Position Paper

Biomass Energy in the UK Paper Sector - Renewable Obligation support

Summary

The Paper Industry is based on renewable and recyclable fibres, with fibres predominantly derived from wood harvested from well-managed forests that regrow as part of a shallow carbon-cycle. With a limited domestic commercial forest resource, UK papermakers use recycled or imported virgin fibre as their raw material. The UK has two forestry-based mills (operated by Holmen (in Workington) and UPM (in Irvine). These mills process commercially grown domestic conifer timber into paper fibres used in their papermaking. The output from such virgin fibre mills is critical to the recycling industry, as new fibres need to be added to the circulating pool of fibres to replace those lost to the system. In practice it's not possible to have a paper industry 100% based on recycled fibres.

Normal practice is for virgin fibre pulp-mills to use biomass as their energy source and indeed both these mills have high-efficiency biomass Combined Heat and Power plant (biomass CHP).

Most of the UK Paper Industry has no preferential access to low-grade forest residues (or waste wood) for energy use. While there will be some additional opportunities for biomass use in local areas, we agree with policymakers that biomass energy is not one of the critical decarbonisation routes for the paper sector, with limited opportunities **beyond the existing pattern of use at three sites** – Holmen Workington, UPM Caledonian, and Shotton Mill – that utilise UK derived biomass (a short description of these sites is included at the end of this paper).

Support through the Renewable Obligation is a key part of the economic operational case for these biomass-based sites. Securing the long-term future of UK located low-carbon manufacturing (and indeed sites decarbonising through other routes such as electrification or hydrogen) requires long-term support if these sites are to be internationally competitive.

Support to address higher cost low-carbon energy needs to continue until costs fall to parity with higher carbon energy sources. It follows that Renewable Obligation (RO) support cannot simply end as existing contracts expire – there must be a successor programme.

Biomass use in the UK Paper Sector. Three companies have invested in high efficiency biomass-fired Combined Heat & Power plant - Holmen Mill (in Workington), UPM Caledonian Paper Mill (in Irvine) and Shotton Mill (in north Wales). All three have Renewable Obligation contracts in place - this support underpinned the original investments on the basis of 20 year support.

These mill CHP are mostly powered by forest residues, though other biomass and wood-based wastes are also used - the proportions depend on local conditions and plant design. The sustainable nature of these UK sourced materials, plus their use at high efficiency, means their environmental credentials are high and generally exempted from the criticism often targeted at low efficiency generation using imported pelletised wood.

As their CHP are 20-years old when RO contracts expire, this is a point when new and significant investment is needed to upgrade plant and ensure the mills improve efficiency and stay internationally competitive.

Investment decisions. Paper mills are capital intensive long-lived assets, manufacturing product sold into international markets.

The scale of investment and complex engineering required to keep sites up to date with cutting edge technology also means that decision making is a long process – with a move from project proposal to financial sign-off frequently takes a number of years. In this context, the remaining RO contract length (and no successor programme in place) is important.

For policymakers seeking to support UK manufacturing, it's simply not possible to allow contracts to time expire and then assess the situation. At the point that a support contract expires, an investment decision will have already been made.

If policymakers are serious about supporting new investment at these sites they need to act now.

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Lack of clear policy support. With policy support for biomass becoming less proactive, there's a danger that the importance of industrial bio-based auto-generation is missed and specifically the productive use of high efficiency use of low-grade biomass is lost.

As well as the economic importance of the manufacturing operations, the three biomass-CHP contribute to a diversified, efficient, and stable UK electricity grid. As the amount of intermittent renewables continues to increase, biomass represents a dependable source of energy that can help operate the grid. This opportunity is already being discussed with NESO.

The economic importance. Such flagship manufacturing sites deliver much more than direct jobs and investment. They also anchor larger value chains, including rural jobs in the forestry sector, conversion activities making use of their products and delivering exports.

One lesson from the recent Covid-19 crisis was the importance of UK manufacturing to supply product into key supply chains, such as Paper-based packaging for food, and hygiene products for healthcare and domestic use. They demonstrate existing low-carbon manufacturing in action.

The mills deliver in excess of 1,400 direct jobs. Additionally in excess of £100m is spent each year in the wider economy, providing rural jobs and supporting UK forestry as well as making productive use of otherwise waste materials from which energy is recovered. A separate assessment of the economic value delivered by these three sites to their local economies has been commissioned.

As all three sites are part of international groups, any UK investment decision is made in a context that considers support packages offered by other countries seeking to attract investment away from the UK.

Supporting forest management. Harvesting provides an important stream of income for forest owners and delivers rural employment. Forest sites are subject to long-term management plans, with replanting and long-term management funded by the sale of products, with natural carbon cycles delivering sustainable materials.

Indeed, woodlands without active management continue to accumulate biomass until they reach maturity, but frequently present a fire risk and a missed opportunity to stimulate new growth and so higher levels of carbon absorption.

Efficient use of resources. Pulp and energy use are outlets for lower grade materials and an important component of overall business planning for forest owners. Carbon from these harvested products is accounted for in the forestry sector by reference to national forest accounting. Such material is assessed as carbon neutral assuming sustainability criteria are met – as is the case for these mills.

Carbon capture. The sites are involved in ongoing research into capturing emitted carbon dioxide for permanent storage, or for use as a raw material in the chemical and fuel industrial supply chains. **So for UK decarbonisation, the use of biomass at these sites is a well-established technology already delivering low carbon manufacturing.**

Until Carbon Capture, Utilisation and Storage (CCUS) is commercially proven, then support for industrial use of biomass should not be linked to CCUS.

Retaining and securing UK investment. A prerequisite to secure investment is policy stability – concern that policies are short term or not certain are a huge barrier. At an economy wide level, successful decarbonisation needs regulatory stability so that businesses can invest in new technology. Investing in a biomass-CHP is a major decision, and policy changes that result in a stranded asset make future investment less likely.

Analysis suggests that without a successor to the RO scheme, the case for continued use of biomass is not attractive in the UK.

Continued support would signal that the UK is serious about delivering low-carbon manufacturing and determined that progress to date is not lost.

Mill descriptions

UPM Caledonian
Irvine, North Ayrshire, Scotland

285 direct jobs, production capacity 260,000t/pa

The site is an integrated mill, using low grade conifer timber of UK origin to largely produce lightweight magazine papers, mostly exported. The site has invested in a biomass CHP that produces all the site heat requirements and just over half of its electricity needs. The CHP holds a Renewable Obligation contract that expires in April 2029.

https://www.upmpaper.com/about-us/our-locations/ our-paper-mills/upm-caledonian-paper/

Shotton Mill
Flint, North Wales

More than 200 jobs now, 600 additional to be recruited, production capacity planned to be 750,000t/pa recycled packaging, 210,000t/pa tissue.

The mill is currently being rebuilt to change from newsprint production to packaging and tissue grades on the largest paper-making campus in the UK. The biomass-CHP was built when the mill processed virgin timber and is retained to provide part of the energy need of the new papermaking processes. The main Renewable Obligation contract expires in March 2027, with a smaller contract (linked to a capacity increase) expiring in 2036. An economic assessment (linked to the current re-build) has identified gas-CHP as the realistic solution to deliver the additional energy required by the expanded production capacity with a new (hydrogen ready) gas-CHP being built to operate alongside the existing biomass-CHP.

https://shottonmill.co.uk/

Holmen Board Mill
Workington, Cumbria, England

340 direct jobs, production capacity 220,000t/pa

The Mill is the only UK manufacturer of folding boxboard made from mechanical pulp with an outer layer of bleached chemical pulp. The Incada product family manufactured in Workington is used in packaging for confectionery, cosmetics, wine, spirits, frozen and dried foods, plus greetings cards and covers. The biomass-CHP holds a Renewable Obligation contract that expires in February 2033.

https://www.holmen.com/en/career/work-for-Holmen/here-is-holmen/workington-storbritannien/workington-mill/

Further Information

Further information is available from Steve Freeman, Executive Director - Energy and Climate Change sfreeman@paper.org.uk.

Confederation of Paper Industries

- The Confederation of Paper Industries (CPI) is the leading trade association representing the UK's Paper-based Industries, comprising paper and board manufacturers and converters, corrugated packaging producers, makers of soft tissue papers, and collectors of paper for recycling.
- CPI represents an industry with an aggregate annual turnover of £15 billion, with 56,000 direct and a further 59,000 indirect employees.
- For facts on the UK's Paper-based Industries please visit: www.paper.org.uk.

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