

Biomass: Improving Energy Security

As a safe technology with a renewable, varied and widely available fuel source, biomass can help strengthen the UK's energy security as part of a balanced energy mix. Its unique functionality means it can also act as an enabler to other renewable technologies, whilst helping the UK to meet stretching carbon reduction and renewable energy targets.

Why does biomass improve energy security?

- Many fossil fuels are sourced from politically unstable parts of the world. In contrast, the global feedstock supply for biomass tends to be easily acquired from relatively stable sources, such as North America.¹
- Biomass has predictable, stable sources of supply. It is a diverse commodity, rich in variation of geographical source and type. This means it can bolster the security of supply.
- Unlike fossil fuels, supply can be renewable and sustainable, and the future of the industry is premised on actively encouraging the replanting and regrowing processes.
- According to the International Energy Agency (IEA), biomass is the fourth largest energy resource in the world after oil, coal and gas. It estimates that by 2050 sustainable sources of biomass could supply the world with 10% - 20% of its primary energy requirements.²
- AEA has estimated that by 2020 sustainable biomass could meet 20% of the UK's energy requirements with the potential for further capacity.³
- Biomass is reliable, flexible and non-intermittent, providing clean, renewable power at comparatively low cost to the consumer⁴.
- **Baseload** plants are able to run constantly, **peaking** plant comes online only as and when it is needed to meet spikes in demand, and intermittent forms of generation come online when certain environmental factors are met, for example wind or sun. Biomass has a unique ability to complement the low carbon renewable energy portfolio, providing both baseload and peaking capacity, and potentially renewable heat as well.

¹US Department of Energy: National Energy Security

http://www1.eere.energy.gov/biomass/national_energy_security.html

² IEA Bioenergy: Bioenergy - a stable and reliable energy source

<http://www.task39.org/LinkClick.aspx?fileticket=8lsyplOAwXs%3D&tabid=4426&language=en-US>

³ AEA UK and Global Bioenergy Resource – Final report

<http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/renewable%20energy/policy/1464-aea-2010-uk-and-global-bioenergy-report.pdf>

⁴ Biomass Energy Centre: Biomass Fuel Costs Comparison

http://www.biomassenergycentre.org.uk/portal/page?_pageid=75,59188&_dad=portal

- Biomass technology is proven and safe. Although potential exists for learning, innovation and costs reduction, biomass is a relatively mature technology meaning that it is cost effective in comparison to newer or as yet unproven forms of generation.

Key benefits to energy security

- Over the next ten years, a quarter of the UK's existing generating capacity will be shut down, with many old nuclear and coal power stations retired or forced to close as a result of European regulation⁵. There is an urgent need to bridge a gap in the energy mix and keep Britain's lights on. New build and co-firing of biomass with coal, and ultimately full conversion of existing plants to dedicated biomass, can provide vital help to fill this gap.
- Predictable, stable, diverse sources of fuel supply such as biomass help to strengthen the UK's energy security. A mature biomass industry is considerably less likely to be vulnerable to price volatility and could provide stability against price shocks in other fuel sources.
- Supporting the biomass industry will also help to enhance the value of biomass sources. This in turn will help to incentivise the development of the global and UK supply chain through better managed woodland and the integration of biomass crops into farming crop cycles.

It is the responsibility of the global biomass industry to develop best practice that encourages biomass rich countries to manage the global feedstock sustainably. The long-term prospects for the industry depend on this direction of travel, and it is ready and willing to play its part.

Key Terms:

Baseload Generation: Baseload is the minimum amount of power needed to satisfy continuing, steady user demand. Baseload power plants (including nuclear, coal and biomass) generate this energy at a stable, constant rate and are not intended to switch on and off regularly.

Intermittent Generation: Intermittent generation is energy produced by a source that is not continuously available, due to some outside factor such as wind or sun. Some intermittent energy sources, such as tidal power, can be predictable. However, in general intermittent sources of generation cannot be deployed to meet the regular demands of a power system.

International Energy Agency (IEA): The IEA is a globally recognised independent intergovernmental organisation that seeks to promote the use of reliable, affordable and clean energy. The Agency has 28 members, including the UK and the United States and also works extensively with non-members such as China and India.

⁵ DEFRA: Industrial Emissions Directive Guide
<http://www.defra.gov.uk/environment/quality/industrial/eu-international/industrial-emissions-directive/>



Biomass power and CHP

a sustainable part of the UK energy mix

Peaking and Intermittent Generation: Demand for electricity varies, meaning that different power sources are required when demand is high or peaking. Biomass is currently one of the few renewable energy sources capable of both peaking and intermittent generation. Peaks or spikes in customer power demand are handled by smaller and more responsive types of power plants called [peaking power plants](#), typically powered with [gas turbines](#).