

# An Introduction to Biofuels

## *A 2-day Comprehensive Overview of Biofuels Technologies & Markets*

### Course objectives

Whether you are new to the industry or simply want to refresh and update your knowledge, this two-day training course will ensure you are up-to-speed with the key, fundamental aspects of the biofuels industry. You will learn the basics of how biofuels are derived, the factors and debates influencing the market and its competitive framework, plus review current and upcoming market activity. Although all types of biofuel will be defined and introduced (including biomass and biofuel for power generation), the main focus will be on the use of biofuels in transportation.

### Level & Style

Please note that this course will be run in an informal manner which allows and encourages time for discussion and questions, ensuring that participants get the most out of the day.

### Approximate Timing

Day 1: Course begins:	09:00	Course ends:	17:30
Day 2: Course begins:	09:00	Course ends:	16.30

(NB. timings are approximate and include lunch plus morning and afternoon refreshment breaks)

### Agenda Details

- **Biofuels: basics & definitions**

There are many different types of and uses for "biofuels". This first session will clearly define and classify these in order to ensure attendees are clear from the start. It will thus provide a clear foundation for subsequent sessions.

- ✓ Biomass and biofuels
- ✓ Non-transport applications (including power generation)
- ✓ Transport biofuels (biodiesel, bioethanol and others) and their uses
- ✓ "First-generation" feedstocks
- ✓ New types of feedstock (including ligno-cellulosic and algae)

- **How biofuels are made and used**

The basics of biofuel technologies, presented in language that is clear and accessible for non-experts. The goal is to help attendees understand some of the key practical requirements and implementation factors shaping the biofuels markets. For the most important current commercial transport biofuel production processes (sugar- and starch-based bioethanol, and oil-seed-based biodiesel), and the most significant emerging technologies (ligno-cellulosic and algae-derived biofuels), we will examine

- ✓ Land use and cultivation (including the fuel vs. food debate)

- ✓ The importance of crop selection and yield
- ✓ Storage, transport and pre-processing
- ✓ Processing technology – biochemical and thermochemical pathways
- ✓ Distribution
- ✓ Technology evolution – commercial, demonstration and research projects

- **Demand for biofuels and price determination**

Biofuels do not exist in isolation, but form part of a wider energy landscape. Success or failure of the industry (in its various forms) will be determined not simply by viable technology, but by factors as diverse as competing energy sources, political and public debate, regulatory and economic policies, and free market activity. We will use worked exercises to demonstrate this.

- ✓ Peak oil, energy security, climate change, lobbyists
- ✓ The role of biofuels in global energy markets
- ✓ Alternative fuel technologies, including electricity and hydrogen
- ✓ Biofuels price determination and commercial viability

- **Market intervention mechanisms**

Government policy has a huge impact on the biofuels market, both in supporting research and development, and directly supporting markets through a range of mechanisms. In this session we will examine the different ways in which biofuel markets are supported, how this varies between countries, and the likely future direction of travel for market intervention.

- ✓ Support for inputs / production
- ✓ Support for processing (agricultural and chemical)
- ✓ Payments, credits, tax exemptions and subsidies (for production and use)
- ✓ Mandated use
- ✓ Trade policy

- **Market supply side**

Examining the structure of the supply side of the biofuels market globally and in different regions of the world, including profiles and case studies of major players, and those making efforts to improve technology to reduce costs and increase efficiency

- ✓ The supply chain from resources to end use
- ✓ International trade
- ✓ Company and project case studies
- ✓ Consolidation and market maturity

- **Alternative futures for biofuels**

This session will pull together the knowledge gained during the course and will involve a worked scenario planning exercise examining the possible future evolution of a particular biofuels market.