearly demonstrates that in some cases nutrients were even higher within canned vegetables than their freshly prepared counterparts.

In addition, it found that steel cans not only protect valuable mineral nutrients, they also help retain product freshness as well as flavour. Canned food has an unrivalled shelf life of up to three years and there is no need for any added preservatives.

Exceptional performance

The report concluded that steel had exceptional performance capabilities with a loss of nutrients after canning deemed 'practically impossible'.

These findings come as no surprise to APEAL, of course; they only reinforce the arguments we have been making for some time.

However, it could prove another vital step in getting this information across to brands and, ultimately, consumers.

As the year progresses at APEAL, we must look to the future of steel packaging.

To mark 30 years as the go-to reference for steel packaging in Europe, APEAL has commissioned a series of thought leadership articles about how the industry can do just that.

In partnership with leading experts in the field of the circular economy we will explore the next 30 years of steel packaging, focusing on how the industry can adapt to and support a circular economy.

Look out for them as the year progresses.

We are currently running our '*30 years, 30 facts*' campaign on our social media pages which tells the story of steel for packaging through sharing a fascinating fact each day.

The facts, which are being published one per day throughout our birthday month of April, help tell the story of our industry in a bite-sized form.

To check out the campaign, follow us on Twitter at @APEAL_EU or search for APEAL on LinkedIn or visit www.apeal.org. ■