Business Model Case Study 5: Food waste

Granville Ecopark in Tyrone, Northern Ireland (UK)

Introduction

Granville Ecopark operates an enhanced anaerobic digestion (AD) facility. The site takes in 90,000 tonnes of food waste per year, from packed food to bottled drinks, category 3 ABP material, catering waste and food processing B products. This can be converted into 64,000 MWh per year, sufficient to power 13,900 homes in Northern Ireland, and a range of other products such as biomethane for off-grid electricity facilities, transport fuel (for example for bin lorries and buses), digestate as fertiliser for horticulture and local farmers, and potentially CO_2 for food manufacturing.

Business model canvas

Granville sets itself apart from competitors through a) Accreditation on operational, environmental and health and safety performance, b) Prosperity Agreement with the government, c) Winning sustainability and excellence awards, and d) Certifying products. Their new transport fleet for biomethane supply enabled sales to operators with off-grid power facilities.

Drivers and barriers

Legislation is an important driver for the demand for AD as a waste management solution. In Northern Ireland, separate food waste collections are obligatory from companies that produce more than 5kg per collection. Moreover, carbon reduction targets drive the growing use of biomethane for power generation and transport fuel.

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BIO-BASED INDUSTRIES Public-Private Partnership

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Circular business model canvas: Granville Ecopark, Food waste

Key partnerships
Buyer-supplier relations for food waste supply, here captured in the customer segments.
Memberships of accreditation- and professional bodies, adding to the assets- and value proposition.
Prosperity Agreement with the Northern Irish Environment Agency, integrating various value types sustainably into the supply chain and value proposition.

Activities to create, distribute, sell and recover values
Operate enhanced AD facility to process food waste. Remove packaging and inorganic materials. Grind food waste into soup/ slurry and pasteurise. Pocess via AD. Biogas either goes to CHP unit; heat used on-site for pasteurisation and power for site operation, running own vehicles or to national grid. Biogas can also be cleaned, with biomethane bottled and CO_2 as potential product too. The digestate is centrifuged for dewatering, solid cake sold as fertiliser.

Physical, financial, human and/or intellectual assets needed to create, distribute, sell and recover values
Buildings and machinery at the ecopark. Specially designed transport fleet for biomethane supply. Certifications assuring quality of processes and products. Reputation of Granville brand.
Human capital of long-term employees.
Intellectual property of AD (associated) technologies.

Value added proposition, e.g. economic, technical, social and /or environmental value of product or service
For waste producers [customer segment A], Granville reduces impact on environment and lowers waste management costs.
For the outputs side (see customer segments B-F), products evidently meet specific quality characteristics through certification (e.g. Biomethane Quality Protocol, PAS 110 for digestate), is ultra-low carbon and offers an economically attractive "drop-in" fuel alternative for natural gas, and digestate as alternative for synthetic fertilisers, with added benefits of environmental and social values (carbon reductions, soil quality, air quality).

Types of customer relationships
Potential for upselling as many customers produce food waste *and* need energy supply.
Possibly co-creation of solution with off-grid customers (segment C).

Communication, distribution, sales and other channels used to reach customers
Direct contact. In some cases reciprocal resource flows when e.g. fuel customers send food waste back.

Customer segments
Double sided business model with:
On the input side:
[A] Food waste processing services for municipalities and companies
On the output side off-takers for:
[B] Electricity for national grid
[C] Bottled biomethane for CHP installations for off-grid electricity generation
[D] Biomethane for transport sector
[E] Dewatered digestate as fertilisers for horticulture industry and local farmers
[F] Bottled CO_2 for food processing

Types of costs to create, distribute, sell, and recover value (e.g., financial, social and environmental costs)
Economies of scale model to achieve affordability, combined with economies of scope to valorise all process outputs.

Types of benefits for your business and the mechanisms required to capture them
Transaction revenues from all customer segments A-F, likely negotiated per customer under longer term contracts.

Costs and benefits created and shared in the wider circular supply chain
Granville aims to take a leading role within the sector and society by championing growth of waste-based energy and products, driving environmental sustainability, offering sustainable employment, and improving standards and technologies – contributing to economic, environmental, social and technical value creation in the supply chain. They added credibility to this statement through a Prosperity Agreement with the Northern Irish Environment Agency to move towards long-term prosperity through improved environmental outcomes.

Context: Wider costs of- and benefits to the economy, society and/or environment
Granville turns a part of the economic, social and environmental costs associated with food waste into benefits for their company, customers and society. It would be best if more food waste was prevented and only unavoidable food waste was generated. Realising changes in the practices of producers and consumers to rule out all avoidable food waste requires collaboration with partners beyond direct waste suppliers and customers of Granville's products and services.