COMBINING PRODUCTIVITY AND A NET-ZERO RECOVERY

Document D - MAKING THE CONSTRUCTION SECTOR EARN ITS STIMULUS

A submission on behalf of Edge

CONTEXT

Obtaining value for money, creating employment and transferable skills whilst meeting the urgent transformation towards meeting the Climate Change Act are all essential outcomes from any stimulus or indeed any expenditure by Government in the immediate and near term.

This proposal recognises public expenditure is scarce and no sector can assume simple acceleration of existing capital expenditure programmes will meet the stated and necessary Government goals.
The construction sector remains disjointed, complex, lacking R&D and with significant variations in quality of delivery, from World Class to frankly shameful. It is the least digitised sector in the economy and has one of the lowest productivity levels. This is despite the considerable progress made by the CLC which has shown real leadership in the last year.

Its contribution to employment across the country is significant, albeit an aging workforce needs considerable training investment to both up-skill and provide a stable workforce.

It also contributes to the UK's CO_2e footprint both by embedded CO_2e and the whole life CO_2e of the building and infrastructure assets.

It is clear all pathways to net zero, or indeed an 80% reduction of CO_2e by 2030 will require the Construction Sector to revolutionise its business models, skill set design, implementation processes etc. The industry in its component parts is not currently fit for purpose to provide, at scale, a net zero built environment.

There are however some world class exemplar practices throughout the supply chain from consulting, through Tier 1 and Tier 2 contractors to product distributors and manufacturers. The UK, with the correct disruptive incentives can and, in order to rise to the Climate Emergency, must leverage these attributes at scale across the industry.

INDUSTRY STRUCTURE

There are four major sectors which the design, project management and construction industry serve. Each has different design processes, fee and risk structures, client sophistication and client engineering/design capabilities in-house. These are:

1. Housing
2. Buildings
3. Infrastructure Systems
4. Mega Projects

The first three all have a significant percentage of existing assets that require enhancement and maintenance.

Mega Projects are effectively single purpose entities, guaranteed usually by Government with particular cultures and characteristics. This proposal concentrates on areas 1, 2 and 3; since each Mega Project requires bespoke measures.

OBJECTIVES

There are four immediate objectives this proposal attempts to meet, plus one longer term one of potential. They are:

1. Employment: getting the sector employed with transferable skills that set the UK up for a data-rich digitised efficient construction sector.

2. Levelling up: creating employment with skills across the nation in all communities.

3. Improving productivity: moving from using public sector capital projects as a crude economic stimulus to an effective creator of assets to support society.

4. Addressing the Climate Emergency: reducing emissions urgently with the objective of the entire industry practicing net-zero carbon design, procurement and implementation by January 2025.

The fifth objective, which is medium term, is to create an industry capable of exporting low carbon design and practice globally.

PROPOSAL – MOVING FROM CRAFT TO 'PLUG AND PLAY'

Sponsored jointly by Treasury and the Cabinet Office, fund selected capital spend programmes focused on enhancing existing assets with both CO_2e explicit targets and productivity goals with the initial aim of creating digital twins of these assets and immediate job intensive UK based employment. Whilst work exists in most departments, accelerate and place the programme on a wartime R&D footing to re-establish the UK's leading role in this practice. Digitising existing buildings with new technology to map in detail is a pre-requisite to enabling a number of parallel needs namely:

1. Building passport to track building compliance with fire protection safety systems, materials installed etc, facilitating the evolution of the Hackitt Review into a workable and efficient practice.

2. Allow a CO_2e profile to be added to meet the CIBSE recommendation of an effective building or infrastructure 'passport'.

3. Regardless of the outcome of the Planning Reform, it provides the baseline record of existing and permitted development, a pre-requisite for any version of 'as of right planning'.

4. Provides the context for manufacturers, suppliers and Tier 2 contractors to develop pre-assembled, modular or system approaches to enhancement, ie: move from bespoke craft to a plug and play approach of systems and components.

FIXING WHAT YOU HAVE WITH PRODUCTIVITY AND CO_2e TARGETS BY SECTOR

Schools:

Consolidate and enhance existing condition data into coherent digital twins for major existing school building types across the nation.

Use a wartime R&D approach to test survey, data manipulation and compatibility with City big data initiatives. Prove concept and roll out nationwide with digital training led by CITB, specifically targeting and attracting the data literate to the industry. CITB are currently surveying what skills are required in the future. Digitising and decarbonising the sector will require new skills for design and implementation as modern methods of manufacture become the norm not the exception. Exploit the existing investment in Transforming Construction and scale up.

Use the learning on retrofit to inform new build which has a longer learning cycle and should only proceed if net-zero carbon is the starting point for procurement not a later option.

Acceleration of future funding will be dependent upon DfE meeting both productivity and CO_2e targets.

The procurement methods will need to be modified, made flexible, risk shared and knowledge shared. It will be disruptive!

Renewable energy, micro grids, remote building management systems, sustainable ventilation systems suited for a post Covid-19 world will all need iterative development, real time proving and commercial roll-out at scale.

From schools - which have the obvious advantage of being in every community and are places to educate and thrill pupils about the UK's ability to address climate change - the technology and practices should transfer by normal commercial means to other public and private building types.

HOUSING

Select an MOD housing estate, already with a good net-zero carbon programme and selected social housing projects as exemplars that reflect a variety of building types.

Fund programme as per schools with a delivery menu of 'no regrets' incremental energy improvements with each measure linked to a certified training and quality programme. The existing domestic contracting industry is currently not fit for purpose to achieve the quality of installation and commissioning required for either value for money or user trust. The CITB programme working through HE colleges is fundamental.

BUILDING GENERALLY

To embed low carbon as a primary design parameter, include net-zero carbon as a threshold objective in the National Assurance Framework, provided by MHCLG to LEPs. Similarly for Mayoral Combined Authorities include into their respective guidance energy and CO_2e performance thresholds.

Many cities and local authorities have already declared net-zero carbon policies but clear support and reinforcement from Treasury and the Cabinet Office will accelerate the change.

INFRASTRUCTURE SYSTEMS

For the Environment Agency, Highways England, Network Rail, a similar approach to schools.

Accelerate the digital programmes and include CO_2e targets on a selected portfolio from each, all tied to training and regional job creation. The EA has a comprehensive programme including training that meets all the objectives plus adding resilience to UK's infrastructure and by settling aggressive CO_2e targets, ensures natural solutions are promoted over traditional heavy civils solutions.

Again, further accelerated funding will be dependent upon performance.

REGULATED UTILITIES

An indication from Treasury/Cabinet Office that the Climate Emergency declared by Parliament means the regulator (as Ofgen appears to be) requires an acceleration of CO_2e targets.

MEGA PROJECTS

Each needs a bespoke discussion; their respective circumstances are unique.

TRAINING

Fund CITB to develop with professional institutions the skills to marry digital twin, VR and AI design process to site operatives and component assemblers. Promote an integrated industry as recommended by Latham, Egan and Farmer. The move to a digitised knowledge based design and assembly industry for both civils and buildings requires new skills and a transformative industry.

CONCLUSION

The opportunity of rebuilding an industry that can reliably and efficiently create housing, schools, buildings and infrastructure systems that meet the climate emergency challenge requires a different use of scarce funds, not a simple version of the 1930s New Deal approach. It does require centralised vision and leadership. It will be disruptive and it is necessary. The roles of UKRI, CITB, etc working with the CLC, whose coordination across the disjointed sector has tremendous value, cannot be underestimated.

The urgency of supporting the economy addressing the Climate Emergency and using public funds with laser-like focus to drive change, means existing organisations will need to adapt and be directed by the centre. The UK has tremendous assets in UKRI and the Universities, professional institutions, design and engineering companies and contractors. They need to be exploited!

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