

Make Innovation HAPPEN



**MIH Knowledge Article:
Insight to Foresight - Leaving Leftovers
Behind**

Scotland
A LAND OF
food and drink

SCOTLAND
IT'S TIME TO INSPIRE



The festive season is associated both with over-indulgence in food and drink and some clever use of leftovers. However, it's not just Christmas when this cycle occurs; every year, one third of the food produced in the world for human consumption goes to waste. In Scotland alone, almost 1 million tonnes of food and drink are wasted annually.

To address the fight against food waste, large and small food and drink manufacturers are increasingly coming up with ways to upcycle surplus and discarded food by turning those into valuable and edible products.

The Scottish government aims to reduce food waste by 33% by 2025 and 50% by 2030. Scottish food and drink businesses could benefit from this emerging market and contribute to a more sustainable future.

The Food Waste Reduction Roadmap

The Institute of Grocery Distribution (IGD) and Waste and Resources Action Programme (WRAP) have launched a Food Waste Reduction Roadmap that encompasses the entire food supply chain, supported by the UK's largest food trade bodies, businesses across the supply chain, Defra, Welsh and Scottish Governments. They aim to see 50% of the UK's largest 250 food businesses measuring, reporting and acting on food waste by September 2019, and all 250 doing so by 2026. 90 businesses, including UK's largest retailers, food producers, manufacturers, hospitality and food service companies, have committed to halve food waste by 2030.

Wonky fruit and veg on the table

'Ugly' fruit and veg (i.e. fruit which is deemed too small, too ripe or malformed) have been at the forefront of media attention for some time. Throw-away items have been traditionally discarded during production processes, due to non-compliance with buyers' aesthetic standards, or, are unharvested fruit which have naturally fallen, or, they have not been sold on a shop shelf.

In the UK, there are a range of businesses who utilise surplus and ugly fruits and vegetables in order to incorporate them into an array of new products.

The Wonky Fruit Company sells a range of relishes, sauces and jams made from 'upcycled' ingredients. The company 'Rubies in the Rubble' includes a line of condiments including chutney, jams, relishes, and ketchups – all made from surplus produce from local farmers and markets. Snact is a company which turns surplus produce into fruit snacks such as chewy jerky or banana bars.

In Scotland, the Crafty Pickle Company aims to reduce food waste by using surplus produce to create raw, unpasteurised and naturally fermented food products, such as sauerkraut, kimchi and red cabbage.

Upcycling beer by-products

Spent grain is the main leftover of the beer brewing process and accounts for 85% of total by-products produced in breweries. Breweries produce millions of tons of spent grain every day that is either going to waste, or are repurposed as animal feed, compost or energy. Recently, spent grain is being focussed by food manufacturers due to its relatively high nutritional value. Spent grain can be incorporated into granola bars, biscuits or bread.

'ReGrained' is an innovative start-up in the US who use spent grain from local craft breweries as the main

ingredient in their snack range, highlighting a growing interest in utilising brewery by-products. A similar business has started in the UK called 'Remashed'. Remashed currently produces a range of granola bars made from spent grain.

Closer to home, the Scottish brewery Jaw Brew has launched 'Hardtack', a low-alcohol beer (2.2% ABV), made from bread from Aulds bakery, which has been formerly returned to the producer after not selling during retail. The collaboration is affiliated with Zero Waste Scotland and Glasgow Chamber of Commerce, as part of efforts to develop recycling and repurposing opportunities within the city. Using bread in the brewing process reduces the need for supplementary sugar, thus requiring less input. To run the brewery in the most sustainable way, they partnered up with a local artisan baker who is experimenting with spent grain to produce a high fibre loaf and snack bars.

Potential for discarded seafood

The Icelandic 100% Fish project aims to increase the value of fish and seafood by utilising 100% of each fish, developing new products and reducing waste. Icelandic fisheries have evolved strategies to make profit out of by-products. Studies by the Iceland Ocean Cluster have indicated Iceland is using over 80% of each fish while most fisheries nations use around 50%. Leading fisheries in Iceland aim to utilize 100% of the fish. Most product development has been in fish liver and omega-3 sectors, followed by enzymes, collagen, proteins and calcium, etc.

The Scottish Biotech company Cuan Tec has developed a compostable and anti-microbial bioplastic food packaging made from fisheries by-products. The company uses chitin from langoustine shells, which they extract through biological fermentation instead of using chemicals. They then convert chitin into chitosan, mix it with starch-based biopolymers, and create a biodegradable flexible film wrapper for food packaging. Cuan Tec uses a gentle and sustainable process with minimal wastage and provides a high-quality product on an industrial scale that is environmentally friendly and has potential to extend shelf life of fresh food.

Growth opportunities

Food waste is a global issue, which has been addressed by stakeholders from the entire food supply chain. Innovations have been introduced in every sector to tackle food waste and to contribute to a more sustainable and environmentally friendly future. Scottish food and drink manufacturers have great potential to use their skills to develop innovative products made from food and drink by-products.