# CPD Course: Applications of bioenergy

## Course date

11th – 13th May 2015

## Course overview

Bioenergy is different from all other renewables in that the technologies require 'fuelling'. This adds a level of complexity to bioenergy projects that is not present in the other renewables. There are new and unique opportunities for value creation in both the upstream and downstream value chains around biomass and energy from waste projects. These value chains also interact with other parts of our economy such as waste, recycling, manufacturing and food. Recent research has found that there is the potential for indigenous biomass material to meet 44% of the UK's 2050 energy demand. The proper management and organisation of these supply chains is key to unlocking the value of that generation capacity for the UK economy.

Typically we observe that bioenergy projects are started by a developer or project sponsor with one, or sometimes two, of the following established: technology, feedstock or a suitable location (TFL). Examples include technology providers looking for sites to commercially demonstrate their system, or waste producers looking to reduce their waste disposal costs (feedstock) or to use their organic waste to displace their onsite energy usage. For a successful project to go head all three aspects must be confirmed before the project can attract funding.

In successful projects there is a suitable mixture of appropriate technologies, feedstocks and location. Depending on whether the project is driven more by feedstock source abundance or by the needs of a particular location, in terms of heat and power, it is necessary to size the technology accordingly, so that it is both efficient and economic.

This course has been designed to introduce participants to the various value adding applications for bioenergy and the wider bioeconomy, including the production heat, power and an introduction to the way bioenergy projects are evaluated by finance houses providers.

This course is accredited by the Institution of Chemical Engineers - IChemE

## Course objectives

On successful completion of this course you will be able to:

- Know how to develop a successful bioenergy project
- Estimate the energy balance and value chain of a given project using a systems approach
- Identify value adding stages in biomass value chains
- Explain the operation of combined heat and power schemes, Organic Rankine Cycle engines and the concept of biorefineries
- Size CHP applications

You will learn the importance of factors such as:

- Project finance and structure
- Risk and uncertainty
- Stakeholder engagement
- Production incentives and policy
- CHP quality assurance.

## Course topics

1. Optimising the use of biomass
    - Heat applications
    - Power applications
    - Combined Heat and Power applications
    - Organic Rankine Cycle Engines
2. Value chains and bio-refineries
3. Biomass in the energy systems
4. In depth case studies.

## Course tutors

Dr Jim Scott
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Dr Dan Wright
Research Associate
European Bioenergy Research Institute, Aston University

Dr Veronica Mas
Applied research and Technical Officer
European Bioenergy Research Institute, Aston University

## Course fee

This course is part of a pilot programme and currently has funding in place to allow participation in this course for free through EBRI's INTERREG IVB BioenNW project.

## Course value

10 CPD credits

This course is accredited by the Institution of Chemical Engineers – IchemE.

## Course structure

A 3 day course followed by a 2000 word case study.

## Booking your place

If you would like to book a place on the course, please reserve your place online. Please state the name of the course you are applying for when booking. In the Finance section, please select 'Other' from the drop down choices as the fees will be covered through the INTERREG IVB BioenNW project.

## Location and travel details

This course is being held at the European Bioenergy Research Institute, Aston University, Aston Triangle, Birmingham, B4 7ET. View location and travel details.

Investing in Opportunities
This project has received European Regional Development Funding through INTERREG IV B.
INTERREG IVB