



NNFCC

The UK's National Centre for Biorenewable Energy, Fuels and Materials



Delivering Sustainable Solutions from Biomass

ANNUAL REPORT | 2011

Foreword

by Dr Jeremy Tomkinson,
Chief Executive



“ Biorenewables have had a good year and we are seeing growth in the UK bioeconomy thanks to new subsidies for renewable energy and increasing demand for environmentally sustainable products. We must now build on this momentum.

The NNFC continue to work at the forefront of the sector and we are helping drive innovation, grow markets and develop policy for biorenewables and bio-based materials. Our consultancy services are highly regarded and we are pleased to have completed work for a number of important clients, ranging from FTSE 100 companies to new biorenewable start-up's.

This year we have analysed future markets for major brand owners, assessed feedstock sustainability for advanced biofuel ventures and conducted due diligence for companies such as Rolls Royce and British Airways.

We have also extended our reach and using our expertise of global markets for biorenewables, we have embarked on several important European initiatives, such as the £12.3m EnAlgae project, which brings together experts from across North West Europe to develop algae as a source of sustainable energy.

And as we enter 2012, we are delighted to be an advisor to the London Organising Committee for the Olympic Games and Olympic Delivery Authority – helping bring bio-based packaging materials to the London 2012 Olympic Games.

Finally, I would like to thank our sponsors, members and friends for their support and we look forward to a productive and profitable working relationship in the future.”

Jeremy Tomkinson

Foreword

by Pamela Castle OBE,
Chairman of the Board



“ Over the past year there has been significant growth in the number of companies investing in biorenewables.

As the cost of fossil fuels has continued to increase, renewable sources of energy and materials, for example biomass, have become more cost competitive and what was once a niche market is now a thriving part of our economy.

In some cases this shift has inevitably put greater pressure on sustainability but it is gratifying that the Government has acted to ensure bioenergy and biofuels are sustainably sourced. Consumers are also more aware of the carbon footprint of products and materials.

This means that companies are being forced to consider their overall environmental impact and this has created an opportunity for businesses, such as the NNFC, to offer consultancy to address these new challenges.

As a result, and despite the economic downturn, the NNFC has increased its non-governmental consultancy work, while also continuing to act as the link between Government, Research and Industry which has made it such a trusted source of information over the past eight years.

I look forward to seeing our business and those of our clients grow and prosper in the burgeoning bioeconomy. I would also like to thank all the staff at the NNFC for their hard work and dedication, and members of the Board for their continued enthusiasm, knowledge and expertise.”

Pamela Castle

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Membership

How can membership benefit you?

- ▶ Save hundreds of pounds off some of the biggest industry events
- ▶ Free access to our working groups on packaging and biofuels
- ▶ Download member-only content on our website, including the latest NNFC business reports and tools
- ▶ Reduced consultancy rates

For this and more, join the NNFC today, www.nnfcc.co.uk/join_form

Websites

This year saw the launch of our new website with some great features to make navigation around the site easier.

We received more than **70,000** unique visitors to the NNFC website last year and nearly a quarter of a million page views.

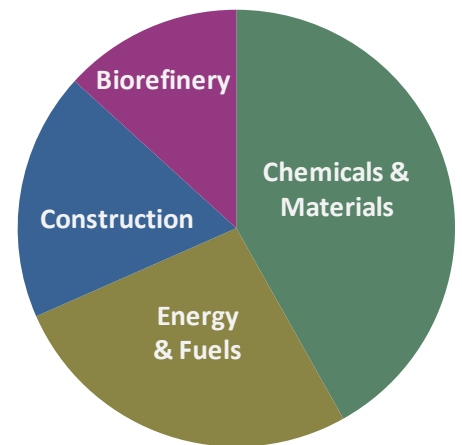
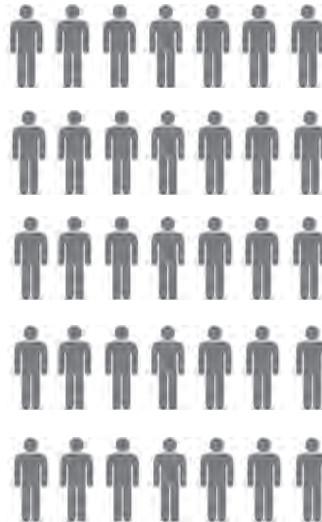
We also operate the Government's Official Information Portal on Anaerobic Digestion – www.biogas-info.co.uk – and the European Renewable Resources & Materials Association website – www.errma.com



Advertising

We mail out to **3,500** contacts across the biorenewables industry – these include feedstock and energy suppliers, major manufacturers, brand owners, government policy makers, retailers, research funding bodies, academics and the media.

For opportunities to promote events to our mailing list, on our website or in our newsletter contact advertising@nnfcc.co.uk



Our contacts in 2011

News

Three great ways to get the latest news:

For breaking news headlines follow us on twitter at www.twitter.com/NNFC

For in-depth news from our team and media partners, visit the news section of the website, www.nnfcc.co.uk/news

For news, events and in-depth analysis from our experts, become a member of the NNFC. Every other month you receive an exclusive update sent to your email inbox and tailored to your sector, www.nnfcc.co.uk/join_form

Events

This year we presented at over **40** leading industry events, including The Guardian CleanTech Summit, The Annual Biopolymers Symposium and The EBEC Conference.

In March we held the “Linking Bio-Based Materials to Renewable Energy Production” event, which opened debate on the economic and political implications of how we measure bio-based content.

We also co-organised the “Biorenewables in the Humber” conference in October, which explored the evolving biorenewables sector in the Humber region - one of the UK's biggest hubs for biorenewables.





Future Market Analysis

Many companies are interested in how their markets are changing and this year we have been working with several major manufacturers and brand owners to answer this question.

Using our expert knowledge and understanding of the industry we have developed future market scenarios for bioplastic feedstock demand and examined the anticipated competition for feedstocks from the energy and fuels markets.

We are developing **sophisticated models** with industry to reduce costs and better prepare them for changes in the market.

Our research has provided independent assessment of which feedstocks to use, where to grow these feedstocks, where demand will be, where to build manufacturing plants and which chemical and polymer platforms are showing most promise.

This has allowed companies to present evidence to customers and shareholders, supporting their environmental activities.

- ▶ The market for bioplastics is growing rapidly and is now a lucrative and diverse industry
- ▶ Over the next decade global production capacity for bioplastics is expected to reach 3 to 4 million tonnes a year
- ▶ As scale increases, prices will drop and become more competitive with plastics made from petrochemicals
- ▶ But there is increased competition for resources and businesses need to be prepared

Resource Planning

Having been set up to assess the potential of non-food crops, the NNFCC is in an ideal position to support companies interested in resource planning. We have an unparalleled understanding of how farming, the waste sector and industry interact and work together.

Whether it's wood, crops, farming residues or food waste, we have the knowledge to help you get the most from your feedstocks and a large contacts directory to help you choose the correct suppliers and project partners.

Knowing what feedstocks are available and where these come from is vital for companies looking to invest in bioenergy, biofuels or biochemicals. It can make a fundamental difference to the sustainability and economic viability of your business.

If you want to get to grips with supply chain management and logistics, contact us and we'll talk you through the process and help you understand what's best for you.

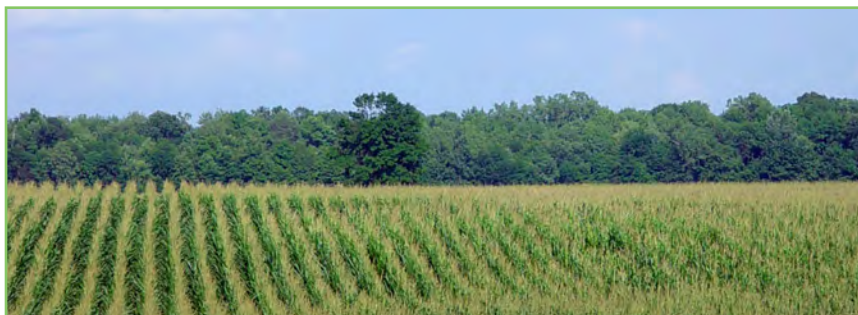
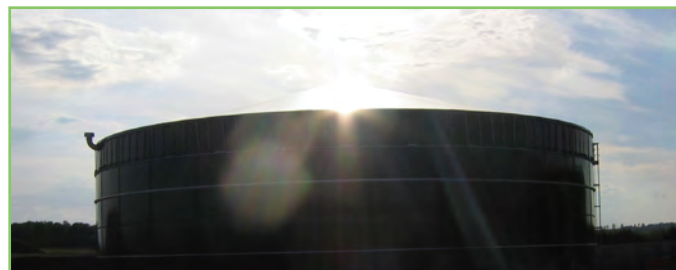
Case Study

Farm-Scale Anaerobic Digestion Plant Efficiency

The NNFCC's **AD cost calculator** was used to model and examine a range of farm sizes, slurry to crop ratios and crop types.

Our analysis revealed that using crops in AD is vital for the technology to make a meaningful contribution to UK renewable energy targets.

Slurry-only systems generate far less energy; by using a modest amount of crop material (30 per cent), an AD plant can increase energy output tenfold for only three times the capital cost.





Feedstock Sustainability Appraisal

Sustainability is becoming increasingly important to businesses operating in the biorenewable markets. As a result, many companies are interested in where they can find sustainable biomass feedstocks or how sustainable their existing feedstocks are.

We are working with a number of leading companies, including major multi-national energy providers, to help them develop sustainability plans and understand how new sustainability criteria for biomass will impact on their business.

We are experts in interpreting **life cycle assessment** and have worked on numerous projects looking at the sustainability of biofuels, vegetable oils, bioSNG, biodegradable polymers, bio-based carrier bags and a number of major renewable chemicals.

Technology Evaluation and Due Diligence

Investors must be certain that a proposed venture is technologically sound and profitable. The NNFCC have some of the world's leading experts in bioenergy, biofuels and renewable chemicals and our team have a proven track record in undertaking due diligence for some of the world's leading companies.

We offer a high level of **technical expertise** investigating and evaluating technological performance, costs and commercial viability. This means you can have confidence that all critical business issues have been addressed, making you better informed and providing you with a sound business case for investment.

We can also make you aware of the uncertainties in the market around policy, supply chain security and specific technical issues, to help you manage the risk and ensure you get a return on investment.



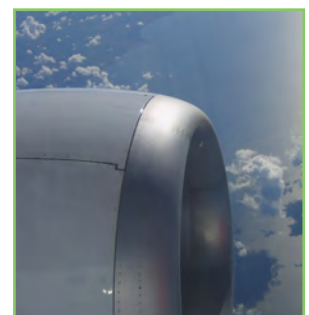
Case Study

British Airways

- ▶ British Airways plan to produce sustainable and renewable jet fuel from gasified biomass at a site near London
- ▶ The fuel could produce half of the airline's fuel for its London City Airport operations
- ▶ Half a million tonnes of waste biomass will be turned into 16 million gallons of bio-based jet fuel

The NNFCC have been working closely with British Airways on the **multi-million pound** GreenSky project. GreenSky is a joint venture between British Airways and American bioenergy group, Solena.

We conducted a due diligence for the airline on the sustainability implications of the venture and have provided technology support as part of our consultancy service.



Project Feasibility Assessment

Assessing the financial feasibility of a project can be a long and difficult process. Subsidies for renewable energy are reviewed regularly to reflect changing costs, making the economics of any new build finely balanced.

This is why the NNFCC have developed a number of tools to help you understand the expected returns from different sources of bioenergy. Having us independently assess the feasibility of your project allows you to see the expected return on investment, which can support your business case and help you get financing.

Case Study

Anaerobic Digestion Cost Calculator

The NNFCC – together with the Andersons Centre – produced the AD cost calculator to help interested parties better understand the economics of AD.

The calculator estimates the **costs** and **returns** of AD based on a series of inputs, such as feedstock type and volume of supply. In June, we updated the rates used in the AD cost calculator to reflect the outcome of the fast-track review of FITs for farm-scale AD.

Contact us to discuss user support or for assistance with a more detailed feasibility assessment.

Business to Business Brockerage

Knowing the right people is a key part of developing successful business partnerships and joint ventures. The NNFCC has worked with some of the biggest organisations in the sector and is intrinsically familiar with the bio supply chain.

Case Study

INEOS Bio

We have been working with INEOS Bio to break down development barriers and facilitate funding for the company's first UK biorefinery, which resulted in a **£7.3 million** Gov't grant.

The biorefinery will produce 30 million litres of bioethanol and more than 3MW of renewable electricity from over 100,000 tonnes of bio-degradable household and commercial waste.

Without your help, interfacing with and advising Government, I am certain that INEOS Bio would not have been awarded grant funding from the Department of Energy and Climate Change and from the Regional Development Agency, ONE North East for the Seal Sands project.

INEOS Bio, June 2010

Case Study

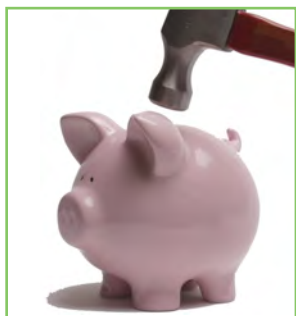
London 2012 Olympics

We are promoting the UK certification scheme for compostable materials through our UK Renewable Packaging Group and raising awareness of the benefits offered by more sustainable materials to key players in the packaging supply chain.

This led to the NNFCC becoming an **advisor** to the Olympics Delivery Authority and London Organising Committee for the Olympic Games on using renewable packaging during the Games.

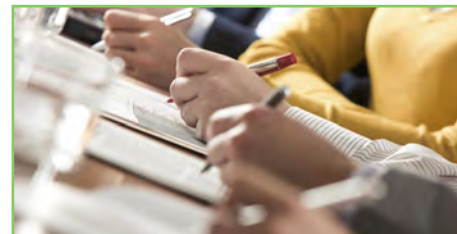
As a result, the NNFCC and the British Printing Industries Federation have helped setup a supply chain for bio-based packaging to London 2012. This means that many of the fast food wrappers, sandwich boxes and drink cartons served within the Olympic Park area will be made from compostable materials.

We also ensured that these materials are independently certified compliant with EN13432. Meaning that most non-reusable, non-recyclable packaging and consumables at the games will be suitable for in-vessel composting or AD.



Tailored Professional Training

- ▶ Life Cycle Assessment – or LCA – allows users to measure and compare the environmental performance of similar products over their whole life cycle
- ▶ LCA is increasingly being used in **policy** and by **brand owners**, as it offers a scientific method of demonstrating the environmental impacts of a product



This year, the NNFCC partnered with North Energy to deliver a series of one-day training workshops on LCA. The workshops covered the applications of LCA, how an LCA is carried out, the importance of the ISO 14040 series of standards as the basis for LCA, and issues arising in interpreting their results.

If you would like to discuss similar professional training opportunities then get in touch with us. We offer training on a range of issues, including policy, financing and sustainability across the biorenewables sector.

Policy and Regulatory Support



UK policy for renewable energy and fuels is complex and constantly changing. As a result, it is important that you **stay informed** about the latest developments.

We work closely with the Department of Energy and Climate Change, Department for Environment, Food and Rural Affairs, Department for Transport, and the European Commission, to develop sustainable markets for biorenewable products.

Having gained valuable insight and experience from working closely with Government over many years, the NNFCC are in a unique position to help you understand which policies and standards are important to you, how they work and ultimately their value to your business.

Case Study

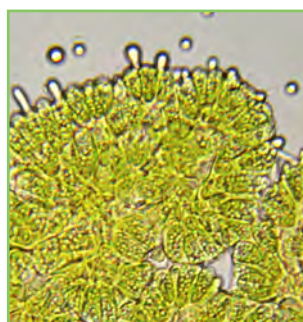
Bioliquids Report

We were commissioned by the Government – as part of the **Renewables Obligation** banding review – to assess the resource size for bioliquids, the technological opportunities to use them and what contribution they could make towards our 2020 renewable energy targets.

The report found that the sector faced several key deployment challenges such as technology cost, fuel cost uncertainty, supply chain infancy and planning issues. These challenges would need to be tackled before bioliquids could fulfil their potential.

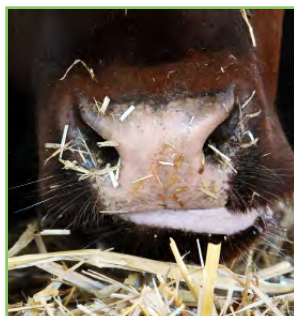
Case Study

EnAlgae



This year, a number of leading European organisations – including the NNFCC – embarked on a **£12.3 million**, four and a half year project called Energetic Algae (EnAlgae), to address the lack of information on algae productivity in North West Europe.

Funded by the EU INTERREG programme, EnAlgae will establish a series of pilot-scale seaweed farms and algae growth facilities in the region to provide the crucial information needed to assess algal productivity and explore it's sustainability.



Bioenergy Policy Support Service

NEW for 2011/12

The Policy Landscape Review provides a broad understanding of the renewable energy and fuel policies, crucial to those who are developing bioenergy and biofuels in the UK.

The review gives you an in-depth assessment of how individual policy mechanisms work, how they link together and how they underpin overarching government strategies affecting the sector.

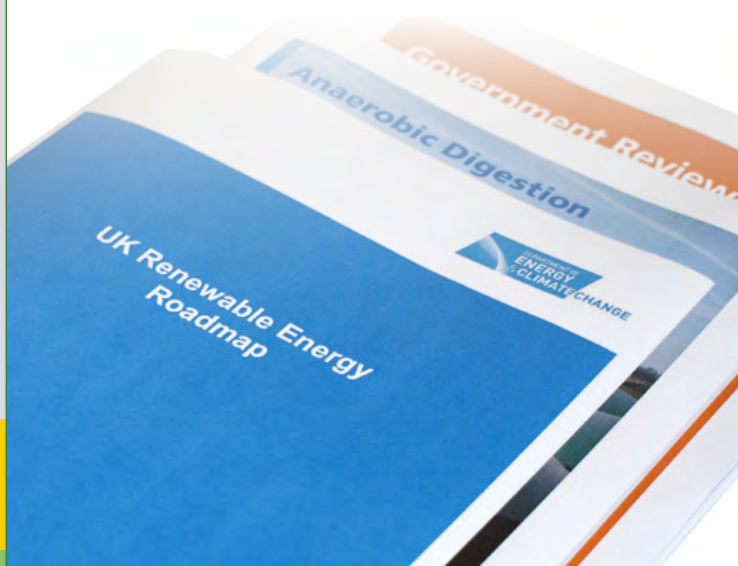
The Policy Landscape Review also provides:

- ▶ Timelines and lifespans of individual policies
- ▶ Information on monetary support values for each policy
- ▶ NNFCC commentary on areas subject to change and review

It is tailored towards the finance and legal sectors, project developers and associated downstream industries, including the chemical and material sectors, where renewable energy use is becoming increasingly important.

This service will provide:

- ▶ An electronic version of the report
- ▶ Access to NNFCC staff to clarify any issues



Sustainability Assurance Service

NEW for 2011/12

The EU Renewable Energy Directive (RED) requires that only sustainably produced biofuels and bioliquids are supported in the EU and contribute to EU renewable energy targets.

This is also likely to extend energy derived from biomass and biogas in the near future.

Any renewable heat, power or fuel generated from biomass or biogas produced under UK renewable energy support schemes will have to demonstrate that they meet the minimum sustainability standards of the RED.

- ▶ Is your company able and prepared to provide verifiable evidence of its compliance with the biomass, biogas and biofuel sustainability provisions of such support schemes?
- ▶ Do you have operational, evidence gathering and reporting procedures in place to satisfy an external sustainability audit?
- ▶ Do you operate chain of custody procedures?

If not then we can help you develop the procedures and processes needed to meet industry approved sustainability assurance schemes or provide your own quality assurance data as proof of compliance with each support scheme.

The NNFCC has teamed up in partnership with Simply Quality UK to provide a sustainability assurance service for companies in the bioenergy supply chain.

The NNFCC's experience in biomass sustainability and in dealing with Government departments, combined with the quality systems expertise of Simply Quality UK, provides an ideal combination of skills and experience to support your business in this increasingly important area.

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Some of our clients



Plastic
Renewable source
Carbon reduction
Braskem



Some of our working partners



Material change for
a better environment



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