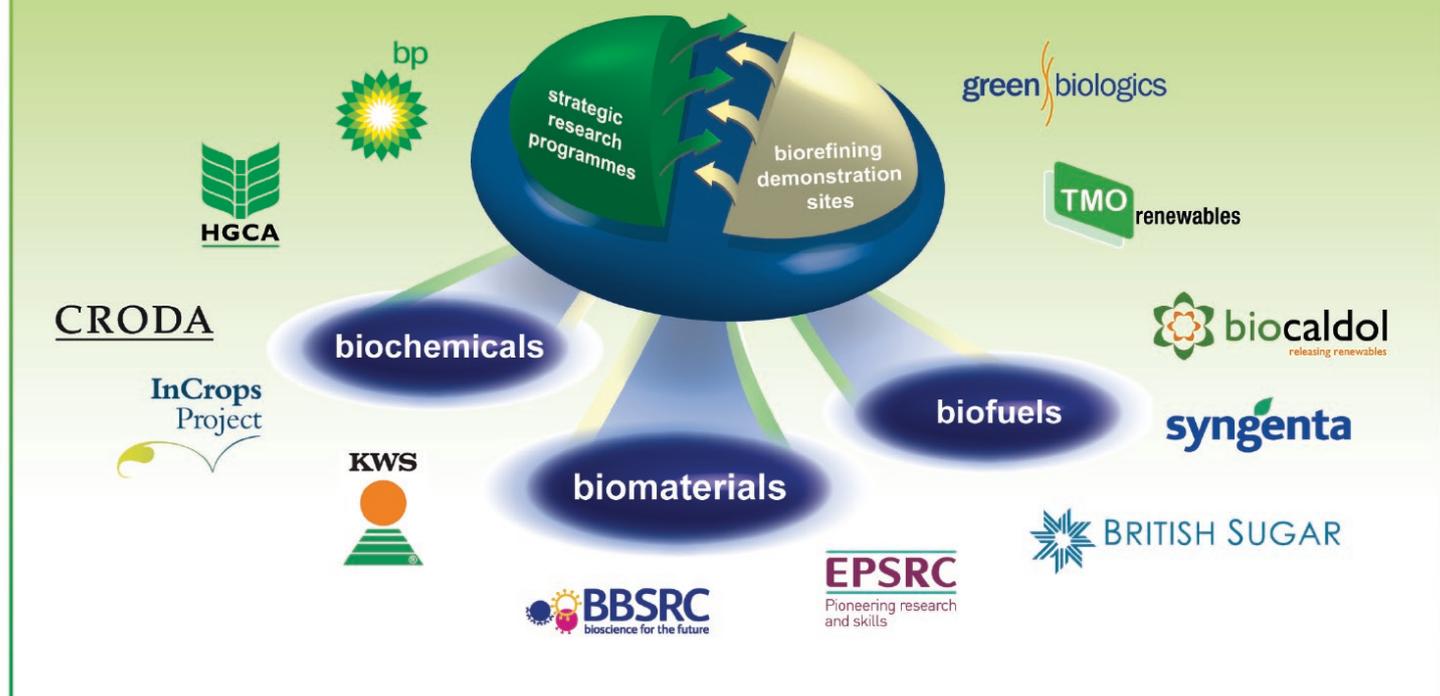


# Chemicals from renewable resources

Integrated Biorefining Technologies Initiative



## The need

There is a drive for society to reduce its dependence upon fossil fuels and petroleum derived chemicals in order to address the problems of emissions, including carbon dioxide.

Using renewable resources such as waste, agricultural by-products and other forms of biomass can provide one answer but a few years ago there was no unified, single approach in the UK to build upon the undoubted capabilities available.

## The results

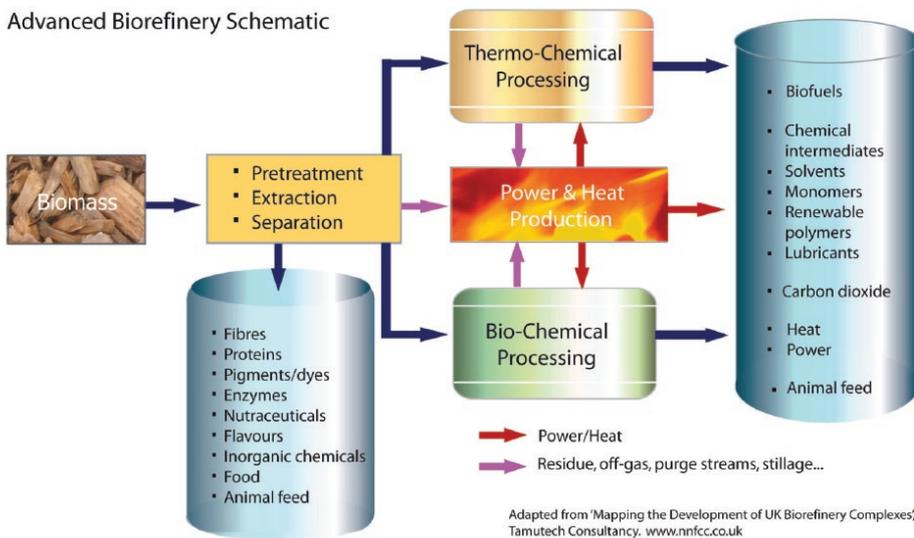
The Knowledge Transfer Network working in the area of industrial, plant and marine biotechnology identified an unmet need in the UK for a national initiative in biorefining. The KTN sought opinion from government advisors and industry and, as a result, it used its network of members to form a consensus of what was required to maintain the UK's position as a leader in such technologies.

Open, and wide ranging, discussions about the ambitions of the UK in biorefining led to a consortium of companies with a unified view of what was desirable to develop this approach across the whole supply chain from agricultural research, through growers and processors, to end-user producers of food, cosmetic

and chemical ingredients. This was the formation of the Integrated Biorefining Technologies Initiative (IBTI).

Engagement with the Research Councils led to a contribution of funding for underpinning research that augmented the financial contributions of the ten companies and provided support for leading-edge projects in universities and institutes. The industrial members of the consortium became a recognised, authoritative voice for biorefining in the UK and were able to have input, and influence, to government strategy in this area and have also become a source of informed opinion internationally.

## Advanced Biorefinery Schematic



**Biorefining:** is the conversion of biological materials into the building blocks required to make materials, bio-chemicals and bio-fuels. The "biomass" used can be agricultural by-products (such as straw or husks), municipal waste or algae – amongst others. Since these sources are renewable and are each formed through the uptake of carbon dioxide (in plant growth) they are considered to have a lower overall carbon footprint.

## World Class R&D

A Research & Technology Club facilitated by BBSRC and EPSRC provides a means to combine relevant academic expertise to work on innovative, multidisciplinary, scientific areas of relevance to industry.

An integral feature of the club's operation is the delivery of efficient mechanisms to facilitate the dissemination of research outcomes to club members and support effective networking and community building between academic groups and the companies involved.

Projects funded by the IBTI Club include research into deriving new flavourings, antioxidants and valuable aromatic chemicals from indigestible parts of plants drawing on the expertise of a range of scientists from engineers to microbiologists.

## Taking Research to Market

To complement the IBTI initiative and provide applied and development capabilities the Technology Strategy Board has helped in establishing a £12m capital investment in an open access scale-up facility at Wilton and has also provided funding through an open competition that will allow companies to have access to this demonstrator plant. TSB's Manufacturing High Value Chemicals through Industrial Biotechnology call provides help for companies wishing to take a discovery from the lab to production.

In 2010 the UK was able to fund a facility to scale up new processes with an investment of £12m in the North East of England.

## Project Details

### Industrial Project Partners:

BP Biofuels  
British Sugar  
Croda  
HGCA  
TMO Renewables  
Green Biologics  
Biocaldol  
KWS UK  
Syngenta

### Research Councils:

BBSRC  
EPSRC

### Total research investment:

£7m

### Technology Strategy Board:

£2.5m a year available for developing production of High Value Chemicals from renewable resources.

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