Pwyllgor Newid Hinsawdd, yr Amgylchedd a Seilwaith /
Climate Change, Environment and Infrastructure Committee
Blaenoriaethau ar gyfer y Chweched Senedd / Priorities for the Sixth Senedd
PR59
Ymateb gan Adeiladu Arbenigrwydd yng Nghymru / Evidence from Constructing Excellence in Wales - CEWales

10 September 2021

CONSULTATION RESPONSE FROM CONSTRUCTING EXCELLENCE IN WALES - CEWales

Thank you for the opportunity to give input to the consultation on the Senedd climate change committee priorities. I am submitting this on behalf of **Constructing Excellence in Wales.**

- **Priority 1**
- **Focus on the Construction sector in Wales**

A shift towards a low-carbon economy is needed and the built environment and construction sector plays a central role in this shift. Our main recommendation as a priority area for the Climate Change, Environment, and Infrastructure Committee is to focus on the construction sector in Wales. Around half of all non-renewable resources mankind consumes are used in construction, making it one of the least sustainable industries in the world. However, the industry is already making changes, but we need to reaffirm a central point of contact for the sector with Welsh Government to help the industry make this shift change. Construction now spans across many Ministerial portfolios but CEWales can provide that one-point of contact for the sector. Welsh Government's action is pivotal to change. Status quo on actions that impact the whole of the property asset lifecycle will not do. We need to consider more interventionist policies like Modern Methods of Construction and Design for Manufacture and Assembly, agglomeration of demand and procurement for outcomes to enable the industry to innovate whilst still creating wealth and good jobs for the people of Wales.

So how can we achieve more sustainable construction, action should be taken to influence …

- Life-cycle costing, whole-life carbon modelling and post-occupancy evaluation as part of the basic scope of work (rather than treating them as "extras"), to reduce both embodied and operational resource use.
- Collaboration between developers, designers, engineers, contractors, and clients to further reduce construction waste.
- Procurement models need to be changed so that values such as net zero, wellbeing, safety etc are more emphasised at the contractual stage of construction projects. Procuring for Value work is encouraging the adoption of procurement and delivery models focused on the whole life performance of buildings and infrastructure, and ensuring these are efficient, safe, sustainable and can be adapted and improved to achieve net zero outcomes not just outputs.
- The lowering carbon intensity of building materials.
- The implementation of climate-smart, low, and clean energy consumption in the use phase of real estate and infrastructure.
- The design of more recyclable materials and closed material flows in the refurbishment and demolition phases to truly enable a Welsh circular economy, including the circularity of building materials.

- The public sector as a major built environment owner and the largest client and procurer of construction projects should lead by example.
- Revise building regulations to make better use of planning control including a requirement for a Future Generations and Net Zero Carbon planning condition for all significant planning applications.
- Thinking wider how about nature-based solutions including afforestation of water catchments to support mitigation of flood risk whilst acting as a carbon sink and supporting biodiversity. This will mitigate the need to financial and environmentally costly flood risk infrastructure.

- **Priority 2**
- **Fund research on Welsh construction and the economy**

As we all know, construction is the great enabler for the Welsh economy, but whatever is built, must be delivered sustainably. That means the construction industry, its clients and supply chain, must change if it is to deliver a built environment fit for future generations and one that helps enable our zero carbon aims. However, we do not have the evidence base to understand the true importance of Construction on the welsh economy, if we have this data then we can more accurately evaluate the sectors impact on climate change. CEWales has already identified a research proposal which would provide Welsh Government with this data, but we need funding to obtain the research (the sector has already committed to part funding this). CEWales can be the custodians in the construction sector in Wales to lead change that is geared towards lessening the industry's adverse impact on climate change. Though the challenge is sizeable, positive steps can be taken through better working practices, smarter buildings, and smarter cities, towns and all urban spaces, via a combination of education, investment, collaboration, innovation and by embracing emerging construction-technologies.

- **Priority 3**
- **The UK Green Building Council does not cover Wales. CEWales could cover the role of the UKGBC for Wales.**

According to the UK Green Building Council, around 10% of the country's carbon dioxide emissions are directly associated with construction activities. The number rises to 45% when considering the whole of the built environment sector and this figure will rise further as a proportion if we do not address the sectors failings, with WG being a lead both as a client and regulator.

Parts of the construction industry are already taking a lead in addressing the challenge. Globally, the World Green Building Council has issued a Net Zero Carbon Buildings Commitment, which challenges companies, cities, states, and regions to reach net zero operating emissions in their portfolios by 2030 and advocates for all buildings in operation to be net zero in operation by 2050. The UK Green Building Council has also recently launched its Climate Commitment Platform. The platform is intended to represent the building industry's response to climate change by mapping the climate commitments and carbon reduction targets of its members (which include several leading UK construction operators). It also provides a forum for clients, developers, and contractors alike to detail their carbon pledges in a clear and unified way. CEWales could emulate this in Wales through appropriate funding.

- **Priority 4**
- **Waste in construction**

Clearly, energy use and the associated carbon dioxide emissions, has been rising rapidly over the past few decades. It is therefore prudent to address environmental issues at the outset; throughout the construction cycle, and especially at the end of a structure's life, large quantities of waste are produced. Significant quantities of waste are also generated by the construction process itself. Much of this wastage is avoidable on site, but inattention to design detailing, inappropriate material, dimensions, late variations, over-ordering, etc. also contribute to waste.

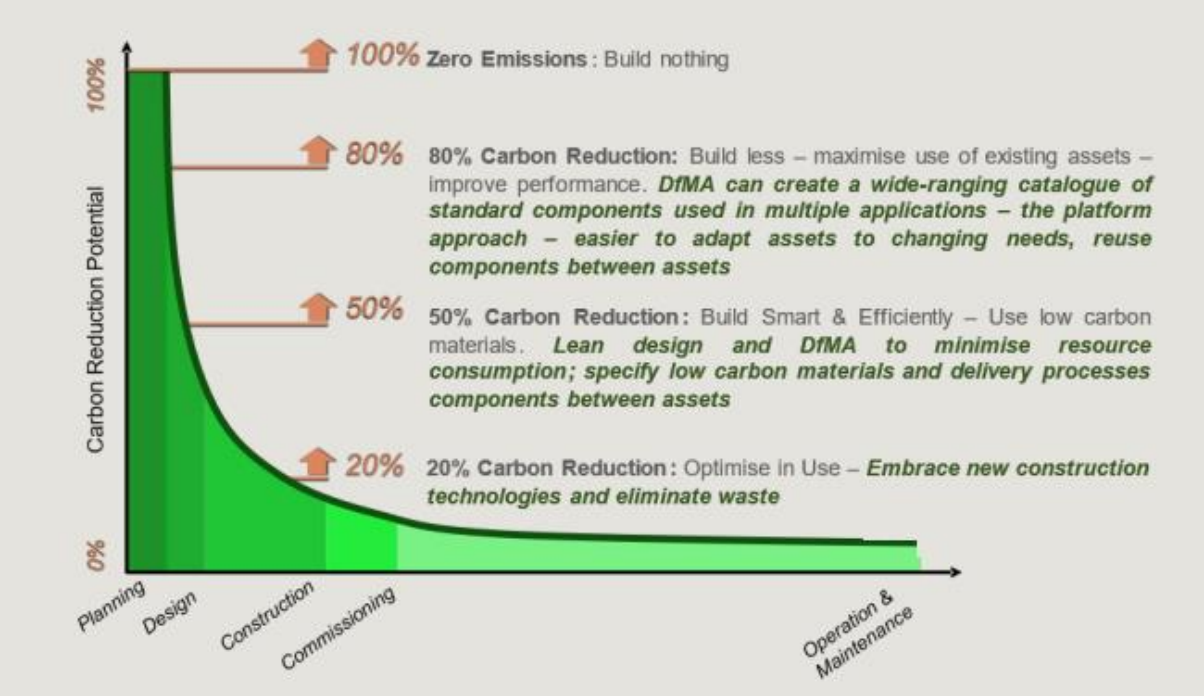
Construction industry related energy use accounts for approximately half of national energy use in the UK. The use of fossil-fuel-derived energy in the production of materials, during the construction process, and by the occupants or users of the building or structure throughout its lifetime is a source of significant quantities of carbon dioxide. Though not the most potent of the so-called greenhouse gases, it is the one produced in the greatest quantities. These climatic changes themselves may necessitate changes in construction practice like energy positive buildings, if we build multiples and network them, then we are also building a green power station.

- **Priority 5**
- **Design for Manufacture and Assembly - DfMA**

Another major focus in improving long term sustainability of built assets requires a shift away from purely targeting delivery of the built asset and towards design for performance of that asset. DfMA can provide a solution here. Development of a proactive DfMA plan for Wales would initiate the transition from outdated traditional methods and approaches to construction, to a semi-industrialised industry delivering enhanced outcomes that would include:

- Support for a green recovery including diving out waste and associated carbon and achieving net-zero targets.
- Support for an Equitable recovery and the foundational economy.
- Delivery of better-quality assets and better outcomes.
- Driving sector innovation.
- Developing world-beating skills, techniques and products.
- Increases in the speed of project and programme delivery.
- Improved sector productivity and reduce capital cost.
- Increasing the predictability of employed capital.
- Strengthening the construction sector's contribution to economic growth.
- With governments across the developed world setting themselves ambitious targets for the elimination of carbon emissions, the infrastructure sector will be required to play its part by reducing operational carbon from infrastructure and embodied carbon from new assets.
- The UK and Welsh Governments are committed to reducing national carbon emissions to net-zero by 2050. While the UK government has pledged to power every UK household with renewable energy by 2030, it is a lot harder to decarbonise quarrying and mining, cement and steel production, at least in the near term. As the rest of the economy gets greener, construction will proportionally account for an ever-larger share of national emissions unless action is taken. Until zero-carbon materials become a reality, the greatest strides to decarbonise construction will be by cutting the quantities of materials used.
- DfMA can help achieve a step change in sector performance, by designing out waste at every stage of the project lifecycle, embedding best practice on energy and resource use into new standards, extending asset life through ease of maintenance and flexibility, and promoting continuous improvement.
- With cutting carbon and saving cost closely aligned, the enhanced environmental and economic outcomes of DfMA will together boost the prospects of a 'green recovery'.

  In 2013 the UK government's Infrastructure Carbon Review (authored by Mott MacDonald) set out a carbon reduction hierarchy. DfMA is high up in that hierarchy.



- **DfMA and Waste**

Wastage of materials and resources is an endemic problem when constructing buildings and infrastructure. Projects are still being delivered where up to half of the materials brought to site are wasted and end up in landfill, not in the finished asset.

As well as adding unnecessary cost, wastage increases the carbon footprint of a project with carbon estimates at the design stage usually falling significantly short of the figure on completion. Carbon arising from producing and transporting materials is known as embodied carbon, so if up to 50% of materials delivered to site go to waste, the embodied carbon footprint will be up to twice as big as calculated at design. Delays associated with traditional construction methods add further to the carbon impact, due to the emissions associated with transport and labour.

Waste arises from:

- Designs that are difficult to build or that ignore standard dimensions and units, resulting in leftover quantities.
- Over-ordering due to caution or uncertainty.
- Transporting and storing unused materials.
- Weather and accidental damage of materials in storage.
- Poor supply chain co-ordination, and
- Human error.

It is not just big infrastructure that is responsible: the issue affects construction projects of all kinds and at every scale. Reduced wastage and increased efficiency have long been arguments in favour of DfMA, where designs are based on modular, standardised components, built in a factory and then assembled when they arrive on site. But the industry has been slow to adopt these methods, even with an apparently clear financial incentive to do so. DfMA has the potential to make a transformative difference. Waste is driven out at each stage. Design is optimised for manufacture. Manufacturing is resource efficient. Any waste arising from manufacture is recovered for recycling with the assembly of components becoming the dominant activity of construction sites. Factory-based manufacturing simplifies supply chain logistics, with raw materials being delivered to manufacturing hubs rather than

to multiple construction sites. Modules are delivered from factory to site only when needed, using 'just in time' principles, so there is reduced risk of wastage resulting from sequencing errors, no stockpiling and over-ordering, and no accidental damage, as the modules are lifted straight into position on delivery.

The above starts to describe the common ground between DfMA and a circular economy for the built environment. Indeed, the transition to a fully circular economy for construction is embedded in the DfMA story (or vice versa). The circular economy is fundamentally about recovering lost value and resources through systems that are regenerative by design. The infrastructure sector, by virtue of its material intensity, is uniquely situated to drive this green economic transformation.

The circular economy, as traditionally known, is a useful framework for addressing issues around waste management and unlocking opportunities in product design. However, far too much pressure and too high expectations have been deferred to the waste management industry to close the circularity loop in the infrastructure sector. By breaking down the circular notion and applying it holistically across the lifecycle of assets we identify green opportunities at each stage that can be best captured by focussing on making the delivery process better. This is DfMA, capturing value by focussing on innovative alliances between actors working across all stages of an assets life cycle, as well as production methodologies.

Turning DfMA into mainstream practice will make a major contribution to decarbonising construction. But it won't happen unless infrastructure owners, designers, constructors and the supply chain work together. How to do that is mapped out in the international standard for managing carbon in infrastructure, PAS 2080, which provides the ability to align the whole supply chain with the net-zero goal.

Now is the time to plan for construction to be a key component of a green recovery – with high-skilled high-paid jobs that offer the extra satisfaction of helping to make our nation cleaner, greener and more beautiful. Making Welsh towns synonymous with green construction technologies and the jobs they bring, DfMA manufacturing methods will support a green construction industry across Wales that helps to secure the future of Welsh construction, accelerates our path to net zero and will lay the foundations for decades of economic growth by delivering low carbon building supply chains. DfMA will directly support delivery of the targets outlined by the 'Ten Point Plan for a Green Industrial Revolution' published by HM Government, November 2020.

- **Priority 6**
- **Sustainable materials**

The development of more sustainable materials (which contain lower embodied carbon) is high on the sustainability agenda for the construction industry. For example, the manufacture of cement is responsible for about 8 per cent of overall global CO2 emissions. Less carbon-intensive and more environmentally efficient methods of construction are also key to help drive efficiencies and the sustainability agenda. This must include other solutions other than timber due to the time span of planting to use. There is a need to incentivise innovation and knowledge transfer from Universities and others, like the Material Technology Centre into industry use. We also need to support entrepreneurialism in Wales to bring value to Wales to meet the climate change imperatives whilst also supporting society, communities and our people. We understand WG's rational on encouraging the use of timber, however, if all countries do that (and in part they will) the timber sector will not be able to secure the sustainable products required hence the need to diversify our thinking through innovation.

Government support for enhanced sustainability in construction is already translating into public policy. We applaud the Welsh governments investment for innovative housing in Wales however we need schemes for further residential and commercial buildings not just sustainable social and affordable housing. The Optimised Retrofit of the current building stock is a tremendous initiative but much of this is privately owned – What can WG do (potentially in collaboration with Westminster) to inspire and incentivise this critical market?

- **Priority 7**
- **CEWales is perfectly positioned as the voice of the construction sector in Wales to enhance the sectors awareness of climate change and guide the industry to adapt sustainable solutions.**

However, we need funding to do this effectively. CEWales can act as the ambassador in the sector to raise environmental, social and governance (ESG) considerations in corporate agendas, resulting in a shift in the perception of ESG factors from being one of several risks to be managed, to a significant driver that is informing company strategy for long-term growth.

CEWales is keen to work with Welsh Government to bring improved focus and coherency to the many actions and innovations which need to be, and are being taken across the industry, to reduce carbon emissions and improve resource efficiency across the entire built environment sector. CEWales is keen to support the Ministerial Construction Forum on a post COVID Recovery Plan but also to accelerate the urgent and necessary transformation of the industry to enable it to play its part in the delivery of the 2050 net zero carbon target.

Catherine Griffith-Williams

Chief Executive

Constructing Excellence in Wales

CEWales – An independent, self-funding membership body; campaigning to highlight the industry's role in creating a Welsh built environment fit for the future.

Tel: +44 (0) 2920 493322
Mobile: 07933505546
Email: catherine.griffith-williams@cewales.org.uk
Web: **www.cewales.org.uk**
Twitter: @CEWales
Construction Excellence in Wales Ltd Registered in England & Wales
Registration Number: 10770324
Registered Office: 91 Balmoral Road, Newport, NP19 8JS
VAT Registration Number: 287759432