Closing the circular economy loop

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Opinion Plus

The circular economy needs to tackle both technical and carbon loops. Bio-based plastics can provide the means, argues Henri Colens.

It is arguably one of science’s greatest achievements and it has been described as a ‘wonder material’. It’s still at the forefront of scientific development and remains a potent symbol of how applied chemistry can change the world. Of course, I’m talking about plastic.

Plastic retains its strength even when stretched wafer-thin; it is exceptionally light and therefore cheaper to transport. These properties make it highly prized in many sectors. It has reduced food waste in the packaging industry and is increasingly popular in the automotive and high-tech mobile phone sectors. The healthcare industry is also exploring its potential.

Nevertheless, before I get carried away, there is another side. The use of plastic has engendered a series of environmental and societal challenges.
Efforts are underway to fix this. By resolving the issue of leakage (material exiting the value chain) we can begin to solve the problems associated with littering. This is being addressed by the draft legislation within the EU's Circular Economy Package; the industry fully welcomes measures that oblige member states to collect and recycle more plastic.

We need to ensure that plastic that is recyclable does not find its way into landfill. We must create a single market for plastic waste to ensure that those member states without adequate recycling infrastructure can get help. This is often referred to as the “technical loop”.

However, the Circular Economy Package gives us the chance to also deal with a second issue; the so-called carbon loop.

Plastic is generally made from oil. More accurately, it is made from base chemicals derived from oil, after a process called ‘cracking’. This process is highly efficient, however, like fossil fuels it depends on a finite resource.

The industrial biotechnology community sought a solution to this problem and they turned to plants. Karl-Henrik Sundström, the CEO of Stora Enso, the global pulp and paper manufacturer summed it up perfectly, “There’s nothing made from oil today that can’t be made from trees tomorrow.”

However, the problem is that bio-based plastic has been ‘the future’ for far too long. At Braskem, the development of our renewable technology started in 2007 with our responsibly sourced sugarcane.

When we started production on a commercial scale in 2010 we immediately became the largest biopolymer producer in the world. Our Green PE™ is a fully recyclable polyethylene, which can dramatically reduce a product's carbon footprint.

Every kilogramme produced saves around four kilos of CO₂. If you consider that 25 million tonnes of plastic are used in the EU every year, you begin to realise the vast scale of potential reductions in emissions savings that using bio-based plastic can achieve.

Unlike biofuels, there are no European-wide targets for the use of bio-based products. The production or use of bio-based products is not subsidised. The energy sector is rather larger than ours, but the EU and its member states should think long and hard about how to incentive every sector to do their bit towards reducing their environmental impact.

Also, let’s be honest; we need bio-based products. We have been taking our planet and its resources for granted for far too long - we cannot go on consuming in the same way.
This is why we need to develop the two loops; both the technical and carbon cycles are crucial for a truly circular economy to flourish.

About the author

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