



Turner & Townsend

UK market intelligence

Value and virtue -
building back greener

Spring 2021

making the **difference**

Introduction

Carbon out, savings in - cracking the code of sustainable construction.

Construction's ability to generate jobs, and power wider economic growth, has put it at the heart of the Government's post-pandemic recovery plan.

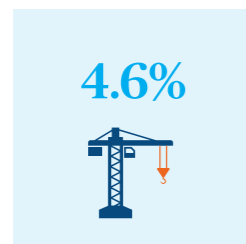
When the Prime Minister announced £5bn of capital investment projects last summer, he likened it to America's Depression-era New Deal stating that the Government would "build back better, build back greener, build back faster".

In the context of this recovery, the UK's commitment to reduce its net carbon emissions to zero will come under the global spotlight in November as Glasgow hosts the 26th UN Climate Change Conference.

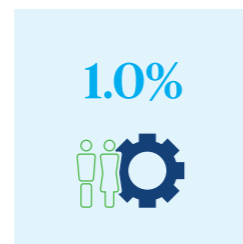
The UK's Presidency of the event will allow it to set the international agenda like never before, and the Government plans to seize its moment on the world stage to lead by example and showcase Britain's progress in tackling emissions.

We examine the overall outlook for the industry, with a focus on how sustainable construction has become central to the UK's post-Brexit, post-COVID future, and how clients can best incorporate it into their built asset strategies.

At a glance



Quarter-on-quarter growth of UK construction industry output in Q4 2020



Expected real estate tender price inflation in 2021



The decline in UK GDP during 2020

Economic overview

Construction output shrank by £21.5bn in 2020 as the COVID-19 pandemic plunged the UK economy into a period of extreme volatility.

The construction industry contracted by 12.5 percent during 2020, the sharpest drop in output seen since the record fall recorded in 2009, caused by the Global Financial Crisis. This was markedly worse than the -9.9 percent retrenchment seen across the UK economy as a whole, and the sharpest decline of all the key industrial sectors.

However, these annualised figures mask the sharpness of the industry's decline, and the speed of its subsequent recovery. By any measure, 2020 was a torrid, rollercoaster year for UK construction - but it ended on a comparatively high note.

UK GDP grew by 1.0 percent in Q4 2020, successfully scotching talk of a 'double dip' recession. The construction industry contributed well to that growth, increasing output by 4.6 percent across the final three months of 2020.

The economy has proved resilient, perhaps more so than many initially imagined, and that is welcome news.

The year also ended with optimism levels rising amongst contractors. Our Q4 2020 contractor survey found confidence had surged to its highest point since Q4 2018, some two years ago.

Index: above 50 = positive growth, below 50 = negative growth

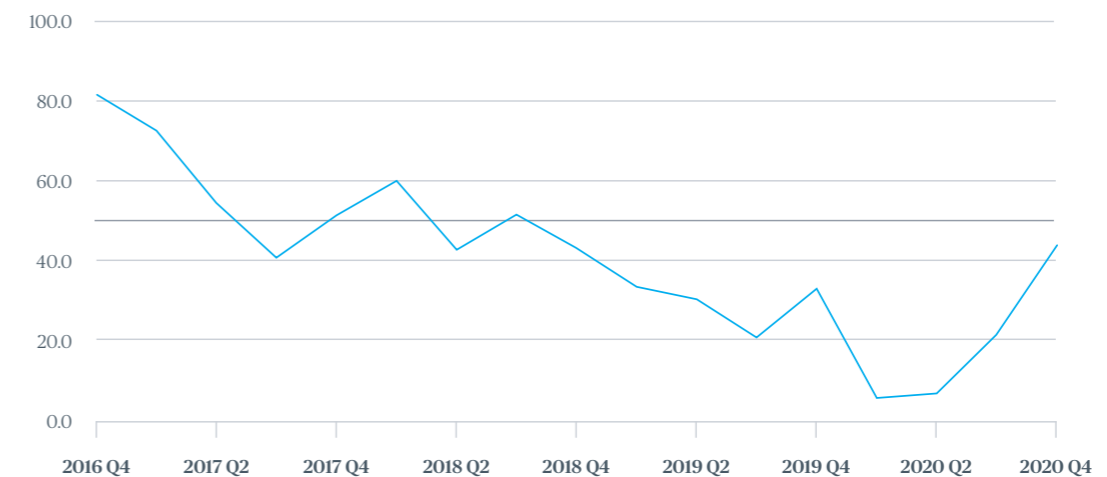


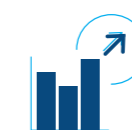
Figure 1: **Construction contractor sentiment**

Turner & Townsend contractor survey: Q4 2020

Is the construction market getting warmer, cooler, or staying the same?

Economic data

*GDP growth rate calculated from levels data in the ABMI time series.



GDP at (market prices) index
Q4 2020: 93.8
Q3 2020: 92.9
Increase: 1.0%



Bank of England base rate
Mar 2021: 0.10
Feb 2021: 0.10
No change

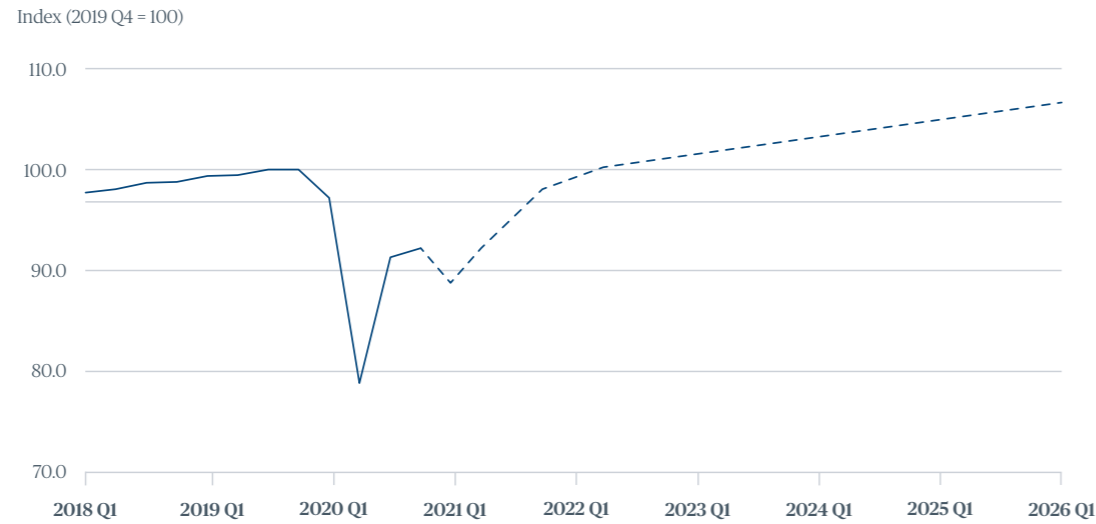
The uptick in sentiment stems from the huge strides made by the UK's vaccination programme, and anticipation of the phased reopening of the economy from spring 2021.

This positivity is also reflected in the Office for Budgetary Responsibility's recent GDP forecast. It predicts GDP will accelerate by 4.0 percent in 2021, with pre-COVID-19 levels reached by the first half of 2022. Whilst caveats and precautionary notes remain, the outlook for 2021 is looking markedly brighter.

Figure 2:
UK GDP performance and forecast

Office for National Statistics and Office for Budgetary Responsibility

GDP —
OBR's GDP forecast - - -



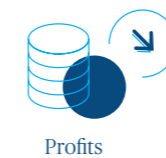
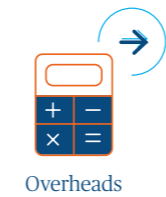
The downside here is that even when the economy passes that June 2021 pivotal milestone, the legacy of the COVID-19 pandemic will be hard to shake off. Economic scarring is likely to persist, leaving the economy some 3.0 percent lower than its pre-pandemic baseline and adversely impacting the UK's supply capacity.

The risk to construction is far greater owing to chronic capacity issues.

As economic performance strengthens, the construction industry is expected to see its fortunes improve. With expanding growth and an anticipated increase in demand, a rationalised supply chain might struggle to match output growth, leading to increased price pressures.

Key sentiment indicators

Quarterly movement



Construction by numbers

Quarterly percentage change



Construction employment



Construction vacancies



Construction new orders



Construction insolvencies



Construction average weekly earnings

Hot rates (price index)

Quarterly percentage change



Ready mixed concrete



Fuel (diesel)



Imported sawn wood price index



Structural steel



Copper

*Data values as of Q4 2020



Consumer price inflation

Feb 2021: 109.1
Feb 2020: 108.6
Increase: 0.5%



Unemployment level (thousand)

Q4 2020: 1,744
Q3 2020: 1,624
Increase: 7.4%



Construction output index

Q4 2020: 97.8
Q3 2020: 93.4
Increase: 4.7%

Tender price inflation forecast

Rising material costs are adding to inflationary pressure, with industry pricing set to turn positive in 2021.

A toxic cocktail of COVID-19 and Brexit uncertainty combined to place significant strain on the UK construction industry in 2020.

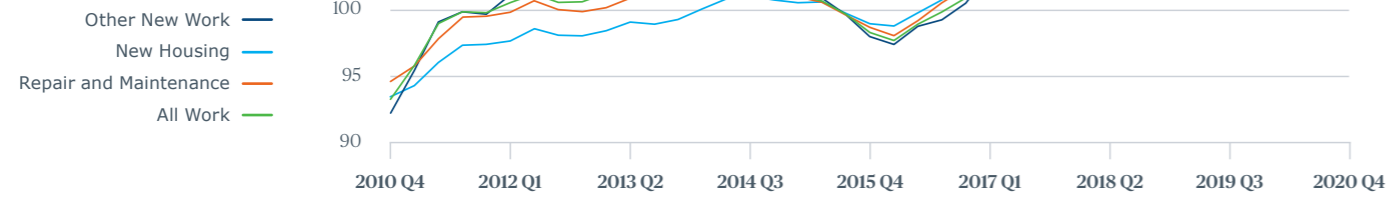
With construction activity severely constrained and client demand falling sharply, deflationary pricing was the order of the day for 2020. The advent of furlough and concerted salary reductions saw construction earnings drop by -2.5 percent in 2020, further adding to the downward pressure.

Meanwhile social distancing rules reduced productivity, risk allowances grew amid uncertainty and preliminaries rose in line with the enhanced provisions required for safe working conditions.

These inflationary pressures put a floor under tender price deflation last year. This year, inflation is set to tick up.

The most prominent inflationary driver in 2021 is arguably material cost escalation. Increasing global demand, raw material shortages, stockpiling, customs checks, and a reduced availability of freight containers are all contributing to rising costs. In Q4 2020, the Department of Business Energy and Industrial Strategy's (BEIS) 'All work' material price index increased by 2.2 percent on the quarter and by 3.1 percent on the year.

Figure 3:
Construction material and component price indices performance: most recent ten-year period
Department of Business Energy and Industrial Strategy



Post COVID-19, the BEIS 'All work' material price index increased by 5.2 percent. Imported sawn wood increased at the fastest rate of the BEIS individual items, by 30.8 percent. Particle board, structural steel, concrete reinforcing bars, imported plywood and gravel, sand, clays and kaolin all recorded double-digit increases.

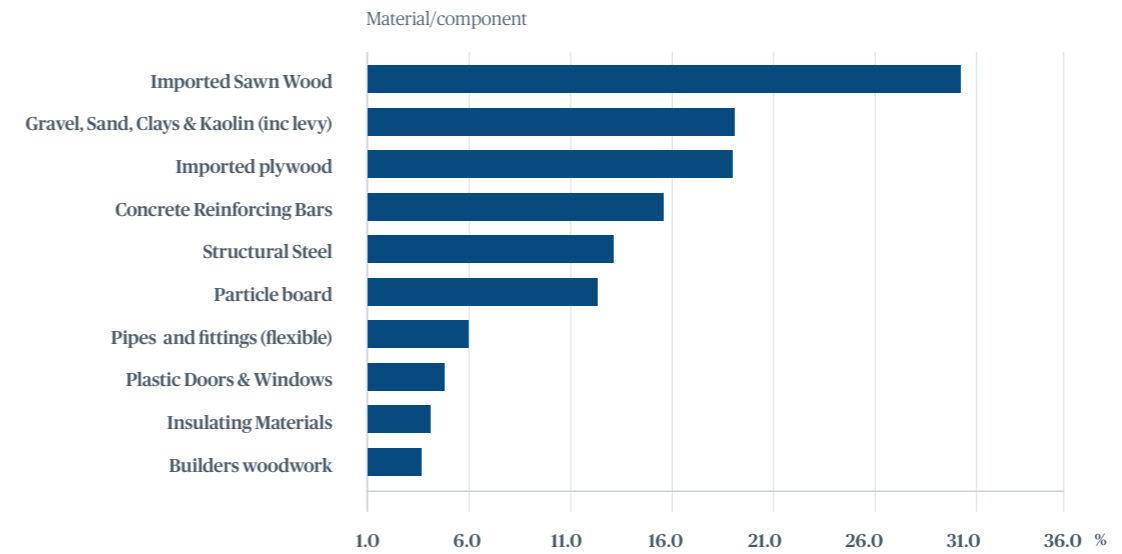


Figure 4:
Post COVID-19 material cost escalation: Top 10 increases, February 2020 - January 2021

Department of Business Energy and Industrial Strategy

While it remains to be seen whether this escalation will filter through into persistent inflation, material cost pressures are a threat. With construction output set to experience double digit growth in 2021, strong demand for materials may stoke ongoing price rises.

It is unclear, however, how much of this increased demand will originate from deferred and postponed work coming back online, as opposed to newly secured work or improving pipelines. This could temper the rate of growth seen in tender price inflation during 2021.

Data from the Office for National Statistics suggests construction new orders are still some way below their pre-COVID-19 levels, having fallen by -14.4 percent between Q4 2019 and Q4 2020. After a brief recovery in Q3 2020, new orders slumped by -8.8 percent in Q4 2020.

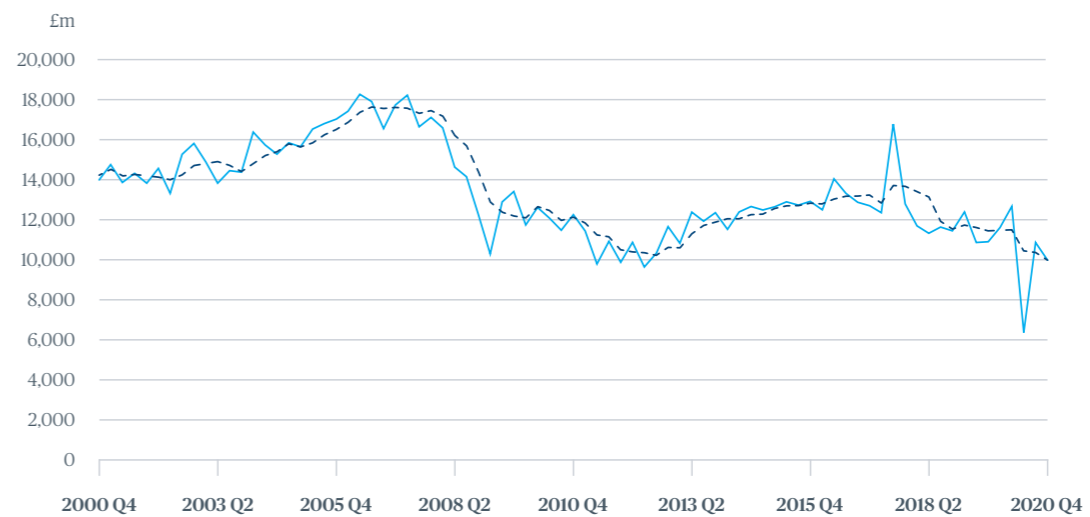


Figure 5:
Construction new orders
Office for National Statistics

Construction new orders
Construction new orders moving average

In effect, an artificially high number of contractors are bidding for a sluggish pipeline of new tenders.

Among all the anomalies of the pandemic's economic impact, the falling rate of construction insolvencies in England and Wales stands out. Just over 2,000 businesses went to the wall in 2020 – 36.7 percent fewer than in 2019 - as a vast package of Government support measures kept struggling firms afloat.

Plunging demand and site closures would ordinarily have proved fatal. Instead, construction firms have endured market fragilities and this has led to competitive tendering. This increased competition is acting to offset some of the gains seen in industry pricing borne by material escalation in 2021.

How does inflation play out relative to our Central scenario?

Figure 6:
COVID-19 scenario planning
Office for Budgetary Responsibility and Turner & Townsend assumptions

Scenario	Considerations
Central	<ul style="list-style-type: none"> Steady transition out of national lockdown in-line with government's roadmap out of lockdown GDP doesn't recover its prior output path, but its old growth rate returns Peak unemployment rate of 6.5 percent attained in 2021 Q4 Government vaccination targets achieved, with consenting adult population inoculated by August Seasonal COVID-19 infections remain but managed effectively

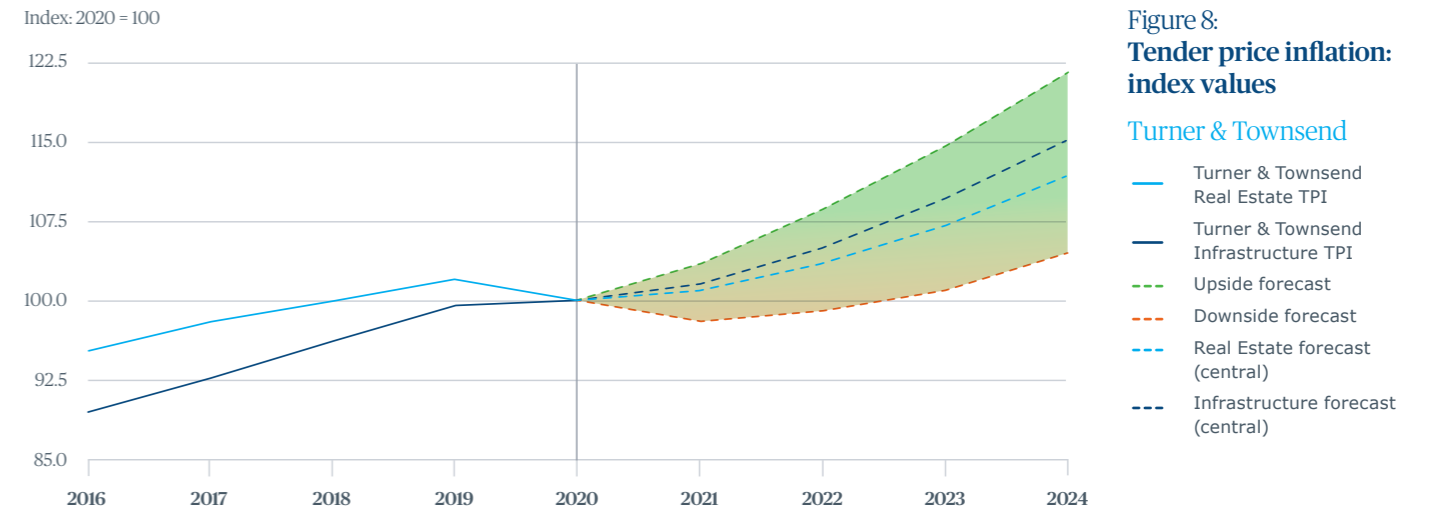
In real estate, our central forecast predicts tender prices will increase by 1.0 percent in 2021. Inflationary pressure will be stoked by rising material costs, immigration skills shortages, improving demand and constrained productivity. However, weak levels of new orders, sterling appreciation, artificially high supply chain capacity and the ongoing threat of COVID-19 transmission will moderate the growth of tender price inflation.

Figure 7:
Tender price inflation: Annual percentage changes
Turner & Townsend

	Real Estate	Infrastructure
2020	-2.0%	1.0%
2021	1.0%	1.5%
2022	2.5%	3.5%
2023	3.5%	4.5%
2024	4.0%	5.0%

Our forecasts are representative for the UK as a whole and inflation may vary substantially by project size, value, procurement route and region. Projects need to be assessed on an individual basis and may not always align to our central scenarios. For further assistance on cost assurance and inflation analysis in your area, please contact Turner & Townsend.

Our inflation expectations for infrastructure are higher, with our central forecast predicting a 1.5 percent rise in tender prices in 2021. Bolstered by significant Government spending, infrastructure is the only construction sector to see levels of new work surpass their pre-COVID-19 level, growing by 4.0 percent since Q1 2020. Following the Chancellor's announcement in the Budget of a further £22bn of finance for UK infrastructure, demand and inflation are set to rise steadily.



As the economy unlocks and the Government's generous support package for struggling firms is withdrawn, insolvency risks will emerge. Coupled with historic capacity constraints and skills shortages, inflation is likely to increase steadily across our forecast horizon.

One key driver influencing future pricing will be the increased demand and supply capacity for sustainable products as part of the UK government's green recovery and acceleration to net zero.

The pressure is already on the industry to transform even before the practicalities of delivering on the Prime Minister's push for green growth are considered. He has predicted the creation of 250,000 jobs from his Green Industrial Revolution and with ambitious targets around heat pumps and offshore wind, many of those will come to construction.

But the pivot to greener construction techniques – and their uptake – will not be determined by top-down policies alone. Real change will require the buy-in of the entire construction industry, from clients right through the supply chain.

Value as much as virtue - the new case for building green

The scale of construction's environmental impact has long made it a focus for climate campaigners and policymakers.

The sector's emissions hit a record high in 2019, with the UN Environment Programme estimating that the construction and operation of buildings together account for 38 percent of global energy-related carbon emissions.

No wonder the UK Government is pushing for construction to live up to its potential, both as a force for environmental good and as an engine of the post-COVID recovery.

How construction does so is a complex question. Pressure must come from above in the form of legislation. But the industry itself must also choose to make the change for practical, sound business reasons.

Fortunately, the crucial tipping point – where clients and suppliers decide to build more sustainably because of an overwhelming business case, rather than just to comply with green regulations – is within reach.

Several significant speed bumps lie ahead, but an acceleration of the progress made already could see the momentum become unstoppable within three years.

Green gear shift across the industry - from new build to retrofit efficiency

Legislation is already forcing contractors and clients to build more energy efficient buildings. From 2025, all new homes built in the UK must be highly energy efficient and 'zero carbon ready' to meet a benchmark Future Homes Standard.

Sensing that the pandemic might lead the industry to lose focus on its green targets, in January the Government upped the ante by bringing forward enforcement of two key parts of the Standard and launching a consultation on extending them to new non-domestic buildings too.

The operators of large commercial buildings are also in the Government's sights.

Meanwhile the funding landscape is getting greener. After years of touting their ESG credentials, several institutional investors have made a commitment to net zero a fundamental requirement for any would-be borrower.

There are shifts in the supply chain too. The contractor Willmott Dixon has pledged that all new build and refurbishment projects it delivers from 2030 will be net zero in operation, and the Berkeley Group has declared itself the first 'carbon positive' housebuilder.

But with around 80 percent of the housing stock that will be around in 2050 having already been built, the ability of carbon-neutral new builds to move the needle is finite. In many parts of the UK, the heavy lifting of meeting the carbon zero goal will need to be done by making existing properties more energy efficient.

However, this will put huge demands on suppliers. The Construction Leadership Council estimates that to retrofit the necessary energy improvements to the UK's housing stock will require an additional 500,000 skilled tradespeople to join the industry over the next two decades – suggesting that the Prime Minister's prediction for green job creation may even be conservative.

More alarming still, in February the Institute for Public Policy Research warned that the loss of skills from the industry – which is expected to see 750,000 workers retire over the next 15 years – could derail the drive to reach net zero. Though this maybe offset to some extent by energy-efficient construction, which increasingly uses modular elements manufactured offsite.

Skills shortages cannot be allowed to block progress. The post-Brexit UK no longer has easy, instant access to skilled European construction workers, so the recruitment of home-grown talent must be a core part of construction's post-pandemic renaissance.

Retro rockets - quick wins on the retrofit front line

The UK was the first major economy to commit to reducing its carbon emissions to net zero by 2050. Last year it pledged to accelerate the pace of carbon reduction, promising to hit 68.0 percent of its 2050 target by the end of the current decade.

Local authorities have followed suit, with many focusing on built assets as an area where they can reduce emissions quickly.

The capital has been a trailblazer in this regard. The Mayor of London's two Retrofit Accelerator schemes make it easier for public bodies, from borough councils to universities and housing associations, to install energy-saving technology across their estates.

Central to the effort is the Energy Leap scheme, modelled on Energiesprong, the Netherlands' transformational approach to retrofitting that slashed installation costs by 50.0 percent in just eight years from inception. (See page 11 for an illustration of how it works in practice).

Since Energy Leap launched in the UK in 2018, unit costs in London and elsewhere have come down sharply. But this is likely to be just the start; economies of scale will be exponential as the number of homes being fitted with the technology moves from the scores to the thousands. Forecasts by the Green Alliance think tank predict that by 2025, capex per unit will be half what it was at launch.

The genius of the Energiesprong model is that it is self-financing; it creates an entirely new market built around collaboration, making the long-term interests of public sector clients align with those of their supply chain.

Central Government is also training the Treasury's financial firepower onto this space. In March 2021 it announced plans to allocate £562m to 200 local authorities for them to retrofit energy-saving technology to as many as 50,000 social homes.

As a recent report by the Environmental Audit Committee 'Energy efficiency of existing homes' highlighted, getting this investment into retrofit right is absolutely critical to the UK reaching its net zero target. This means enabling a comprehensive programme to retrofit at least 19 million homes and switch from gas boilers to low CO2 heating.



Sutton housing partnership Energy Leap

The London Borough of Sutton is piloting the first example of the capital's Energy Leap scheme to transform the energy efficiency of its social housing stock.

Dermot Barnes, Project Manager-Energiesprong at Sutton Housing Partnership, said:

"It does involve large-scale investment upfront for the initial properties, but under the Energy Leap that capex will fall as we aggregate demand, grow supply chain capacity and achieve economies of scale whilst delivering and maintaining an agreed performance standard."

"In practical terms this means Sutton Housing Partnership's carbon footprint will be reduced and these properties given a new lease of life, with liability for performance and maintenance passing to the contractor.

"For our tenants, the advantages are clear. Their homes will be warmer and more attractive, their heating costs will be dramatically lower and they will have a true 'home for life'."

New build, new efficiency

Although large scale options for cost neutral net zero retrofit schemes can be expected by the end of 2023, the dynamics of new build properties bring a different set of challenges.

Building Regulations are being tightened ahead of the Future Homes Standard, and local authorities frequently apply pressure to private sector developers by making planning permission conditional on schemes delivering significant environmental and social benefits.

Crucially, the green premium is falling as clients increasingly opt to build properties to the Passivhaus standard, which uses advanced insulation and airtight construction techniques to reduce lifecycle energy consumption by 90 percent.

Research by the Passivhaus Trust in 2019 found that when using best practice, building a typical home to Passivhaus standard costs between 8.0 and 9.0 percent more than using conventional techniques. It also forecast that the premium could reduce to just 4.0 percent with wider adoption.

Economies of scale, increasing industry expertise and greater use of Modern Methods of Construction are rapidly bringing down the cost of sustainable building.

As the green premium shrinks, and with advanced tools like Turner & Townsend's carbon calculator (see page 13) enabling the carbon impact of any given design to be factored into the cost planning process, clients no longer need to choose between best value and best environmental outcome on their programme.

Calculating carbon right from the start

The carbon produced by a built asset during a decades-long lifecycle may ultimately make a greater environmental impact, but the construction process itself can also generate significant carbon emissions.

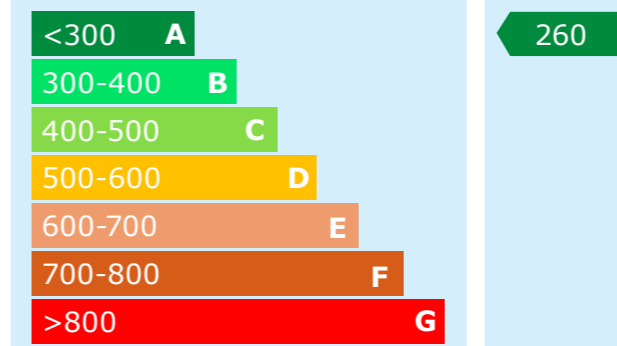
These emissions are known as embodied carbon – a measure of how much carbon is generated from 'cradle to completion' of the asset. In practical terms, this means quantifying the carbon emissions produced during the manufacture and transport of all building materials and components, as well during as their on-site assembly.

Turner & Townsend's cost management specialists have developed a carbon calculator tool that allows clients to understand the amount of embodied carbon in their buildings.

The tool focuses on the most commonly used – and carbon-intensive – structural materials, steel and concrete. It delivers a clear, concise and authoritative value for how much carbon would be produced in getting a design from drawing board to day one of the asset in use.

By representing the value visually, like the energy ratings label on a consumer electrical appliance, the tool enables clients to see at a glance how much embodied carbon each design option will entail.

When used at the design phase of a programme, and in conjunction with cost planning, the carbon calculator allows clients to make truly informed decisions – and strike the perfect balance between their cost, value and environmental priorities.




From greenwash to green work

Powerful though the support and encouragement of Government and institutional investors is, the final decision to go green in a capital programme lies with the client.

Designing and implementing a truly net zero real estate strategy requires more than just warm words.

Goals must be explicit and baked into the process, and while technology and data-led decision-making are important enablers, a successful shift to net zero demands permanent behavioural change too.

There are five key steps to making that change a reality:

<p>Clarity and alignment</p> 	<p>Clients must be clear with their supply chain about their corporate net zero vision, ensuring everyone understands what needs to be achieved and the route to achieve it.</p>
<p>Procuring with precision and purpose</p> 	<p>You can only manage what you can measure. Clients must embed agreed technology standards into their contracting and procurement strategy, to ensure all stakeholders work to common parameters.</p>
<p>Joined-up value engineering</p> 	<p>Value engineering is a crucial part of cost management, right across the asset lifecycle. Rather than being taken in isolation, decisions must factor in the impact on totex, solution interoperability and whole-life carbon, as well as the environmental performance of the asset.</p>
<p>Getting more from the legacy estate</p> 	<p>The key question to ask of assets in the occupation phase is "can we do better?" To answer it, asset owners must gather granular data on current progress in reducing energy use, decreasing embodied carbon and increasing renewable energy supply. IoT sensor technology offers the best way to amass huge amounts of operational data, but it must be aggregated and visualised in a way that everyone can understand and act upon.</p>
<p>All for zero, and zero for all</p> 	<p>Designing and building to net zero is one thing, ensuring an asset continues to operate at this level is another. In buildings with multiple tenants, or where use changes over time, net zero operational targets can slip. Ongoing success requires owners to monitor the right data, reward the right behaviours and foster collaborative relationships with occupiers – either by offering incentives to those who outperform environmental targets or by increasing rents for those who miss them.</p>

The choice is no longer green or growth. It's both.

As the green premium comes down - thanks to economies of scale and the added value of future-proofing - sustainable building is rapidly becoming more commercially attractive.

Putting sustainability at the heart of both capital and operational spending is now rightly seen as a business opportunity for clients rather than just an additional cost. As the real estate sector confronts the challenges of the post-COVID market, a well-managed sustainability strategy is also an opportunity for clients to support and strengthen their supply chains.

If a crucial tipping point on cost can be reached by the residential sector as early as 2023, it could pave the way for the wider real estate industry to follow. But to achieve this, industry must act now to uphold its part of the bargain and break its low margin, low investment cycle and change how it builds capability.

Net zero must be embedded throughout the supply chain, investment and innovation need to be accelerated, and procurement and processes have to be scaled up to deliver a UK fit for a greener future.

About Turner & Townsend

We are an independent professional services company specialising in programme management, project management, cost and commercial management and advisory across the real estate, infrastructure and natural resources sectors.

With 111 offices in 45 countries, we draw on our extensive global and industry experience to manage risk while maximising value and performance during the construction and operation of our clients' assets.

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