Response to RSE report

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Overview

This document is a short response to the Royal Society of Edinburgh report "Inquiry into public financial support for tree planting and forestry" published 29th February 2024.

While the RSE report takes on an enormous task, in reviewing the wide range of factors relating to forestry and the services and benefits that it delivers, it appears to have gone into greater detail in some sections than others. In the case of the timber industry, and the storage of carbon in harvested wood products, it appears to have had access to relatively limited information, and therefore arrives at a relatively shallow understanding of the industry. This response therefore considers statements 93-96 of the report, seeking to expand the picture. Carbon capture by trees and the role of Harvested Wood Products (statement 101) has also suffered as a result of these limitations.

Complexity and product mix

The timber and wood products industries in the UK form a complex web of products and technologies, which combine to provide efficient use of timber. The process of converting cylindrical commodities (logs) into rectangular units (sawn wood) leads to a large proportion of offcuts which are rapidly transferred to other industries manufacturing wood based panels or other products. Thus solely pursuing sawn timber is inefficient, whereas connecting the value chain allows for efficient use of the material. Such offcut materials may also be used alongside bark or other residues in CHP systems for energy, reducing the carbon footprint of the wood processor company.

The complexity does not end there. Many sawmills produce an assortment of sizes and grades of product. Thus from the round cross section log they are able to produce both large and small cross section elements, some from the stronger regions of the log, some from weaker juvenile wood, and balance the out-turn to optimise both percentage of log used and revenue from sales. To prohibit manufacture of perceived "low value" pieces would in fact inhibit productivity and reduce material efficiency, while also eroding the profitability of the business. An argument that items such as pallet wood or short life elements are low value and should be considered in some way second rate (statement 94) is therefore misleading.

Within the wood based panels sector, the UK produces oriented strand board (OSB, a high performance panel product of properties equal or superior to plywood), particleboard (a versatile product with a well defined range of classes to allow high performance end uses alongside cost-effective general purpose material) and medium density fibreboard (MDF, also a versatile product destined for applications where quality of surface finish and aesthetics are required such as joinery components). All of these range in lifespan, depending on the application chosen, but all categories can find themselves in long-life applications within buildings contributing to storage of carbon (Spear 2023).

Even outside of construction, we should not be misled that timber is not contributing a valuable role to society. For example, fencing timber is by definition a medium term usage – the treatment of fenceposts is intended to provide a service life of e.g. 15 years, which is not a trivial quantity of time, or 30 years for premium products (TDUK and WPA 2023). This is a rigorous application requiring structural integrity to give a stock-proof barrier throughout the service life.

Timber in construction and other long term uses

Timber in construction does not have to be based on cross laminated timber or glulam, although these products are very useful in large span or tall buildings. The existing housing stock in the UK, even if built with brick and block, contains a substantial quantity of timber in flooring joists, roof trusses and sheet materials for the floor itself (OSB and particleboard). A transition to timber frame construction uses additional timber to construct the wall elements (Spear et al. 2019). Timber frame is already the dominant form of construction in Scotland, but also widely adopted within England and Wales, with a steadily increasing share of housing starts. A shift towards timber framed housing systems would allow a very large number of homes to be built (contributing to the UK government's aspiration of 300,000 homes per year).

However, if the same volume of timber were channelled solely into CLT houses a larger volume of timber would be required and the number of homes built would be greatly diminished. On the other hand, a large number of flats and apartments could be made from CLT, using the advantage of this engineered wood product. Efficient use of our timber stock to build housing is best achieved through a combination of timber frame houses and bungalows, with CLT to provide higher density housing solutions such as blocks of flats, and a mix of CLT and glulam and other engineered wood products (e.g. laminated veneer lumber, parallel strand lumber) to achieve non-residential building requirements (Spear et al. 2019).

Limited effect of pursuing mass timber solutions on employment

The employment figures reported within the RSE report contain a substantial number of FTE jobs within the industries mentioned above. To propose that these industries are of lesser importance than mass timber solutions (e.g. CLT, glulam) is misleading. Even if a large investment into UK CLT manufacture occurred (and it has been considered at several points in time within the past decade, e.g. Taylor and Wilson 2013, Legal & General 2016) the jobs associated this technology in isolation from the others would be a very low percentage of the whole. In addition, CLT manufacture in the UK would take one of two forms: either importing softwood from Europe for manufacture (leaving all forestry and primary sawmilling jobs overseas) or developing a product from UK timber – requiring a healthy sawmilling industry that is able to produce not only the elements for CLT but also the smaller cross section items for other purposes. The feasibility study results for the UK manufacture option have been mixed, as a very large volume and secure supply of timber over time is required to go into this large scale manufacturing option. Competition for timber that is already destined for other parts of the market would be strong.

Cascading

Recycling is a substantial element within the wood products value chain. The term cascading relates to the progression of wood material through a sequence of lives, in a cascade from 'high value' to 'lower value' applications over time, although the perception of high and low value can introduce problematic value judgements, as reflected in the over-simplification in Statement 94 of the RSE report. It would be more helpful to consider products with demanding requirements for size, wood species, aesthetics or physical form, cascading to products that are more tolerant of infeed material dimensions and heterogeneous feedstocks.

Timber entering landfill has been dramatically reduced following legislation changes in the first decade of this century. According to Forestry Statistics one million tonnes of timber is recycled into wood based panels in the UK every year (Forest Research 2023). Alongside roundwood and industry offcuts, this supports production of 3,466 thousand cubic metres of OSB, particleboard and MDF

panels which enter long term, medium term and short term applications as mentioned above. Even the wood based panels are now recyclable, with UK technology being franchised globally to recycle MDF (Bartlett 2023).

The need for cascading, and prioritisation of wood to enter certain parts of the value chain is a widely recognised concern as we move towards a greater reliance on wood and biomass to reduce the greenhouse gas emissions of the wider economy. For example, Sikkema et al. (2017) considered the European sector and proposed that harvested logs should preferentially enter certain industries (e.g. construction timber) while offcuts could enter other sectors (e.g. wood based panels and paper). If taken literally this is quite an extreme option, but the broad concept has merits. Efficient and optimised allocation of the woody material at first use is then followed by cascading of the reclaimed products through successive subsequent uses. Awareness of the infeed requirements for certain industries is required, for example OSB (the wood based panel which contributes most significantly to timber frame construction) requires roundwood input, due to the engineered geometry of the strands used in this panel, whereas particleboard could more readily rely on recycled wood or offcuts from other wood processors as chip size is smaller. Similarly the paper industry requires virgin chip at certain points, but can accommodate large quantities of recycled fibre for other grades and products.

The largest recommendation in Sikkema et al (2017)'s study was that wood for energy production should shift away from a reliance on virgin material, and use more material which had cascaded through multiple lives. Cascading and resource efficiency do offer solutions to important strategic concerns, requiring investigation and discussion, but based on a firm understanding of the multiple objectives and wider supply chain.

Conclusion

The examples above indicate some of the most obvious complexities of the wood value chain in the UK. This review could be extended to discuss a great deal more examples and subtleties, or to consider species mix, grades of timber, typical availability and suitability for different products. However a balance was required between detail and brevity. The complexity itself is the central message, requiring a holistic approach to proposing solutions for the wood products industry. This requires a re-consideration of Section 8 of the RSE report, and to cautiously steer away from an over-simplified desire to promote mass-timber in the UK.

References

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