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Insects for Protein: Disruptive Business Models and Approaches to Waste Management.

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The human food supply chain is placing an ever increasing strain upon the Earth's environmental systems. In particular, it is estimated that rearing animals as a source of protein requires 33% of the planet's arable land¹ and is responsible for 14% of greenhouse gas emissions. The resource demands to feed a growing population, eating a diet based on increasing quantities of meat, may make it impossible to meet the emissions targets set out in the 2015 Paris Agreement. A radical re-think of our food systems is therefore required in order to enable future generations feed themselves sustainably.

Insects are widely viewed as a more sustainable source of animal proteins for humans to consume, or for feed for livestock. According to the Food and Agriculture Organisation of the United Nations, they require far less land, water and feed to produce a kilogram of protein, compared to beef or lamb. Furthermore, insects are nature's recyclers: they are able to turn waste materials into viable sources of nutrition. In the United Kingdom, there is growing interest in rearing crickets for human consumption and black soldier fly larvae for use as livestock feed. But at present there are significant challenges facing wider uptake.

Both crickets and black soldier fly larvae are capable of eating residues from agriculture and wastes from the food supply chain. The latter can even digest manures. However, both are bound by severe regulatory restrictions. For example, food safety standards prohibit the use of wastes in the human food supply chain. This is for good health reasons, and disease prevention. But while such regulations were applicable in a world of plenty, they now limit our ability to maximise the resources available in wastes and require revision. Furthermore, regulation which came into force as a result of the Bovine Spongiform Encephalopathy (BSE) crisis prohibited feeding of animal products to other animals. This included insects, despite the fact that insects are consumed by chickens as part of their natural diet. Moreover, in addition to these regulatory barriers, introduction of insect protein into diets in countries such as the UK face challenges concerning public acceptability: will we, the consumers, be willing to eat them, or animals reared upon them?

In this talk we will explore new insect businesses that are forming in the UK, which are exploiting niches within the current regulatory systems, sharing a common goal to reduce waste and improve the sustainability of our food supply chain. We will consider the business models adopted, how the businesses make the most of the resources available to them, what needs to be done to address the regulatory issues they face, and how these new businesses may be highly disruptive to the UK's standard, incumbent business models.