Circular economy – a round peg in a square hole?

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Credit Stefan: Anneri Carinus • Credit Dewald: Mia Louw

While all food producers bear a moral obligation to reduce, reuse and recycle, putting these practices into action is often much easier said than done. To illustrate why, please close your eyes and think about what you consider as waste. Chances are that, like for most people, mountains of everything from car tyres to potato peels are conjured up in your mind's eye. Although this vision is certainly not incorrect, this is the worst-case scenario for implementing a "reduce, reuse and recycle" strategy since this material is not homogenous and would require significant resources to sort, clean and rework. For this reason, these items are considered useless waste. However, many of these items still contain value which could be exploited if the material could be processed at the source while still homogenous and fresh, especially in the food industry. For example, something as simple as papaya and pineapple peels from salad producers contain proteases, papain and bromelain, which can be used in everything from meat tenderisers to facial creams.

This is where the concept of a *circular economy* comes to play, but understanding its true essence goes beyond a mere catchphrase. According to the Oxford Dictionary, a *circular economy* can be defined as "*an economic system based on the reuse and regeneration of materials or products, especially as a means of continuing production in a sustainable or environmentally friendly way*". However, many companies that produce a specific by-product, known as waste if not used otherwise, often lack the means to transform these by-product streams into additional commodities. Consequently, these "*waste streams*" are often sold as animal feed, which places an additional burden on the producer as sales are driven solely by demand. When grazing is plentiful, and demand is low, the waste material is disposed of in landfills at an additional cost to the producer since it cannot be stored for extended periods. Because demand for a process by-product is unpredictable, many producers dispose of the material as waste rather than animal feed.

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Although this situation is gradually changing, achieving sustainability within a company is often resource intensive as clear roles and responsibilities for a "sustainability officer" are not yet commonplace. Employees end up juggling sustainability responsibilities alongside their regular duties. Not surprisingly, sustainability frequently falls lower on the list of priorities.

To guide companies towards becoming sustainable, the United Nations member states, including South Africa, adopted 17 sustainability goals which provide a *"shared blueprint for peace and prosperity for people and the planet"*. However, since these goals are mainly focused on both socioeconomic and environmental considerations, very few companies have the capacity to achieve these goals since they do not fall within the prerogative of the food producers. The so-called New Agenda therefore aims to address these goals via "partnerships" (UN goal 17). By investing in partnerships, a producer can increase the value of its by-product streams by converting them to further commodities via its partners. In this way, a producer not only aids in the creation of jobs, but it also limits the amount of waste reaching landfills.

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The question should therefore be asked: "Why necessarily a *circular economy* and not a square or even polygonal economy?" The term "circular" implies an uninterrupted cycle from product to by-product to product within the same system. The efficiencies of such systems can be increased by spreading the load across more role-players, which each bring their own competencies to the table, while at the same time addressing the sustainability goals as set out by the UN member states. In this way, the circle becomes a polygon where by-products can be converted to a business-to-business-to-customer manner rather than the more conventional direct business-to-customer model. This would not only increase the efficiencies within a company, but also aid in creating additional job opportunities.

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For example, the craft beer industry has experienced unprecedented growth over the past decade. Beer production relies on the conversion of carbohydrates to mainly carbon dioxide and alcohol. While the alcohol remains in solutions, most of the carbon dioxide is vented off (wasted) during fermentation, contributing to climate change. It has been estimated that it could take a single tree up to two days to absorb the carbon dioxide released from producing one six-pack of beer. To limit its emissions, an Australian brewery partnered with a local university to cultivate algae that convert carbon dioxide into oxygen up to five times more efficiently than trees. This process not only limits the amount of carbon dioxide released into the atmosphere, but also produces algae that could serve as a protein-rich nutrient source while creating job opportunities.

In conclusion, while the circular economy serves as a foundational concept, expanding it into a polygonal framework offers a more comprehensive and effective approach to sustainability. Forming collaborative partnerships and embracing a more intricate system would not only enhance business efficiency but also contribute significantly to global sustainability initiatives. As the saying goes, "a single tree does not make a forest". Let's join hands and collectively address sustainability. Through collaborative efforts, we can create a resilient and sustainable future for the food industry and beyond.