

The Clean Growth Strategy

Leading the way to a low carbon future

Consultation response: "The Clean Growth Strategy"
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The timber industry is at the forefront of driving low-energy manufacturing, producing high-performance low-carbon goods, leading the off-site construction revolution, offering a clear solution to the current housing crisis and helping achieve UK carbon reduction targets.

Introduction

The Confederation of Timber Industries is encouraged by the Clean Growth Strategy and the genuine desire from the Government to leave our natural environment in a better condition than we found it.

Timber has an established supply chain with huge potential for rapid growth, helping the UK meet employment, economic and housing targets, whilst also delivering against low-carbon and climate change objectives:

- Timber is one of the safest and cheapest forms of carbon capture and storage available
- The UK timber industry employs 150,000 people in the manufacturing and supply chain and an additional 200,000 UK construction jobs (and a third of construction apprenticeships) are in wood related trades
- The forestry and timber industry is a key part of our environmental and industrial heritage and a vital part of our low-carbon future
- Timber products have the lowest embodied carbon of any mainstream building material
- Timber product manufacturing has significant potential to reduce the Emissions Intensity Ratio (EIR).

Defining the low carbon economy

It is vital that this strategy reflects that "low carbon" is about more than electric vehicles and offshore wind. Timber is not only a natural carbon store; manufactured timber products require far lower energy inputs to produce than competing materials. In addition, factories are often heated using biomass boilers, fuelled by production waste (e.g. dust and offcuts) to ensure low grid impact and virtually zero waste. This reduces pressure on the UK electricity grid while delivering high-performance, low-carbon goods which can substitute or outperform their high-carbon counterparts. This means we can expand our UK manufacturing base – in joinery, windows, furniture and factory-built timber-frame housing – without increasing emissions.

Whilst climate change is a global phenomenon and must be dealt with globally, we should ensure that we are measuring the impact of a product from a full lifecycle and supply chain perspective, wherever it is made or we simply risk offshoring our footprint. Too often we see short term capital decisions over-ride a natural capital or whole life approach and sustainable, ethical manufacture replaced by an import from a market where the regulatory environment is different (out of sight and out of mind) or even a domestic supplier that “gets away with it”.

An evaluation of the available studies shows that there remain considerable concerns about the impact on the environment of PVC-u windows. Key among the concerns is the fact that PVC is made from Vinyl Chloride Monomer (VCM) – a Class 1 human carcinogen. To make matters more complicated, VCM is made from chlorine, the production of which is energy and emissions intensive - with over 8 million tonnes of chlorine used to manufacture PVC in Europe in 2015. PVC is also a major user of fossil fuels with plastics production accounting for 4% of global oil production.

Growing our Forests

The growth of timber consumption aids investment and growth in the managed forest sector – i.e. growth in timber markets leads to growth in forests. This can be seen across Europe, the main source for timber in the UK, where less than 65% of the annual growth is harvested to produce the vast bulk of construction grade timber in the UK and across the EU.

This forest growth is major weapon in the fight against climate change. According to the Confederation of Forest Industries (Confor), wood supplies are set to peak around 2025, a challenge to future supply and the potential loss of a vital and valuable carbon bank. In 2012, the UK consumed £1.09 billion of homegrown timber (approximately 41% of softwood timber used) – this is increasing rapidly. By increasing the UK’s forest cover from 13 to 16% we could reduce around 10% of our national CO₂ emissions by 2050 and provide the feedstock for a vibrant manufacturing industry.

There is rightly emphasised in the Strategy on home grown timber, however, the timber supply chain is complex and whilst we advocate the importance of using more home-grown timber, this potential will only be fully realised if we ensure that we develop the market for consumption of timber in general, allowing time for planting and growth, as well as capital investment in processing and manufacturing technologies necessary to allow the domestic timbers to compete.

There is some very encouraging research emerging to support this agenda from Edinburgh Napier, Bangor, and Bath Universities. However, the domestic timber sector does not currently have the capacity to meet demand, and this agenda will take time to realise.

In 2017 the development of the new Institute of Sustainable Construction laboratories in Edinburgh Napier University (approx. £3 million investment) was completed – this has a strong emphasis on the timber and forest product sector.

The University has five major timber projects ongoing with the Construction Scotland Innovation Centre (CSIC) supporting new timber innovations in relation to building construction all of which are led by industry partners, these include:

- Advanced panels systems
- New modular construction
- Scotland’s highest Cross-Laminated-Timber (CLT) building near Glasgow
- New cladding systems and treatments
- Hybrid – steel/timber systems

Realising the benefit of Embodied Carbon

Around 10% of UK emissions (c. 57MtCO_{2e} per year) are associated with the manufacture and transport of construction materials, and the construction process; if no change is made then this sector alone will be responsible for additional emissions of over 3100Mt CO_{2e} by 2050, equivalent to over 5.5 years of total UK emissions.¹

The Clean Growth Strategy is too focussed on operational energy. The main unintended consequence of the continued tightening of the requirements for operational efficiency has been observed to increase the embodied energy of those buildings.

In many cases, designers will employ a high-tech approach to minimise operational consumption; using highly processed materials, complex plant equipment and a sophisticated, automated control system. In terms of whole-life performance, this tends to shift the carbon ‘cost’ from operational consumption to the embodied carbon of the building fabric.

Even before a building is occupied, between 30% - 70% of its lifetime carbon emissions have already been accounted for². Carbon saved during manufacturing and construction processes can be “banked” now and has a higher value than operational carbon saved in the future especially as the UK moves towards 80% grid decarbonisation.

Often it has been cited that measurement is complex, however, the British Woodworking Federation is able to produce free Life Cycle Assessments for all timber products (in a calculator developed by the BRE to comply with the new European Standards).

¹ See Low Carbon Construction Innovation & Growth Team by Paul Morrell

² RICS Professional Guidance, Global Methodology to Calculate Embodied Carbon 1st Edition 2014



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The final report on low carbon construction for HM Government by the Innovation and Growth Team (IGT) (HM Government 2010) concludes that embodied carbon is an important factor that needs to be brought into the systems used for appraisal of projects and hence into the design decisions made in developing projects. (See Figure 1).



Figure 1: Carbon life cycle phases of a building and their contributions to the overall UK carbon emissions that the construction industry has the ability to influence.

When the tree is harvested the carbon it has absorbed remains stored in the timber until the end of its physical life – roughly one tonne per metre cubed. While this carbon is safely



Research by Heriot Watt University for the Wood Window Alliance in 2013 quantified the significant carbon savings from the use of a timber frame instead of PVC-U (roughly 1.5 tonnes CO₂ per home) – the equivalent of driving over 5,000 miles in a small family car.

locked up in timber products – such as walls, windows, doors or floors – more trees are planted, absorbing and storing carbon as they grow. In fact, our LCA studies show that more emissions are absorbed and stored in timber products than are emitted during harvesting, processing, manufacturing and transportation combined. This provides a net emissions reduction process.

Build with Carbon

The potential for timber-based building products to create a new generation of low-carbon energy efficient homes is huge. The industry is involved at every stage of building design and delivery and is creating some of the best quality and progressive solutions from the structural elements to refurbished interiors to furniture, floors, walls, staircases, roofs, doors and windows.

Every cubic metre of wood used as a substitute for other building materials reduces CO₂ emissions to the atmosphere by an average of 1,1 t CO₂. If this is added to the 0.9 t of CO₂ stored in wood, each cubic metre of wood saves a total of 2 t CO₂.

Based on these figures, a 10% increase in the percentage of wooden houses in Europe would produce sufficient CO₂ savings to account for about 25% of the reductions prescribed by the Kyoto Protocol.

Globally, the regulation and practice of measurement and reduction of embodied energy and carbon is growing rapidly. The UK is widely recognised as having been a leader in the field

for many years, with the Bath ICE database in particular used across the world despite of its often-limited relevance for their region and industry. However, practices within Scandinavian and Northern European countries such as Germany and Austria may now be overtaking those in the UK, with widespread research programmes underway. In Australia, innovation credits for Lifecycle Impacts are already available as a part of the Green Star rating system and likely to be included as a firm credit in future updates, which has led to major developers making the EC measurement a standard feature of all of their projects.

In January 2013, The Netherlands became the first country to regulate for the measurement of greenhouse gases embodied in buildings: as of the 1st January 2013, a new environmental requirement in the Dutch Building Decree requires two new environmental indicators to be reported with respect to building materials being greenhouse emissions and depletion of resources (i.e. an LCA) for residential and office developments over 100m² according to the Environmental Assessment Method for buildings and civil engineering works. Despite this, the UK is a leader in low carbon building. People travel from all over the world to see exemplar buildings such as Murray Grove or Dalston Lane. We also have the largest Cross Laminated Timber factory in the World being built outside Leeds by Legal and General Homes.



The UK is a world leader in advanced engineered timber construction. The world's tallest multi-storey residential timber building, Murray Grove in Hackney, London, designed by Waugh-Thistleton Architects, shaved nearly five months off projected build time of traditional build methods.

Great Green Britain Week

The idea of Great Green Britain Week is a strong one, we would be happy to support by showcasing the benefits of timber in terms of both sustainability and wider health.

A key focus of this could be the green wash marketing that undermines sustainable decisions. Consumers do not fully understand terms like "recyclable" which is often used by industries such as the PVC double glazing industry to describe a possibility rather than the likely end of life scenario (according to Waste Management World in 2013 just 15% of old PVC windows recycled in the UK).

A focus on Health



It has been estimated that doubling the tree cover in the West Midlands alone would reduce mortality as a result of poor air quality by 140 people per year.

Source: Centre for Ecology and Hydrology, Lancaster University • www.nhsforest.org

Only 10% of Britain's children play in nature compared to 40% in 1985. Increasingly, because of the way we live (urban environments, lack of outdoor space, technology keeping us chained to screens etc.), it is not only children who are becoming disconnected from nature, adults are also increasingly spending most of their time indoors, with

a host of academic research revealing debilitating effects on wellbeing and health both for humans and their living environments.

The expansion of forested land and the planting of more trees in the UK is a long-term solution to increasing biodiversity, lowering carbon dioxide levels and providing a wide variety of social benefits and community engagement.

Woodland generation is playing a major role in regenerating brownfield areas and old industrial sites to bring fresh forest closer to urban areas. However, forestry takes time to develop – 40 to 60 years depending on species – so mitigation of climate change needs to be addressed.

Woodlands and trees also improve air quality by absorbing pollutants, reduce noise pollution through sound deflection and reduce the impact of the urban heat island – the warming of the urban environment through lighting, building performance, roads, reflective surfaces and many other factors. Simply put – the more wood is used; the more trees are planted. This encourages the expansion of the UK's forests and creates more natural, healthy surroundings for communities to enjoy.

Timber is increasingly seen as an aesthetic and healthy option for interior design in the education and healthcare sectors. Here timber is used both as a structural element and to provide a warm, clean, calming space for students, patients and staff. Plenty of natural light and the organic feel of wood helps to improve behaviour and lower stress levels. The thermal properties of timber can also provide a warm, energy efficient and long-lasting finish.



The 2008 study, 'Health and Place' found that 'natural settings such as parks, beaches and forests' constituted the largest category amongst 'favourite places'. Increasing the number of publicly accessible forests by growing the sustainable forestry industry in the UK will be good for all sectors of society.

The low impact of the timber supply chain extends beyond the carbon argument. We are now starting to understand the full impact of chemicals on our environment and the true cost of transporting heavy goods. Timber provide an opportunity to substitute high impact materials whose manufacturing processes and off-gassing can have a serious impact on air quality, both inside and outside of a building.

Timber products such as Accoya and Wood Window Alliance windows have been proven to meet the rigorous Cradle to Cradle Materials Health Standard.

The Confederation of Timber Industries

The Confederation of Timber Industries is an umbrella organisation, representing the UK's Timber supply chain from Forest to end of life recycling.

The CTI represents Producers, Manufacturers and Distributors of Timber across all the supply chain.

Our membership includes large Multinational Companies as well as key Trade Associations, NGOs and Research Institutes. Timber contributes substantially to the UK Construction, Manufacturing and Service Industries, providing jobs across the skills spectrum and adding value of ca. £20bn to the UK economy.