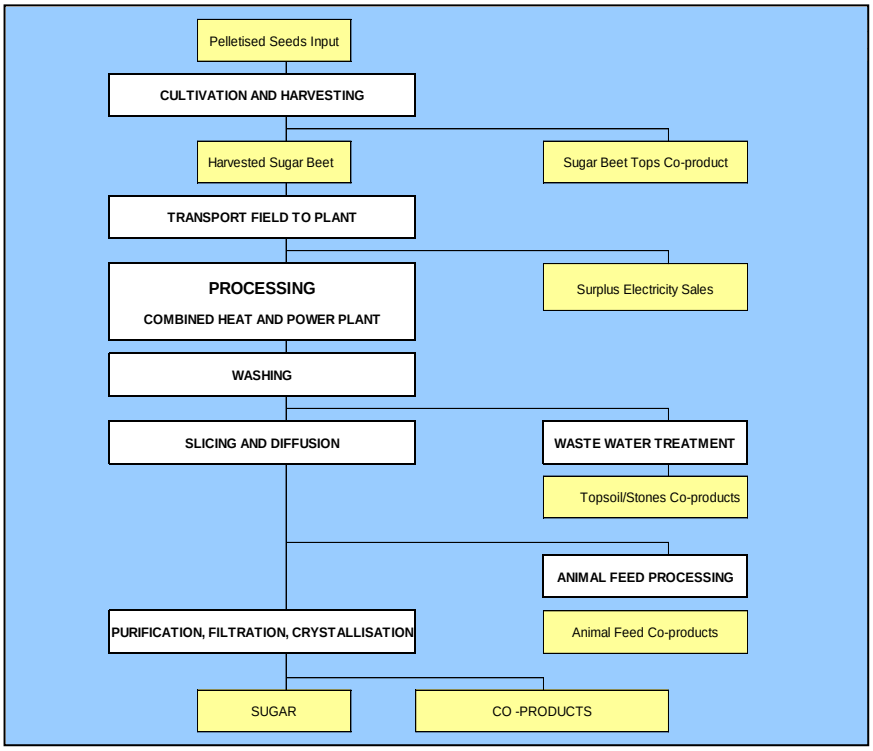
November 2017

NORTH ENERGY CASE STUDY

Carbon Footprint for British Sugar



LCA of UK grown Sugar

Increasingly, consumers are becoming more aware of the environmental impact of their purchases but need more information to help them make the right choices. To meet this demand, Publicly Available Specification 2050 (PAS 2050) greenhouse gas (GHG) methodology was developed by the British Standards Institution and sponsored by the Carbon Trust and Defra. PAS 2050 was the world's first standard for measuring the lifecycle of greenhouse gas emissions ('Carbon Footprint') of goods and services; British Sugar were invited to be one of the pilot companies to assist in its development. Based on a long and successful relationship, North Energy were appointed to undertake British Sugar's first sugar carbon footprint in 2008 and then for subsequent carbon footprints for 2010, 2012, 2014 and 2016.

Life Cycle Assessment (LCA)

There are a number of different methodologies available to calculate GHG emissions of products or processes, all of which can provide quite different results. PAS 2050 was developed to enable products to be compared on a like-for-like basis. Its aim is to be the single standard method for the assessment of the life cycle GHG emissions of goods and services. It involves the analysis of a product's supply chain including production, use and disposal. It enables a company to analyse its GHG emissions, including carbon dioxide, methane and nitrous oxide, so that it can focus efforts to reduce emissions in the most cost-effective manner.

About British Sugar

British Sugar is recognised internationally as one of the most efficient and progressive sugar manufacturers in Europe. From the core feedstock of UK-grown sugar beet, a variety of products are produced in addition to sugar, such as animal feed, agricultural lime, bioethanol, topsoil, etc.

Work Delivered by North Energy

North Energy developed spreadsheet-based models of the sugar refining process and GHG emissions at each of British Sugar's four UK plants (Wissington, Bury St Edmunds, Cantley and Newark). The spreadsheet models incorporate:

- an analysis of the sugar refining process flows illustrated by process flow charts
- data input templates specifying detailed data requirements
- allocation of GHG emissions between products based on their market values
- calculation of the apportionment of GHGs to electricity exported to the grid from the sites' combined heat and power plants
- a cradle-to-factory gate assessment of all products, including process stages such as cultivation, transportation and sugar refining processes at each plant
- calculation of a final weighted average GHG emission figure for the four plants.

About North Energy

North Energy has worked for many years with a wide range of commercial and industrial clients, as well as government departments, to produce LCAs of products, including biofuels and biochemicals, adopting various established methodologies. As such, we have a specialist knowledge and in-depth practical understanding of all aspects of carbon footprinting.

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