biomass connect

Consultation Workshop

April 2023

Industry Panel Workshop Summary

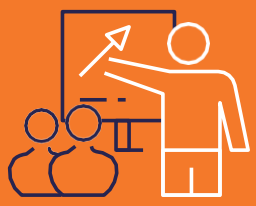
Introduction:

In April 2023, Biomass Connect held a stakeholder consultation workshop with experts from the biomass industry to better understand the key challenges currently facing the industry and how these could best be addressed by the programme. This first industry workshop was predominantly attended by stakeholders from academia and consultants working in biomass related sectors.

Main challenge areas identified:

Based on the responses and issues raised during the workshop, the main challenges to upscaling biomass production in the UK fall into three interrelated categories:

01



Strategic and economic uncertainty

02

Technical and logistical complexity

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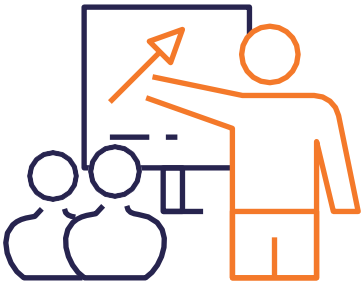
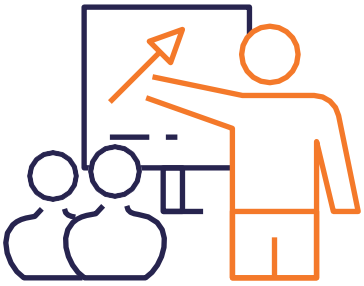
Lack of awareness and confidence



Strategic and economic uncertainty

The need for clear strategic direction and supportive economic conditions were identified as critical factors that underpin growth in the biomass industry. Since publication of the 2012 bioenergy strategy, bioenergy has played a significant role in decarbonising the UK economy, principally in road transport fuels and electricity generation. Ten years on, the UK energy landscape has changed significantly. At the time of this workshop it was anticipated that the publication of the Biomass Strategy, expected imminently, would provide strategic direction regarding how biomass and bioenergy will be produced and used in the UK. It was hoped that this would give confidence to the industry and its investors.



The following requirements were identified to help address the challenges of strategic and economic uncertainty:

A need for clear leadership and direction

- Define clear priority principles and best uses for biomass.
- Avoidance of over-restriction – allow sectors, businesses and individuals to move forward.
- Provide confidence in existing sectors and support established supply chains.
- Ensure growth not contraction – avoid negative impacts on the existing bio-based industry.
- Carbon sequestration – how this can be economically captured and shared between landowners and industry – how this will link to farm payments, will it be accredited?
- Sustainability criteria – will these be developed for agricultural residues and energy crops. If so, how will these be applied?
- Financial incentives – Lack of financial support for planting biomass crops was considered a major barrier to attracting new growers. However, a need was identified to using a joined-up approach; supporting both supply and demand side actors.

Technical and logistical complexity

BACKGROUND

Unlike fossil resources or existing agricultural and forest product sectors, the supply chains, conversion routes and value chains for biomass crops and their products are still being developed. Those being developed are at different levels of technological readiness and are operating at different scales. There is also considerable variation within biomass crops themselves; they need to be matched to specific sites, growing conditions, conversion routes and locations relative to their intended conversion facilities.

As biomass and bioenergy can take many forms, this complexity can make biomass production and utilisation difficult to define and convey in simple messages to a non-technical audience, this can lead to confusion and increase uncertainty. From an industrial perspective, identifying clear routes to market was considered essential to encourage prospective growers and investors.

The following recommendations were made to address issues of technical and logistical complexity:

Clear routes to market

- Throughout the workshop the need to provide information regarding clear, sustainable and economic routes to end-markets was emphasised; to reduce confusion, limit uncertainty and boost confidence.

- This can best be achieved by provision of clear evidence-based guidance that identifies clear routes to market, focusing on current viable technologies and infrastructure that is already operating at scale or is predicted to scale up rapidly e.g.

    - Heat and power.
    - Anaerobic digestion (CH4/H2).
    - Biobased products (composites, plastics).
    - Sustainable aviation fuels (Solid biomass to liquid).
    - The potential contribution of Bioenergy with Carbon Capture and Storage (BECCS) as it becomes deployed.

PROJECT BACKGROUND

Biomass Connect is a UK-wide demonstration and knowledge sharing platform aimed at supporting the biomass industry by providing robust information on biomass crop performance, agronomy, economics and environmental impact.

The project is part of the Biomass Feedstock Innovation Programme (BFI), a £36M programme funded by the Department for Energy Security and Net Zero (formerly BEIS) to address barriers to increasing production of sustainable UK-grown biomass.

Supporting decision making

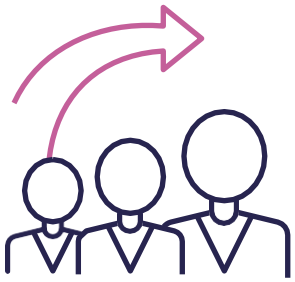
A need for the provision of practical and reliable information to support farmer decision making was identified by the workshop panel. The following topics were considered to be most critical:

- Economics of cultivation and management, how it relates to farm payment/ environmental land management schemes.
- Comparison/integration with current land management practices.
- Machinery and labour requirements and accessibility.
- Land specific issues – from a practical perspective
  - Detailed agronomic information, planting and harvesting requirements.
  - Biomass crop/variety selection and access to planting stock.
  - Reliable estimates of yield potential and rotation lengths.
  - Environmental impacts, both positive and negative.

Two projects have been funded under the BFI Programme which are being specifically designed to support planning and decision making for farmers, foresters and landowners:

EnviroCrops – Perennial Energy Crops Decision Support System (PEC-DSS), AFBI.
Developing an app or web-based tool which gives practical, spatially explicit information to support farmer decision making. The program will provide simple information regarding what biomass crops are best suited to land available, what yields and costs and prices can be expected, and the local availability of contractors and markets.

BIOFORCE (Biomass Forestry Creation). Verna Earth Solutions Ltd.
Developing new geospatial data tools to support planning and decision making for land owners considering conventional or short-rotation forestry and agroforestry; combining trees with other forms of agriculture.



Raising awareness and confidence

The need to improve wider awareness of biomass energy and bio-based products was emphasised during the workshop. Building confidence was considered essential to encourage investment along the supply chain, from grower to consumer. Clear leadership and guidance from policy and industry was considered to be essential in establishing legitimacy and boosting confidence.

Biomass Connect has been specifically developed to act as a focal point for the industry and the public; to raise awareness, educate and disseminate information that relates to biomass crops and their utilisation.

The main aims of the project are to support the biomass industry by:

- Providing robust information on biomass crops, agronomy, economics and environmental impact in accessible media via the biomass connect website.

- Demonstrating biomass crops and field operations at eight demonstration sites across the UK. Each growing up to 11 species of short-rotation trees and perennial grasses.

The following recommendations were suggested to address issues of improving awareness and building confidence:

Clear routes to market

- Clear, joined-up policy and strategy from government and industry.
- Improve stakeholder and public awareness, acceptance and confidence by providing clear, accessible and robust evidence- based information; providing honest appraisals and dispelling myths and disinformation.
- Addressing public concerns regarding wider issues of: Sustainability e.g. 'Food vs Fuel' and provide robust evidence regarding the genuine environmental costs and benefits.
- Building better biomass networks - Improving interactions between sectors and across supply chains. Better signposting and connecting potential growers with suppliers and end users.
- Marginal land – To avoid competition for agricultural land used to grow food and/or fuel, use of poor grade 'marginal land' was considered the solution. However, a fundamental misunderstanding has been identified regarding what actually constitutes 'marginal' land and how its definition is perceived by the farming community compared to those in academia and policy.

Major opportunities

Multiple opportunities were highlighted by the workshop panel which could improve awareness, build confidence and increase uptake of biomass cultivation. Much of these opportunities focussed on clarifying routes to market and identifying win-win opportunities where additional environmental benefits of biomass cultivation can be achieved.

Carbon sequestration

BACKGROUND

The UK is placing great emphasis on developing carbon capture and storage (CCS). CCS represents one of only a few technological options for large scale reduction of greenhouse gas emissions. Combining biomass and bioenergy with CCS (BECCS) is one of a few mechanisms that are currently available to remove historic CO2 emissions from the atmosphere by using fast growing plants to capture CO2 which is then geologically stored when the biomass is converted; potentially enabling generation of heat and power with net-negative emissions. However, this technology is still emerging and infrastructure has yet to be fully developed and deployed in the UK; a technical article on BECCS is available from the Biomass Connect website.

Members of the industry panel identified this as a major opportunity for the biomass industry but felt there was a lack of clarity regarding how carbon sequestration might be regulated, monitored or monetised to encourage investment and provide incentive for upscaling production. The following key questions were raised:

- What real opportunity does carbon sequestration present for the biomass and bioenergy industry?
- How will carbon sequestration be measured, economically captured and shared between landowners and industry?
- How will biomass crops and their carbon sequestration value will be linked with farm payments (ELMs) - will it be accredited?

Breaking down the barriers between forestry and agriculture

It was highlighted in the workshop that significant opportunity exists for large scale establishment of mixed-managed woodland and energy crops.

Significant opportunity exists to compliment woodland creation with biomass production, in addition to that produced by conventional forest management practices. Improving communication between forestry and agricultural community would assist in further identifying opportunities and drawbacks of including biomass 'crops' in agroforestry and short-rotation forestry and thinning regimes of continuous cover forestry. Aspects of this are being addressed by the BFI project BIOFORCE.

BACKGROUND

In the UK, agriculture and forestry approaches to land management have become distinctly separated. Biomass production of energy 'crops' involves cultivation of tree species, grasses and other fast growing plants. Energy crops such as short-rotation tree species may be incorporated in both agricultural land and in woodland.

The UK government has committed to increasing expansion of forest cover and is already promoting agroforestry approaches to land management; linked to the basic payments scheme (BPS).

Using biomass crops to gain other environmental benefits

Options for using biomass crops to provide additional environmental or ecological benefits was emphasised during the workshop. In particular, opportunities were raised regarding options for using biomass crops in:

Pollution/contamination reduction

A BFI project investigating options for utilising biomass production from conservation management is currently ongoing. The Teesdale Moorland Biomass Project is investigating the options for utilising biomass from conservation management of heather moorland in the north of England. Open burning of heather moorland is common management practice and there is also a significant wildfire risk in unmanaged areas. This project is examining the opportunities for reducing risk and providing additional benefits from using heather as a biomass feedstock.

Flood mitigation

Use of biomass crops in 'buffer strips' has been identified as an effective land management option to reduce flood risk, soil erosion, and groundwater pollution from agricultural land by planting strips of either grasses, other herbaceous perennials or tree species in 6-20 m wide strips along field margins or beside watercourses; a technical article on biomass buffers is available on the Biomass connect website.

Biodiversity management

There is some evidence longer-rotation biomass crops have benefits to biodiversity when compared with arable crops. A technical article effects of short-rotation coppice willow on biodiversity is also available on the biomass connect website.

Recommendations for Biomass Connect

Based on responses from the workshop, in addition to addressing the challenges and opportunities highlighted above, the following general recommendations were made to Biomass Connect to improve its continued support of the industry:

- Help to provide clear, appropriately targeted, evidence-based information to address aspects of uncertainty.
- Help provide practical and reliable information to support farm decision making.
- Help signpost and build industry networks to improve connectivity between stakeholders, sectors and supply chains.
- Help provide educational resources to address topics of uncertainty regarding biomass and bioenergy aimed at a general audience.
- Help improve awareness and build confidence both within the industry and the general public.