

Building a sustainable biomass-based economy in Wales

Understanding the potential for building a sustainable biomass-based economy, using plants as a renewable source of key commodity products (chemicals, transport fuels and energy), is a key part of a National strategy which would position Wales at the forefront of the UK's low carbon, knowledge-based economy.

Establishing a biorefining industry in Wales, as a platform for creating a diversified farming industry that could contribute to the social and economic regeneration of its rural economies, was the focus of a study commissioned by the BioComposites Centre, Bangor University in 2008.

Building on its extensive expertise in this area, Chemistry Innovation - in collaboration with the National Non Food Crops Centre (NNFCC) and Trends Business Review (TBR) - successfully bid to for techno-commercial study.

The principle objective was to consider if it is possible to reverse the economic impact of the decline in traditional rural economies in Wales, by creating a sustainable



biorefining industry using renewable, non-genetically modified, non-food crop based feedstocks specifically including high sugar grasses.

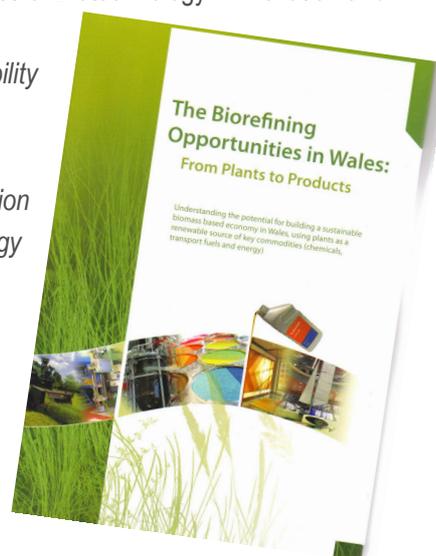
The study addressed five specific questions relating to:

- ⇒ the economic case for developing biorefining and the associated technology /supply chains across Wales
- ⇒ the market opportunity for bio-derived products and their strategic value to the Welsh economy
- ⇒ how biorefining activities in Wales would integrate with complementary activities in the rest of the UK
- ⇒ the strength of the infrastructure and skills base in Wales for supporting a lead position in biorefining
- ⇒ assessment of the impact on the existing industrial base and regional capabilities over the next 20 years.

Using its knowledge/experience of the chemical sector and technical awareness of the market drivers and industrial processes for biorefining, Chemistry Innovation delivered a comprehensive report outlining a compelling case for establishing a biorefining industry in Wales.

In the Foreword to the final report Ian Shott, Chair of the Government's Industrial Biotechnology - Innovation and Growth Team said:

"I believe the feasibility study will act as a catalyst for the effective co-ordination of a National strategy that will see the establishment of a new centre of excellence in biorefining and position Wales at the forefront of the UK's low carbon, knowledge-based economy".



What is a Biorefinery

A biorefinery is a large scale facility that converts plant matter (biomass) into a range of usable materials - most often fuels but also chemicals - in the same way as an oil refinery converts oil into fuels and chemicals.

There are two main types of biorefinery processes - **thermochemical** and **fermentation**.

Thermochemical processes use heat to convert biomass into 'BioOil' used for power, or 'Syngas' which can be used for petrochemical manufacture.

1st generation fermentation processes convert the 'valuable' parts of crops i.e. grain, sugar - discarding unwanted parts i.e. straw and chaff - using established technologies in industrial use today.

2nd generation fermentation processes, currently under development, will convert the whole crop - providing much higher levels of productivity as well as being able to process a wider range of biomass.