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Packaging Innovation to Support the Emerging Circular Economy in the Food and Drinks Industry – Designing for a Sustainable Future.

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This paper highlights packaging's strategically important role in the food industry from a sustainability/ circular economy perspective. A vision for a circular economy plastics packaging future is urgently needed in order to address a range of resource and environmental issues, in particular concerns (amongst others) over the increasing threat to wildlife and human seafood supply chains and the low levels of recycling. Globally, 95% of all plastics packaging material value is lost to the economy after a short first use and 32% of plastics packaging escapes collection systems - Ellen MacArthur Foundation's *'New Plastics Economy'* report, 2017). As David Bellamy stated *'Ensuring that this valuable resource is recycled is a key part of developing a Circular Economy, improving resource security and enhancing environmental responsibility.'* Innovative/alternative packaging and resource management solutions are needed for both the developing world (most marine plastics pollution originates in SE Asia) and advanced economies. An appreciation of plastics' strategic role can enable retailers, brand owners and packaging suppliers derive competitive edge whilst improving their sustainability credentials. Increasingly, leading food companies and retailers are setting packaging policies and targets. For example, Nestlé - a leading Dow Jones Sustainability Index company – aims for 100% of its packaging to be recyclable or reusable by 2025. Importantly, a range of legislation and economic instruments are shaping the future of plastics packaging. In the EU, there is the CE Directive, plastics taxes and single use directive. The EU's plastics recycling rate (all product types) is approximately 41% (Plastics Europe). Circular economy proposals include achieving a recycling rate of 50% by 2025 and a rate of 55% by 2030. In the UK, there are also possible bans on single use plastics, proposed Deposit Recycling Schemes (DRS), implementation of modified Extended Producer Responsibility (EPR). Also, WRAP's Plastics Pact has set a range of targets to 2025 which aims to eliminate problematic or unnecessary single use plastic packaging through design, innovation or alternative(reuse) delivery models; 100% of plastic packaging to be reusable, recyclable or compostable; 70% of plastic packaging effectively recycled or composted and 30% average recycled content. All these efforts will require much innovation, extensive collaboration between a wide range of stakeholders and effective communication with consumers.

In addition, the EU has launched its new *Plastics Strategy* which seeks to integrate plastics into the *circular economy*. This development has been given added impetus by China's recently implemented *National Sword policy* that imposes restrictions on the importation of recyclate with more than 0.5% contaminant. There is also a need to combine life cycle thinking with CE in order to develop optimal packaging-distribution systems—for example, appropriate consideration needs to be given to resource management technologies infrastructure, pack design, logistics and food safety/waste issues. This paper will explore what changes and innovations in plastics are likely to be seen to 2030 and beyond. For illustration, we will explore what scope exists in packaging logistics of chilled fish and seafood to introduce [biomaterial](#) packaging and returnable packaging systems as (potential) alternatives to single-use expanded polystyrene (EPS).