



Turner & Townsend

75 & celebrating

International construction market survey 2021

making the **difference**

Overview

- 02 About our survey
- 06 Global economic outlook
- 10 Global construction market outlook
- 16 Global construction cost performance

Special focus

- 30 Tokyo
- 32 Net zero

Around the globe

- 34 Africa
- 38 Asia
- 42 Australia and New Zealand
- 46 Continental Europe
- 50 Middle East
- 54 North America
- 58 South America
- 62 UK

Methodology

- 66 Comparing construction costs
- 67 Terms and references
- 68 Further reading



The year challenge meets change



For nearly 18 months, governments, businesses and families have endured a once-in-a-century public health emergency. The world emerging from the global pandemic is very different to the one that entered it.

Now as the post-pandemic recovery gets underway, world leaders are calling for the coming years to be more than just a period of growth – but of renewal and positive change too.

G7 leaders meeting in the UK in June launched 'Build Back Better World', a global partnership to improve infrastructure in low- and middle-income countries.

Meanwhile, governments around the globe have called on the construction sector to step up and serve as an engine of wider economic growth.

Taking stock of the construction industry

Our 2021 International construction market survey takes stock of how the industry is responding, the challenges it faces – and the rewards on offer.

We'll examine how the strains imposed by diverging growth rates and intense

competition for resources are placing speed bumps in the path of accelerating capital investment.

Our regional teams of experts have compiled detailed construction cost and sentiment data from 90 markets around the world, to build up an unmatched picture of how the global supply chain is handling the surge in capital spending.

We pinpoint where these two forces – rapidly rising demand and constrained supply – are colliding to drive up input costs and schedule risk.

As the world's eyes turn to Tokyo for the delayed Olympic Games, our data reveals that the Japanese capital is the world's most expensive market to build in.

Responding to complexity

But the challenging macroeconomic backdrop is only half the story. These are times of change and complexity for large organisations managing diverse capital programmes.

Both public and private sector clients are juggling multiple, competing goals and priorities. From accommodating hybrid working patterns, to embedding social value into their operations and taking concrete steps towards Net Zero, in the new world success is no longer judged by the traditional mantra of 'better faster, cheaper'.

That's why this edition of our survey also considers how those responsible for

capital assets can tackle overlapping challenges simultaneously – translating enterprise strategy into a programmatic approach which is proven to deliver better outcomes.

Positive legacy

2021 marks the 75th anniversary of Turner & Townsend's foundation. Our company was born as countries across the world struggled to rebuild after the destruction of the Second World War.

Then, as now, governments ignited growth with huge stimulus packages, and private sector investment across the built environment followed, ushering in dramatic, lasting economic and social change.

The post-COVID recovery has the potential to be just as transformative, and the global construction industry should seize this opportunity to deliver more than just growth.

Together we have a chance, and a duty, to build a greener, more inclusive and productive world.

Neil Bullen

Global Managing Director, Real Estate

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About our survey

Now in its 12th year, our latest International construction market survey brings together data and knowledge from 90 global markets. It aims to provide insights into the key challenges, opportunities and general direction of travel for the global construction industry.

Our team of economists worked closely with our local experts to analyse input costs – such as labour, materials and plant – and charted the average construction costs per square metre for multiple asset classes across several sectors in 31 key markets.

The spotlight cost data for 31 key markets was complemented by additional data gathered in a further 59 markets, allowing us to assess market conditions in 90 locations in total. This information provides context and a richer understanding of the balance of supply and demand and the cost pressures within each market.

Whilst positivity is emerging following the initial impact of COVID-19 on the global economy, our analysis of the data captured shows the most diverse of outcomes to date. Of the markets surveyed, 6.7 percent are 'cold', 32.2 percent are 'lukewarm', 50.0 percent are 'warm', 10.0 percent are 'hot' and 1.1 percent are overheating.

As a result of the multi-paced recovery and the complex interplay of factors driving demand and increasing market pressures, 2021 presents a variety of new construction opportunities and challenges. We hope that our survey provides useful information to assess the impact COVID-19 has had, and continues to have, on individual markets, collective regions, and the global construction industry as a whole.

Since our 2019 publication, we have added 37 unique markets. A list of those markets can be found on page 15. Whilst our 2020 document wasn't published, we still captured and analysed data during this period. Throughout our 2021 survey, there will be references to both data sets to evidence changes and allow for more timely and relevant comparisons.

For simplicity, we have adopted straight-line USD conversion as our primary method of comparison for our cost data. For more information on the methodology see page 66. Detailed explanations of what's included in and excluded from our cost information are given on page 67.



Key highlights

55

markets are warm,
hot or overheating

56

markets are warming up

5

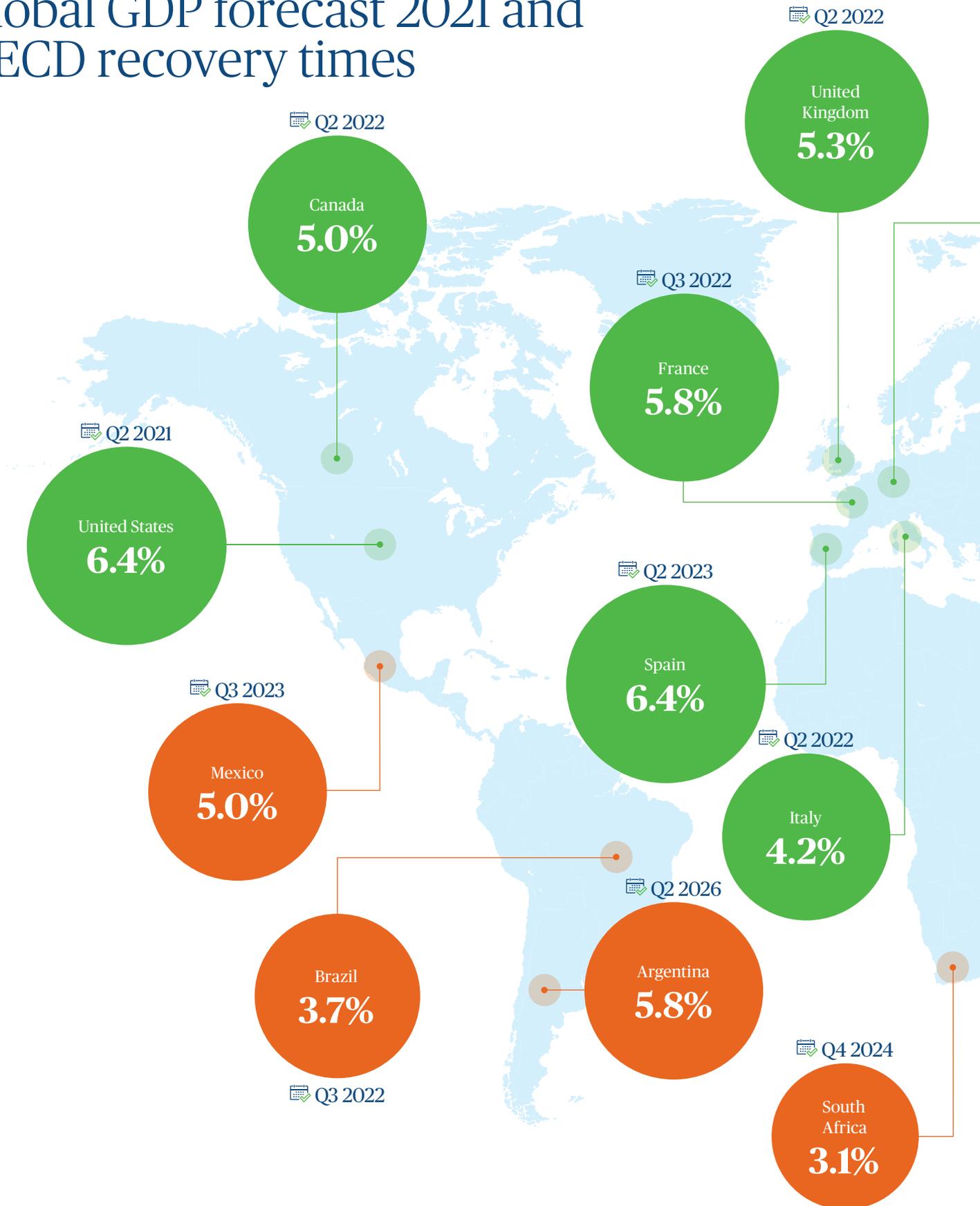
markets are cooling

37

new (unique) markets
since 2019

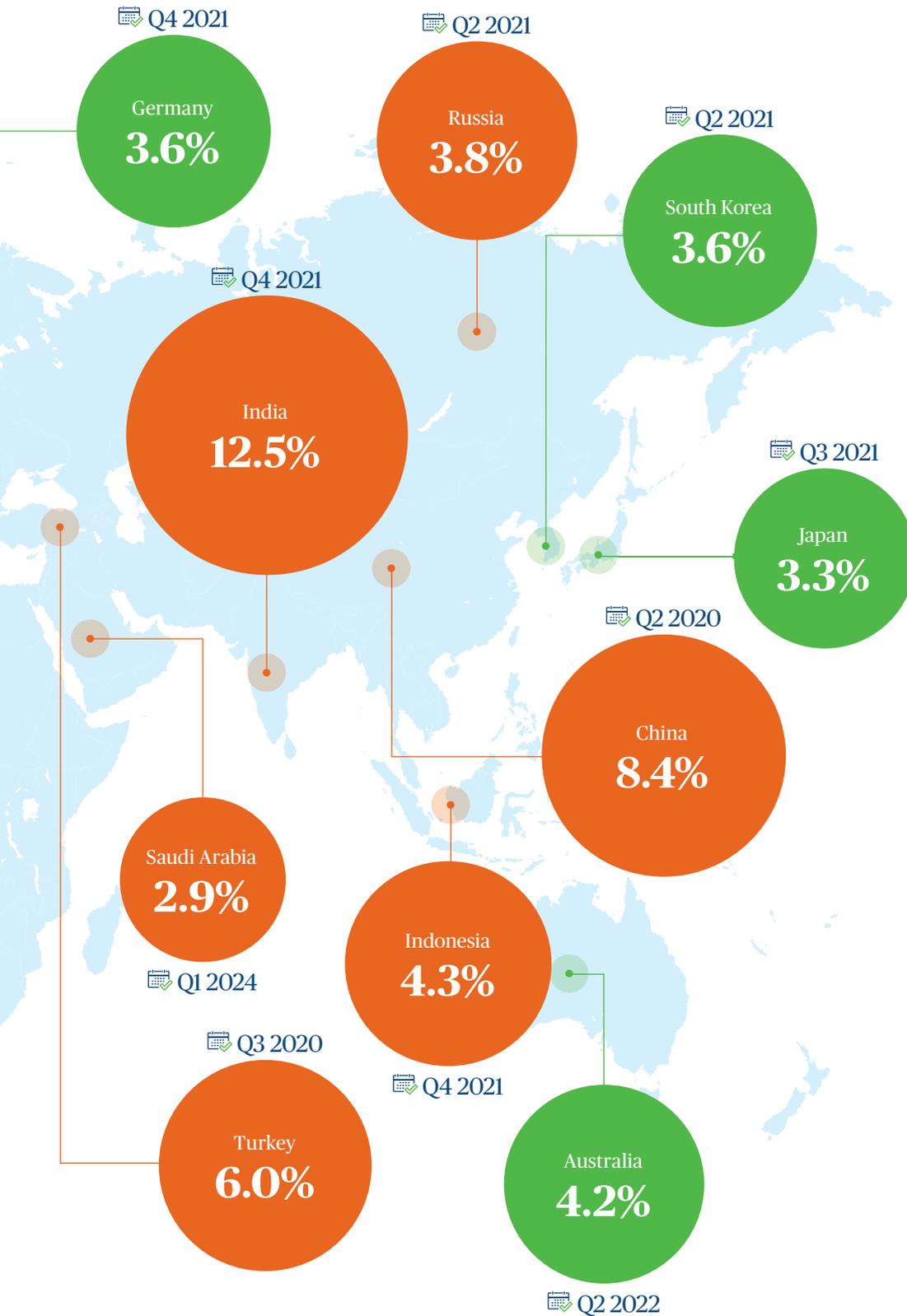
San Francisco was the most
expensive place to build in
our 2019 survey

Global GDP forecast 2021 and OECD recovery times



Economic development

- Advanced
- Emerging
-  Quarter in which GDP recovery to pre-pandemic levels is anticipated



A reinvented global economy

COVID-19 has caused seismic disruption to business, trade, supply chains and staff. Now, the combined impact of countries' differing strategies to cope with the pandemic is causing a reconfiguration of the entire global economic landscape. The extent and pace of change over the past 18 months is unprecedented in recent times.

The global economy contracted by -3.3 percent in 2020, according to the International Monetary Fund (IMF), as COVID-19 forced economic activity to halt. But as of mid-2021, recovery was well underway, despite significant uncertainties remaining. The IMF is forecasting 6.0 percent growth for 2021 led by India, China and the United States – all increasing substantially, by 12.5, 8.4 and 6.4 percent respectively.

Nevertheless, the timeline to a full global economic recovery remains uncertain, as new COVID-19 variants result in

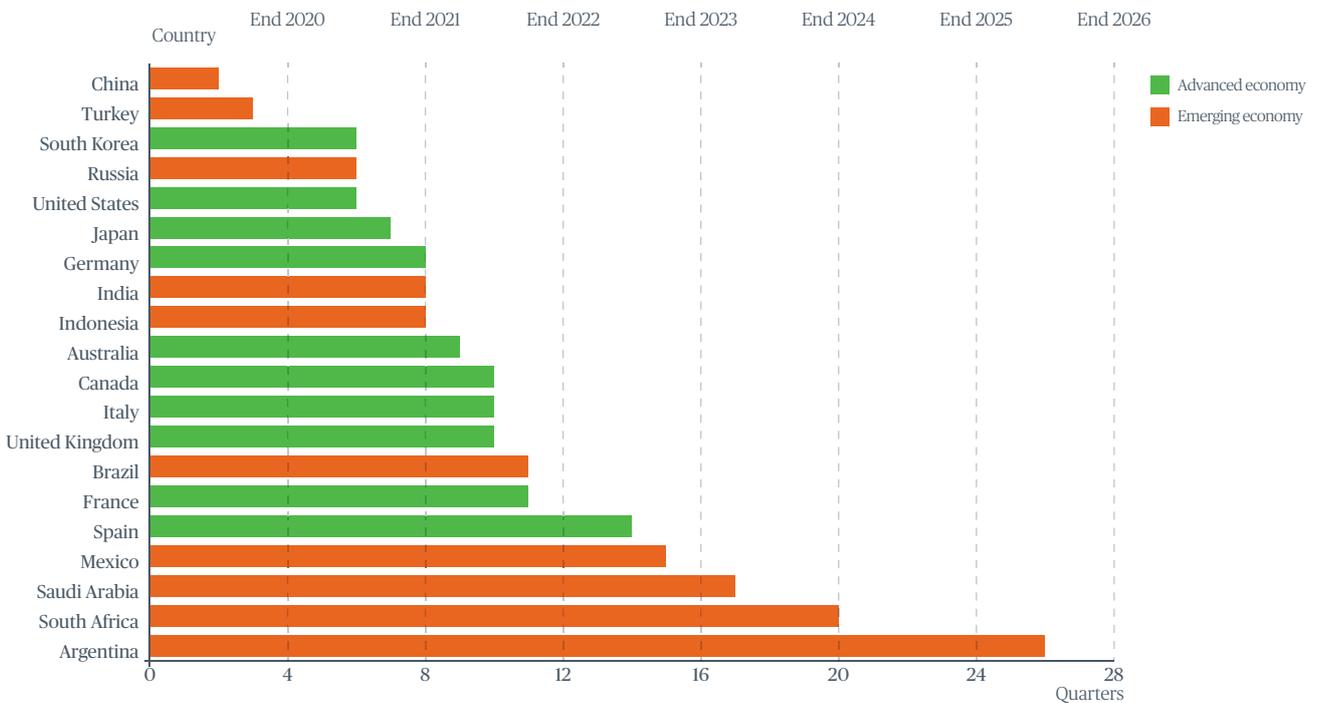
major outbreaks and cause cases once again to surge. Currently, economic recovery remains highly uneven between countries, regions and industry sectors.

Advanced economies (green) with high healthcare and welfare provision, robust inoculation programmes and strong fiscal and monetary stimulus – therefore keeping employment stable and business' afloat – are finding ways to accelerate forward amid the uncertainty.

In stark contrast, many emerging economies (orange) are struggling to keep up with COVID-19's immense

medical and fiscal burden, having fewer safety nets for the unemployed and have suffered severely due to a loss of tourism business.

Figure 2: Timeframes of recovery, in quarters, by sustained increase in real GDP per capita above 2019 Q4 levels - G20 countries



Source: OECD (2021), OECD Economic Outlook No 109 (Edition 2021/1) Note: For countries recovering after Q4 2022, calculations are based on average quarterly growth rates in 2022

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Economic overview

Global

6.0%

forecasted GDP growth in 2021

North America

6.4%

forecasted GDP growth in 2021

China

8.4%

forecasted GDP growth in 2021

India

12.5%

forecasted GDP growth in 2021



Comparing two crises

The Global Financial Crisis (GFC) of 2008 was a balance sheet recession. Asset prices collapsed, liabilities remained, and a collective shift towards savings emerged. A credit crunch ensued as the over-exposed banking sector sought to deleverage and demand dried up.

The COVID-19 crisis is different; a unique combination of medical, socio-cultural and economic factors simultaneously impacted both supply and demand. Business activity and demand was disrupted immediately as economies were locked down to contain the spread of the virus. Restrictions on people's ability to move and work, and business' ability to produce, created a supply shock-feeding into the reduction in demand.

The accessibility of finance during COVID-19 has played a significant role in supporting the global economy. Credit has been freely available, and it is relatively cheap.

Japan has announced close to US\$3tn in stimulus packages, or more than 50.0 percent of GDP – the highest of any country.

Stimulating recovery

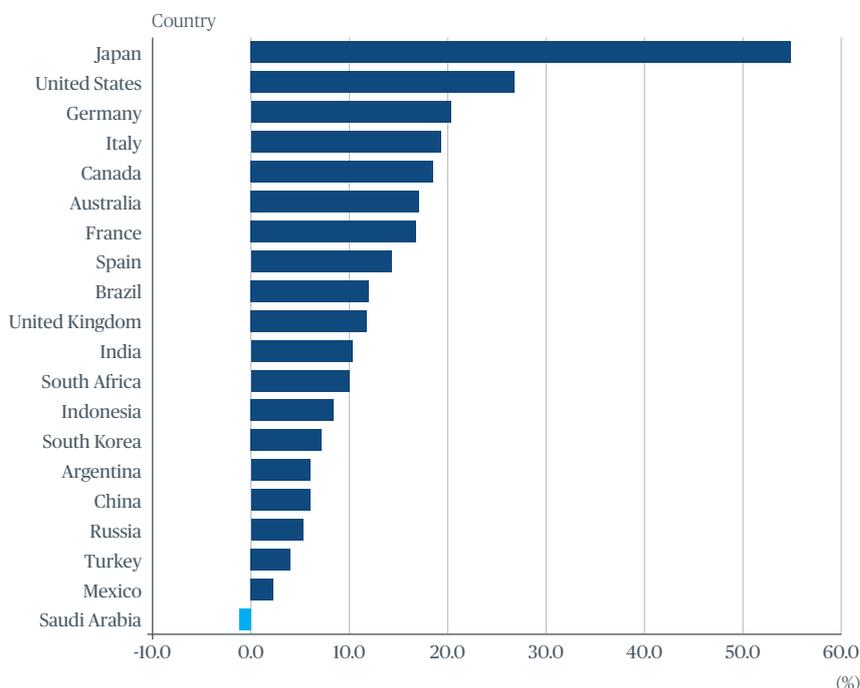
The US has announced US\$1.7tn of new stimulus, bringing its total stimulus to around 26.0 percent of GDP. The US administration also announced a further US\$2tn jobs plan that includes major infrastructure projects, including road upgrades, water and power distribution upgrades to tie in with renewable energy generation projects.

Many European countries, along with Australia and Canada, are all devoting significant proportions of their GDP to stimulus programmes.

With most advanced economies able to borrow at very low interest rates, government spending is more affordable now. Job retention programmes, cash donations to households, business grants and low interest loans have already had a significant impact on the global economy in 2021.

Recent changes to the way central banks set interest rates to target inflation may also lead to interest rates staying lower for longer – offering continued access to funds. Previously, most central banks raised interest rates when inflation reached a set target. Now, central banks – such as the Federal Reserve – are targeting “average inflation” over a

Figure 3: Government COVID spending as percent of GDP - G20 locations



Source: COVID-19 Economic Stimulus Index - Ceyhun Elgin, Gokce Basbug, Abdullah Yalaman

period of time, which is likely to make interest rate changes less frequent and hold rates stable for longer.

Fiscal response a future problem?

Whilst increased fiscal and monetary support is helping to boost economic growth, there are concerns about the impact such vast amounts of money circulating in the economy is having.

Some commentators, understandably, are worried about the debt and interest burden numerous stimulus programmes globally will place on future generations. However, according to the IMF World Economic Outlook (April 2021), real GDP growth in most advanced economies is set to outpace real interest rates for several years to come.

Inequalities are being driven between poor and affluent areas in advanced economies, but also between advanced and emerging economies. According to the IMF, 95 million people have fallen into extreme poverty due to COVID-19, a definitive backwards step following several years of improvement.

Money has been pouring into global stock markets, pushing them to record levels. Commodities, along with other tangible assets, are being sought as investment vehicles and stores of wealth, feeding

in from increased stimulus – exacerbating inflationary pressures.

Cheaper finance has contributed to a house price boom in many developed countries, including the Australia, Canada, France, Germany, UK and USA. In the USA, the Case Shiller 20 City Index increased by 13 percent between May 2020 and May 2021. Phoenix increased most, by 17.4 percent year on year, followed by San Diego (17 percent) and Seattle (15.4 percent).

With central banks relaxing inflation targeting, this is contributing to the accessibility of cheap money, fuelling that house price growth. There is also another cause for concern here as monetary policy loosens. There is a possibility that an overshoot of inflation may occur as interest rates – which usually increase to curb inflation – are kept low to stimulate economic growth.

Supply chain pains

Border closures continue to disrupt global supply chains, slowing the movement of vital imports and exports.

Commodity prices have increased intensely as a result of supply disruptions and high demand, especially from China. This includes metals and minerals, food and agricultural products such as

construction timber. Contract freight rates have increased, with shortages of container ships, port facilities, dockworkers and truckers.

These inflationary pressures are cause for concern, impacting the financial viability of projects. Global steel prices, for example, have more than doubled in the past 12 months in Europe and the USA. Steel Benchmarker indicates that in June 2021 US hot rolled band was at US\$1,824 per tonne, up from US\$572 per tonne a year earlier. Copper prices, meanwhile, are around US\$10,000 per tonne in May 2021 (London Metal Exchange) compared with US\$5,500 12 months ago.

It's a similar story for nickel, aluminium, tin and zinc. The main causes are supply disruptions and stronger than expected growth in China, Europe and the USA. Oil prices have increased to around US\$60/bbl where they appear to have stabilised for now. Lumber prices have also increased strongly.

New trading relationships

As China grows its dominance in world trade, many countries are reconsidering their level of dependence on Chinese trade. If China raises tariffs on imports in favour of domestic production, whole economies can be affected.

Bilateral trading relations between the USA and China deteriorated during the administration of President Trump. While the new Biden administration might have looked to reset the relationship, it appears that the USA will continue to take a hard line on US-China trade and tariffs.

This is leading to a search for alternative export markets and more onshoring of production to bolster the supply chain.

Impact of a 'green recovery'

In the lead up to COP26 in November, governments and public and private sector organisations the world over are increasingly committing to high-profile carbon reduction and net zero targets.

The USA, China and Europe now appear to be in sync when it comes to green initiatives. It is not just wind farms and solar. Global government-sponsored investment is likely to follow the lead of the US announcements by making road, water, power and internet distribution systems more efficient through re-engineering and smart management technologies. For example, more rail freight and passenger transit, promotion of electric vehicles, plug-in charging stations and electric school buses will reduce transport emissions, a major source of carbon pollution.

With ageing infrastructure adding to maintenance costs, it makes sense to take advantage of low interest rates to modernise many ageing assets. This will, of course, create the need for additional commodities such as steel and copper, rare earth metals and lithium, and it should therefore be expected that costs could further increase.

A new global landscape

Looking forward, the landscape may have changed permanently. Unlimited international travel could take years to recover. Privacy may suffer as travellers will be more closely monitored for vaccine compliance. Globalisation and international trade could slow down in favour of more domestic, and sustainable, production.

With working from home arguably an irreversible trend, regional centres, small towns and villages should benefit from more local spending and localisation agendas. By contrast, central business districts (CBDs) in many cities may struggle. Internet shopping, data centres, infotainment and communications should continue to thrive.

Future fast-tracked

The legacy of the COVID-19 pandemic will be felt for decades to come, with fiscal fallout a particular concern as countries pay for the vast economic support packages made available. At the same time, the world will need to prepare itself for the prospect of future pandemics and learn the harsh lessons taught during the past 18 months. Everything has changed.

Equally, in many respects the pandemic has brought the future forward. The investments currently being made in infrastructure, digitalisation and sustainability, bolstered by stimulus packages and support, were always coming, but they have arrived much faster due to the pandemic.

Corporate and socio-cultural change have been accelerated significantly due to COVID-19. The result is a reinvention of the global economy, a revaluation at scale of the way business is done, and why it is done, which should ultimately have a positive impact on future generations.

Geneva is the most expensive place to build in Continental Europe



Road bumps still ahead

Construction activity continues to be heavily influenced by governments' response and handling of the COVID-19 pandemic, which is shaping an uneven recovery across the industry. Traditional growth sectors are waning, with COVID-19 accelerating growth in emerging sectors. Rising costs of construction, supply chain disruption and skilled labour shortages, however, are quickly becoming the biggest barriers to industry growth.

The impact of the COVID-19 pandemic on construction has been widespread and significant. Lockdown measures have closed construction sites, caused severe disruptions to global supply chains, and triggered project delays. Loss of labour resources have occurred due to redundancies and border closures, and capital expenditure into new projects has reduced.

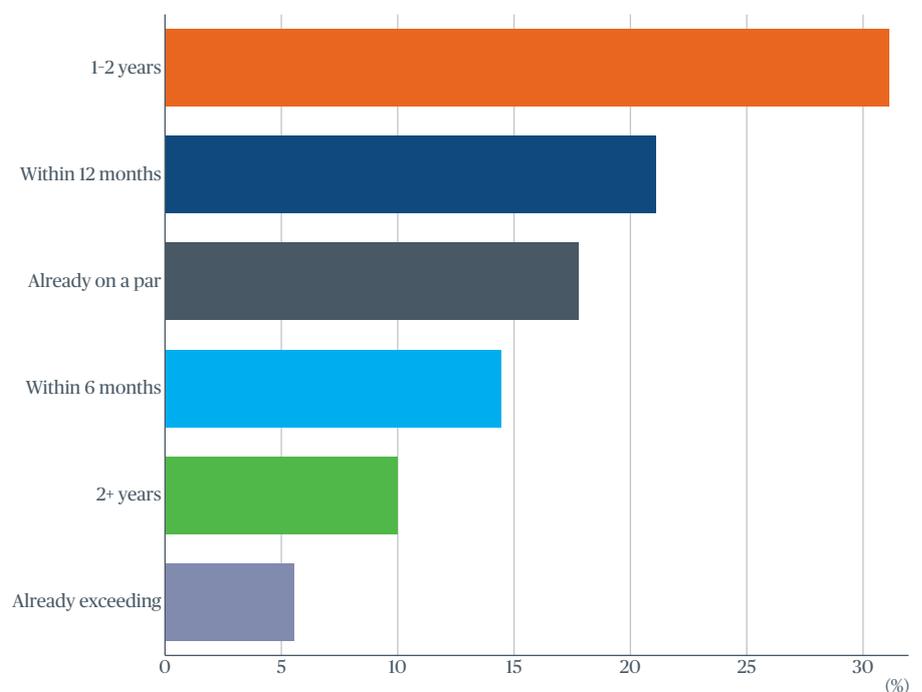
Despite this, as economies emerge from the COVID-19 pandemic and the roll-out of the vaccine continues, capital expenditure and construction activity are increasing in most markets. With private sector confidence still bruised from the pandemic, many governments have responded with bold monetary and fiscal policy, which for many markets is the fundamental driver of their recovery.

However, with many markets still facing high levels of COVID-19 cases, there remains a lot of uncertainty as to when some regions will fully emerge from the crisis. For those markets that are more advanced in their recovery, a clearer picture is starting to emerge of what kind of upturn is possible for construction markets and the key factors driving this.

A multi-speed recovery

In this year's survey, we asked respondents when their construction market was likely to recover to pre-pandemic levels of output. From the 90 markets covered, 16 were described as already being "on par" with pre-pandemic levels, while 5 markets described their position as "exceeding" pre-pandemic levels, which included Berlin, Frankfurt, Hamburg, Milan and Perth. Of the remainder, 13 markets are expected to be back at pre-pandemic levels within the next six months, 19 within the next 12 months, 28 markets are anticipating between 1–2 years, and 9 markets in 2+ years.

Figure 4: Timeframes of recovery for construction industry to return to pre-pandemic levels of output - view across 90 global markets



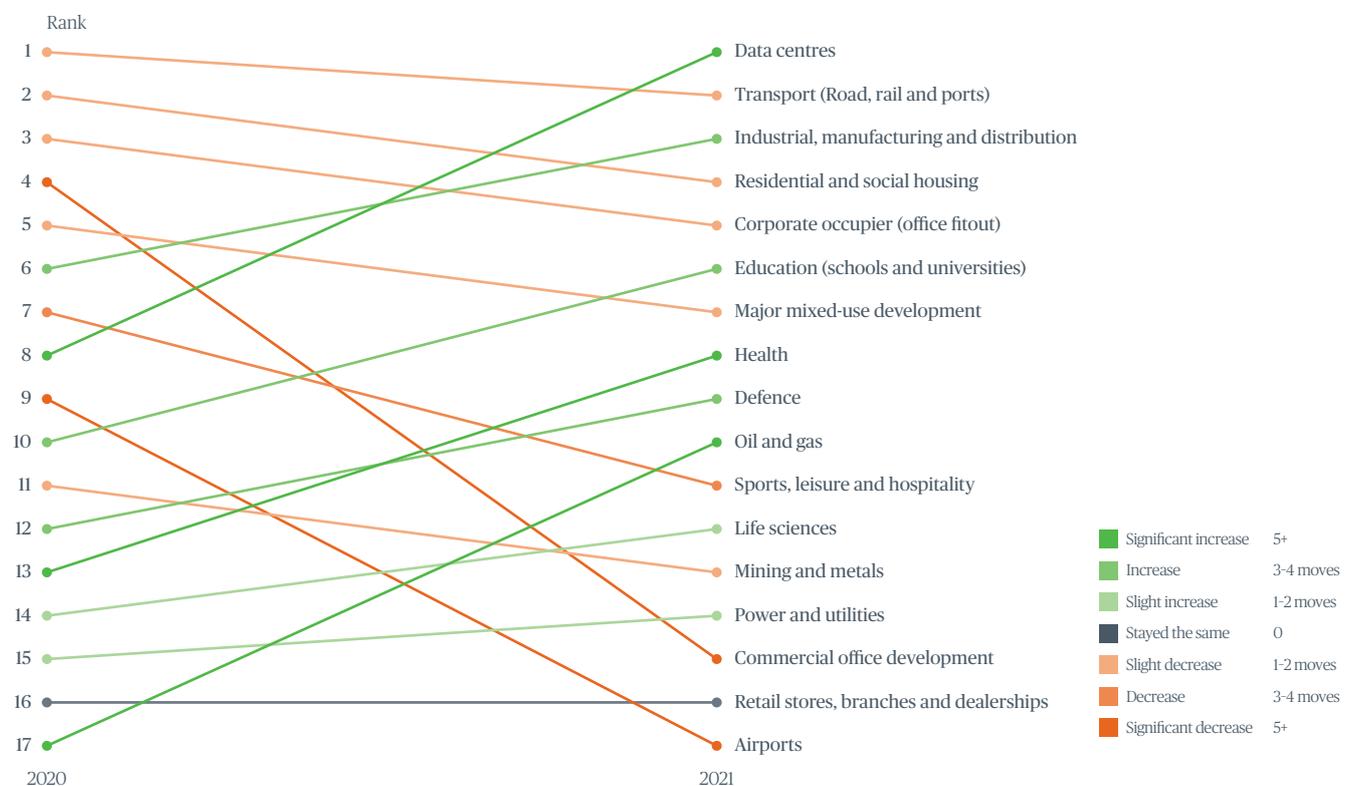
Source: Turner & Townsend International construction market survey 2021

Given that most economies fell into recession in 2020, to have 58.9 percent of our surveyed construction markets anticipating being back at pre-pandemic levels of output within the next 12 months is a remarkably positive outcome.

Whilst markets look to recuperate, there has been a considerable shift in the way regions are looking to "rebuild".

The pandemic has created an unprecedented opportunity for the construction industry to reinvent itself, and we are seeing many markets take advantage of this.

Some of the key trends that we have seen emerge include an emphasis on supply chain resilience and diversification, an increased push for net zero carbon, a shift towards hybrid work patterns, and a growing use of digital and innovation in construction projects.

Figure 5: Top-performing construction sector, by activity levels, 2021 vs. 2020

Source: Turner & Townsend International construction market survey 2021

A changing landscape

The impact that the COVID-19 pandemic has had on different industries has varied significantly, which is driving a rapid change in the global economic landscape. As such, we are seeing the focus of new investment shift the top performing sectors in construction markets.

In the survey, our regional experts identified the top three performing sectors in 2021, and the results were considerably different to the results of our 2020 survey.

The top performing sector across all participating markets is data centres, driven by the unabated growth in technology and digitalisation.

This is the first year that data centres has made it into the top five performing sectors, moving up from sixth position in 2020.

The second highest performing sector is transport (roads, rail and ports), which was in the top position in 2020. Infrastructure investment has been a

key focus for government stimulus in the recovery from the COVID-19 downturn, and we expect further investment to continue over 2021/22 to support economic activity.

Moving from sixth to third on the list is industrial, manufacturing and distribution, which has undoubtedly been driven by the rapid growth in e-commerce that has been fast-tracked by the pandemic. The retail landscape is changing inexorably, and this is driving a surge of investment into new technologies and distribution facilities across the world to meet the rapidly changing needs and demands of consumers. Unsurprisingly, this is one of the fastest-growing industries and we expect this sector to continue to see continued strong growth over the next couple of years.

Residential and social housing has moved down from second to fourth position in the top performing sectors since 2020. Despite this descent, residential construction has been largely robust during the pandemic, with new housing

demand surging over the first half of 2021. A key trend we have seen across several regions, is of people moving away from high-density apartment living in metropolitan areas to living in larger houses in more suburban and rural locations. This has been driven by people's desire to move away from highly populated areas due to the health crisis, an increased ability to work from home, and a desire for a larger living space following the lockdowns.

Notable sectors that have moved up the list over the last 12 months include education, which has moved from tenth to sixth position, and health, which has moved from thirteenth to eighth position. Oil and gas has moved from seventeenth to tenth. This is primarily due to it not being considered a top sector by any respondents last year and 3.5 percent of respondents indicating it is now.

Sectors that have dropped down the list include commercial office development, sports, leisure and hospitality, and airports, all of which have been heavily impacted by COVID-19.

New challenges brought to the fore

Every year, we ask our experts around the world to tell us about the key challenges in their markets. Respondents then assess whether a particular challenge is having: no impact; little impact; medium impact; high impact; or significant impact on delivering construction works. The challenges are then aggregated according to their response.

This year, as expected, COVID-19 is the biggest challenge facing construction markets, with many regions still seeing considerable COVID-19 case numbers and heavy restrictions still being

enforced. However, historic ones also remain.

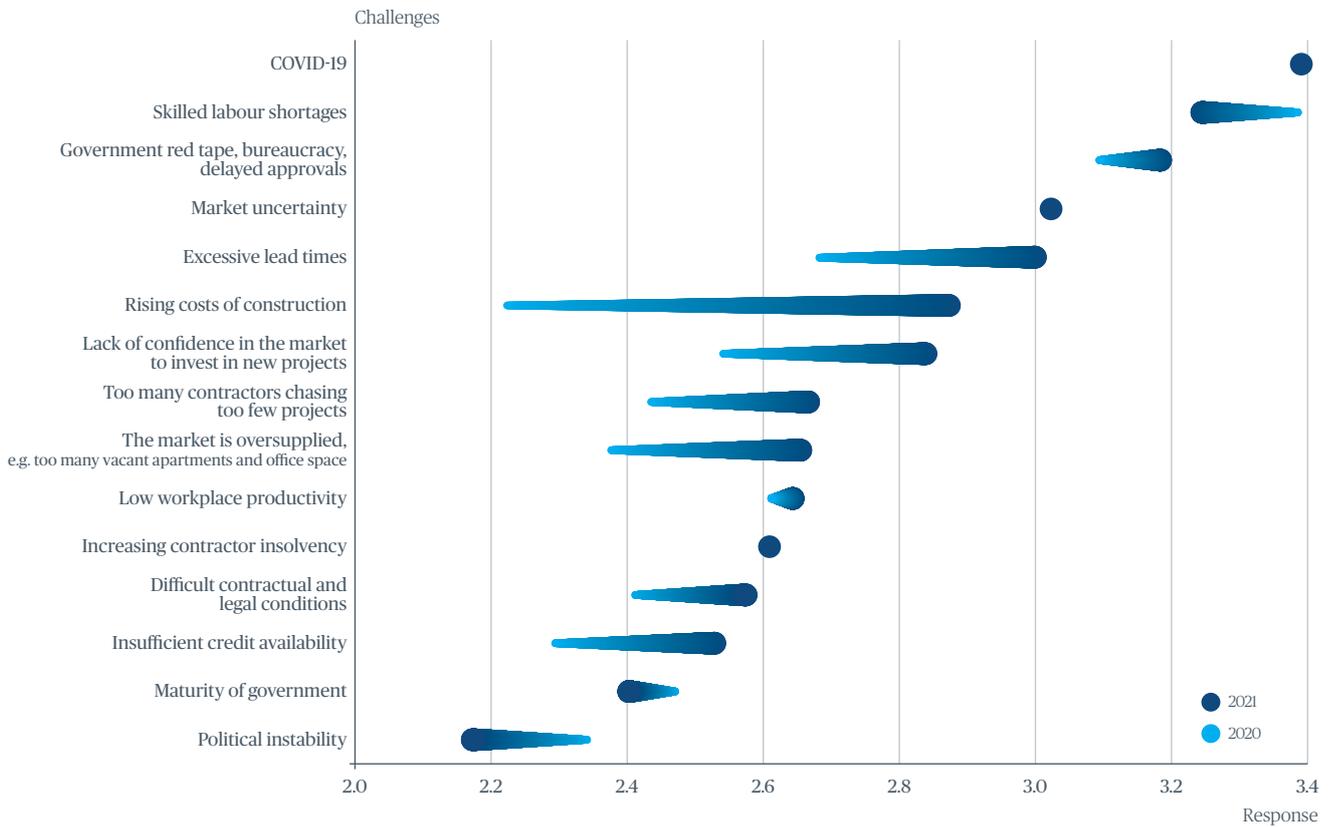
Skilled labour shortages have moved down to the second place, only due to COVID-19 being added to this year’s list of construction challenges.

One of the most notable changes in this year’s survey is the growing problem of rising construction costs, which has moved from twelfth to sixth position since 2020. This has been influenced by supply bottlenecks and constraints being experienced on a global scale, which has also kept excessive lead times as one of the top five challenges in 2021.

Government red tape, bureaucracy, and delayed approvals is the third biggest challenge faced by markets, which has moved down from second place in 2020. This is followed by market uncertainty, which was new to the list of challenges in 2021.

Unsurprisingly, despite a subtle increase, insufficient credit availability is one of the lowest ranking key challenges faced by global construction markets.

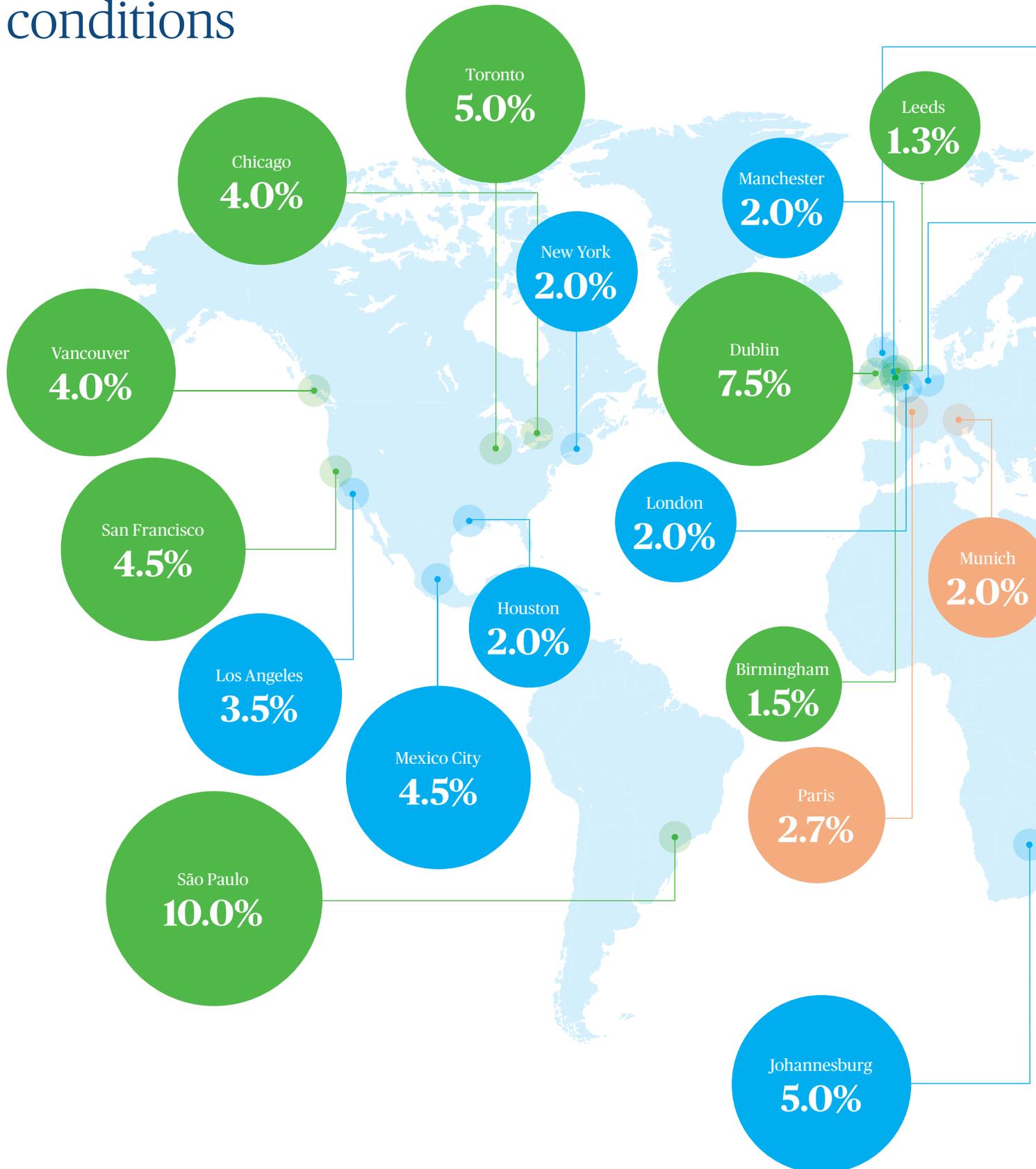
Figure 6: Key construction challenges, 2021 vs. 2020



Source: Turner & Townsend International construction market survey 2021



Global inflation forecast 2021 and current tendering conditions

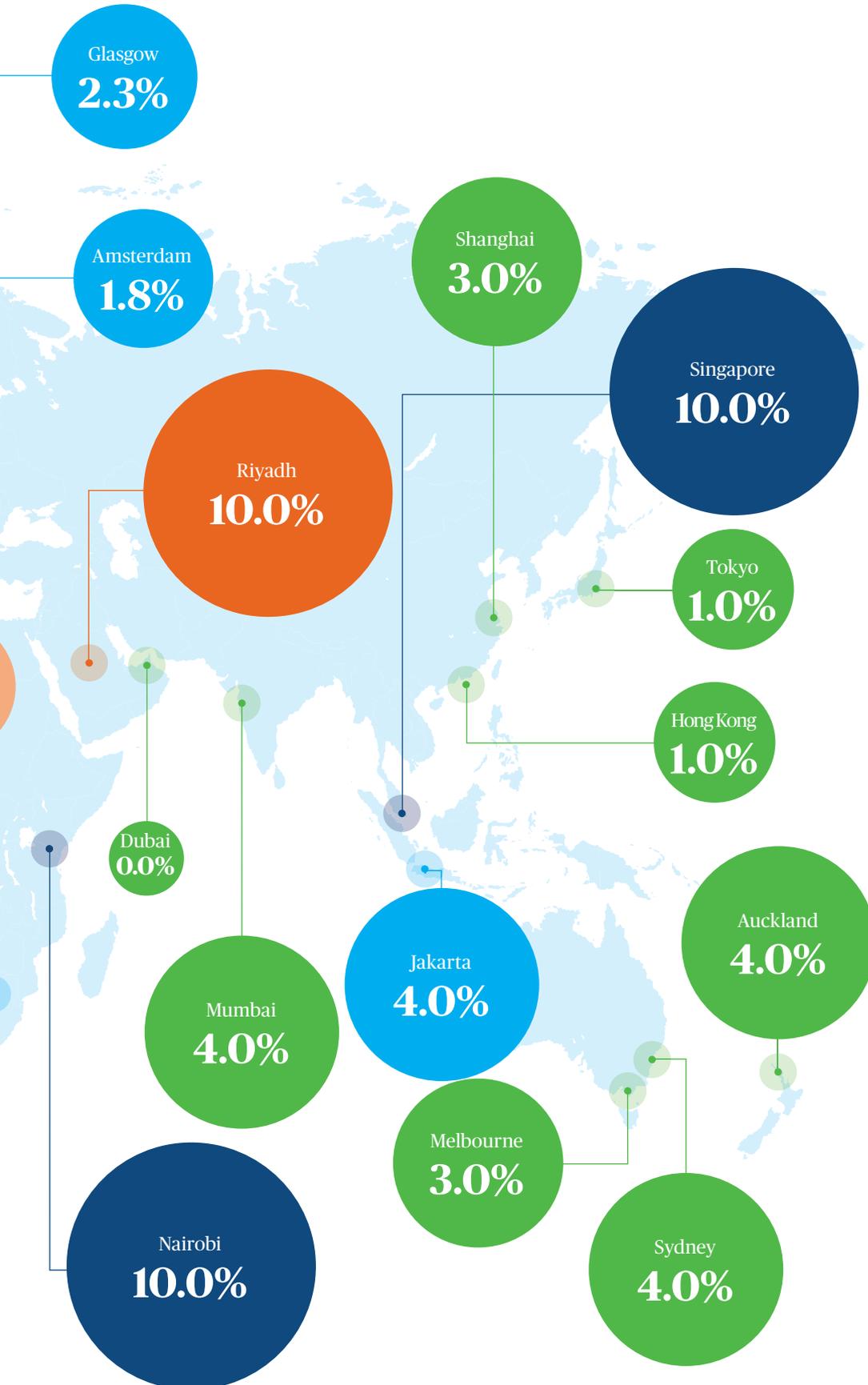


Current tendering condition

- Overheating
- Hot
- Warm
- Lukewarm
- Cold

New markets added since 2019

- Abu Dhabi
- Adelaide
- Austin
- Belfast
- Birmingham
- Boston
- Bristol
- Brussels
- Calgary
- Cape Town
- Chennai
- Delhi
- Dubai
- Durban
- Edinburgh
- Gaborone
- Geneva
- Glasgow
- Hamburg
- Hanoi
- Lagos
- Leeds
- Lima
- Los Angeles
- Macau
- Manchester
- Manila
- Milan
- Montreal
- Mumbai
- Nashville
- Newcastle
- Rio de Janeiro
- Shenzhen
- Taipei
- Tampa
- Tianjin



Markets gather heat and momentum

Many construction markets have seen a marked increase in activity levels in 2021 as the global economy continues to recover. This year's survey paints an optimistic, yet cautious, picture for the construction industry. As activity accelerates, supply chain constraints are build increasing and skills shortages are worsening, resulting in substantial construction cost inflation in many markets.

By gauging local tendering conditions from our 90 surveyed markets, across 45 different countries, we can draw useful conclusions relating to the strength of competition in the construction supply chain, which is an indicator of likely cost pressures being experienced.

Unsurprisingly, COVID-19 has prompted a significant shift in tendering conditions for many construction markets. When we asked our regional experts to describe these in their local construction market, ten markets were described as either hot or overheating. This is down from the 20 seen in our 2020 survey and 18 in our 2019 publication.

These locations are mainly spread across Europe, where eight markets are described as 'hot' including Paris, Berlin, Frankfurt, Hamburg, Munich, Milan, Geneva and Zurich. No markets in this region were described as 'cold'.

In the UK, however, tendering conditions have mostly been described as 'lukewarm' to 'warm'. Private sector construction expenditure was heavily impacted by the uncertainty of Brexit and COVID-19 but has since started to strengthen over 2021.

This year, there were 45 markets labelled as 'warm'. That is up from 23 in our 2020 survey and 17 from our 2019 publication. As local construction industries adjust following the initial effects of the pandemic, some markets that were previously 'hot' and 'overheating' have transitioned downwards as they have cooled. An increased number of new markets in countries that are generally warm is also contributing to this.

All seven markets in Australia & New Zealand have described their tendering conditions as 'warm', due to the region's low COVID-19 cases and significant government spending to boost construction activity. Sydney and Melbourne have cooled from being 'hot', while Perth has moved from being 'lukewarm', supported by rising global

commodity prices and growing demand for raw materials.

The majority of markets in South America were also described as 'warm', except for Buenos Aeries, which was 'lukewarm'. Construction markets across the region were hit hard by the COVID-19 pandemic in 2020, with many projects placed on hold. Since the start of 2021, confidence has improved, and postponed projects are resuming.

In the United States, the majority of markets were either 'warm' or 'lukewarm'. In the US, second-tier cities like Nashville, Phoenix, Austin and Denver have recently experienced stronger population growth due to migration out of top-tier cities such as San Francisco, Chicago and New York, which is helping to drive new construction activity in these markets.

Most markets in Asia are 'warm' or 'lukewarm'. Singapore and Chennai have both been described as 'cold' after being considerably impacted by lockdowns and loss of confidence across these markets.

The Middle East is experiencing a mix of tendering conditions. Riyadh was shown as 'overheating', with Doha and Dubai both 'warm' and Abu Dhabi 'lukewarm', while Muscat was described as 'cold'. Not only has the Middle East been heavily impacted by the loss of migrant labour due to the pandemic, but also faces ongoing political and legislative challenges that are impacting construction.

Some markets have cooled dramatically, with six markets named as being 'cold'. Half of those 'cold' markets are situated in Africa. All nine African markets have been described as 'lukewarm' or 'cold', impacted by the ongoing health and economic crisis the region is still facing. This has heavily impacted the construction industry in many markets and has resulted in construction sites operating at reduced capacity, building material shortages, rising construction costs, and weak private investment into new projects.

Moving forwards, 56 markets are expected to get 'warmer', with 29 'staying the same' and just five may become 'cooler'. There are three markets that are currently 'cold' and might cool down further. These are Gaborone, Harare and Nairobi, and are all in Africa. However, there are three markets in Africa that may warm up, highlighting intra-regional variability, mixed demand and polarised views to appropriate government policy.

Four markets threaten to overheat, with Geneva, Munich, Ottawa and Paris tendering conditions currently 'hot', and set to become 'warmer'. London, San Francisco and Sydney, along with 35 other markets may step up to become 'hot' from 'warm' as activity is set to increase. Many of these markets, and those potentially 'overheating', are amongst the most expensive to build in the world already. A transition to less competitive environments, and reduced supply chain availability, could lead to increases in costs.

As markets warm, we're likely to see more construction projects starting. So, with a significant number of markets in recovery and warming up, this should feed into higher levels of activity across the globe. In turn, as many markets compete for scarce resource, and respond to governments investment drive, inflationary pressures may well increase.

Inflationary pressures bite

Typically, higher price inflation occurs in hot or overheating markets. However, the unique situation that COVID-19 has presented has meant that higher inflation is being seen in warm, lukewarm and cold markets, partly due to labour and supply constraints.

In this year's survey, we asked our local experts to indicate how much construction costs had increased or decreased over 2020 and what they expected the movement would be over 2021, 2022 and 2023 which are set out in Figure 8.

Figure 8: Construction cost inflation, 2020, 2021, 2022 and 2023



Source: Turner & Townsend International construction market survey 2021

In 2020, there were 18 markets that experienced construction cost deflation and seven markets that had no inflation over the year. The uncertainty caused by COVID-19 saw many projects placed on hold and cancelled across the world, which quickly shrunk pipelines of work across many markets. With fewer projects underway, demand for construction resources declined and competition spiked, lowering prices.

While deflation occurred in many markets in 2020, several markets experienced high inflation. Eight out of the nine African markets had inflation of 5.0 percent or more, supported by the region's high reliance on imported materials, which subsequently pushed construction costs up over the year.

Looking at 2021, there are no markets expecting any deflation to occur, however, there are 11 markets that are expecting inflation of 10.0 percent or more during the year due to global supply chain bottlenecks and skilled shortages. Many markets are anticipating this to worsen over 2022, as construction activity ramps up, pushing inflation up further.

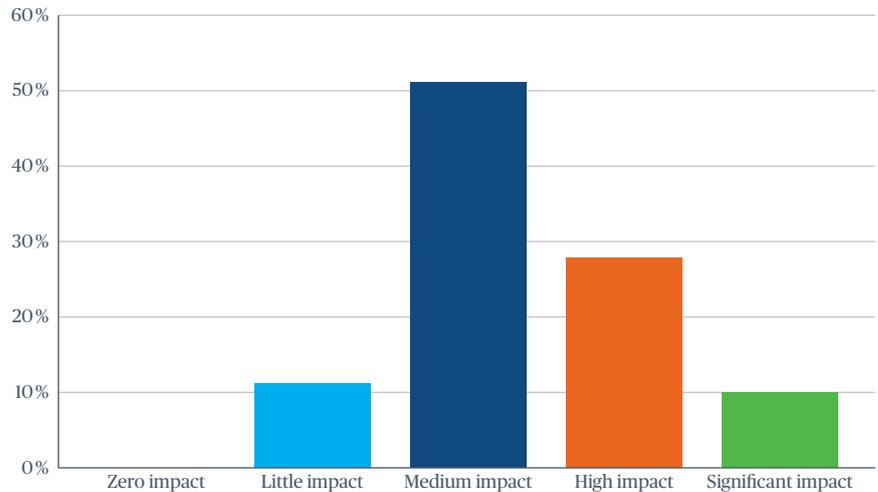
Supply shocks continue

One of the biggest impacts the COVID-19 pandemic has had on the construction industry, driving inflation, is its ripple effect across global supply chains.

Well over a third of our respondents said the pandemic has had a high or significant impact on their supply chains. Whilst most manufacturers have now resumed their operations, and supply chain networks have adapted to the changing conditions, new supply challenges are being faced in 2021.

There are several contributing factors that are constraining global supply chains for building materials. When layered on top of one another, they are creating a 'perfect storm', causing considerable price spikes in some building materials.

Figure 9: Impact of COVID-19 on supply chains



Source: Turner & Townsend International construction market survey 2021

Reduced capacity

The first key issue impacting material supply chains is that many manufacturers are still operating at reduced capacity in order to adhere to COVID-19 restrictions in their region. This means that production is not yet back to pre-pandemic levels, creating shortages.

We anticipate that production capacity will increase relatively quickly as staff return to work from furlough or part-time working arrangements and social distancing measures are eased. However, there is likely to be a degree of supply chain 'scarring' and it will take time to rebuild production capacity, especially to replace production facilities that have been closed down.

With travel still restricted, countries relying on heavily migrant labour forces for their construction projects will continue to experience labour shortfalls as demand rises.

Rising demand

The next layer is the growing level of construction activity we are seeing in many markets, due to government stimulus and changed consumer preferences from the pandemic.

Public infrastructure investment has surged, as have requirements for digital and data services, particularly e-commerce, fuelling demand for new data centres and distribution facilities. The unavailability of services and travel has seen consumers invest more into new housing and home renovations. As a result, global demand for building materials has rapidly increased over the first half of 2021.

Shipping delays

The last layer is the surge in freight demand, driven by an increase in e-commerce and the restrictions on travel, which is resulting in significant global shipping delays. There are record volumes of freight moving through ports around the world and this is resulting in severe port congestion, surging freight costs, equipment shortages and higher priced goods.

In some cases, the cost of shipping containers has quadrupled, and the issue is being exacerbated by delays in offloading ships in port due to COVID-19 restrictions. A shortage of shipping containers is also impacting on delivery times and availability of materials.

Material price escalation

The impact of these global supply constraints has been evident in the building material cost data collected in this year's survey.

Structural steel beams, reinforcement bar, softwood timber and copper pipe have all risen sharply, with an increase of up to 40 percent (year-on-year) being observed in some markets.

Looking ahead

We anticipate that by mid-2022, these surging global costs will ease and begin to correct. As the COVID-19 vaccine continues to be rolled out, restrictions will ease, meaning manufacturers will be able to increase their operating capacity and increase the supply in the market.

Materials: a global power shift

Material availability has undoubtedly recast the client and supplier dynamic and there is currently a shift in power from client to supplier in some markets.

Materials are no longer commodity products readily available on demand. There are fewer suppliers and manufacturing facilities in some countries than before the pandemic, prices are volatile, and delivery is not always guaranteed.

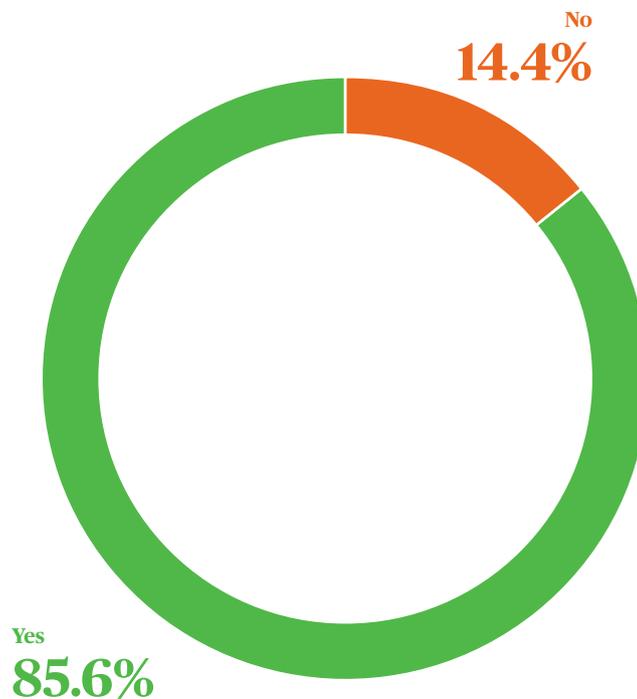
To mitigate against these risks, proactive clients are developing new supply chain strategies, forging new relationships and agreeing enlightened trading terms with suppliers. In our survey, 85.6 percent said clients were looking to diversify their supply chains to build resilience.

Some clients are widening their geographic reach when procuring materials and equipment. If they previously sourced locally, their model may have moved to sourcing in a specific regional market. Similarly, if they previously operated a regional model they may have pivoted to a global sourcing strategy.

In this unpredictable market, clients are rapidly understanding how much their brand equity counts with suppliers in specific markets.

A business and what it represents to supply chain partners may be understood and carry weight in one country, but it may have considerably less equity and understanding in another region.

Figure 10: Are clients looking to diversify their supply chains as a result of COVID-19?



Source: Turner & Townsend International construction market survey 2021

Regaining buying power

Global clients have been able to regain some buying power by incentivising suppliers and creating gateways for them into new markets. These businesses are increasing their purchase frequency to achieve volume discounts and also maintain competition through a wide tender pool.

In an effort to deliver security of supply, these clients are committing to multi-year volumes with preferred suppliers and are fixing their rates. There is also a trend in some regions where clients are actively absorbing more risk by taking on responsibility for the cost of material logistics.

Allied to these steps, some intelligent clients are using digital tools to help make informed procurement decisions. When digital tools are used correctly, they can help analyse data across supplier selection, location of purchase, volume discount thresholds and batching of purchases over wide geographies to

achieve best price points. Platforms such as reverse auction tools are well-suited to negotiating competitive terms for commodity-type materials, where sources of supply can be easily switched. A long-term 'green' lining of this may be a behavioural shift with a greater forensic environmental focus from clients on where materials come from.

Clear specifications, up-to-date market intelligence and appropriate supply strategies are always important, but those organisations that have these fundamentals well established will prosper in this challenging environment.

The most expensive global construction markets

To identify the most expensive place to build, the average cost in USD of four different building types of construction were assessed:

- CBD Offices – Up to 20 floors medium (A grade)
- Large shopping centres including malls
- Large warehouse distribution centres
- Townhouses – medium standard

Tokyo has taken the lead for the first time in this year's survey, driven by the market's robust growth and extensive pipeline of real estate and infrastructure projects, pushing up demand for construction resources.

Following Tokyo are Hong Kong, San Francisco and New York, which are markets that have historically sat among the top ten positions in the survey.

New to the top ten in this year's survey are Geneva, Boston and Los Angeles, which are all markets that have generally high labour costs for construction.

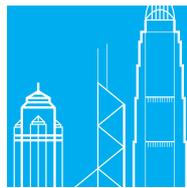
London has moved down the list from 3rd to 8th position since our 2019 survey, largely due to the addition of new markets. But also because of the combined effects of Brexit and COVID-19, placing many projects and programmes on hold, restricting demand for new work over 2020.

It is also worth noting that the method we use to compare construction costs for the most expensive places to build is highly dependent on the exchange rate. As all costs are converted into USD, the strength or weakness of a currency against the USD will have an impact on the average cost of the four building types and the overall ranking.

Ten most expensive places to build



1 Tokyo



2 Hong Kong



3 San Francisco



4 New York City



5 Geneva



6 Zurich



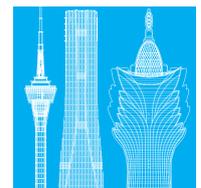
7 Boston



8 London

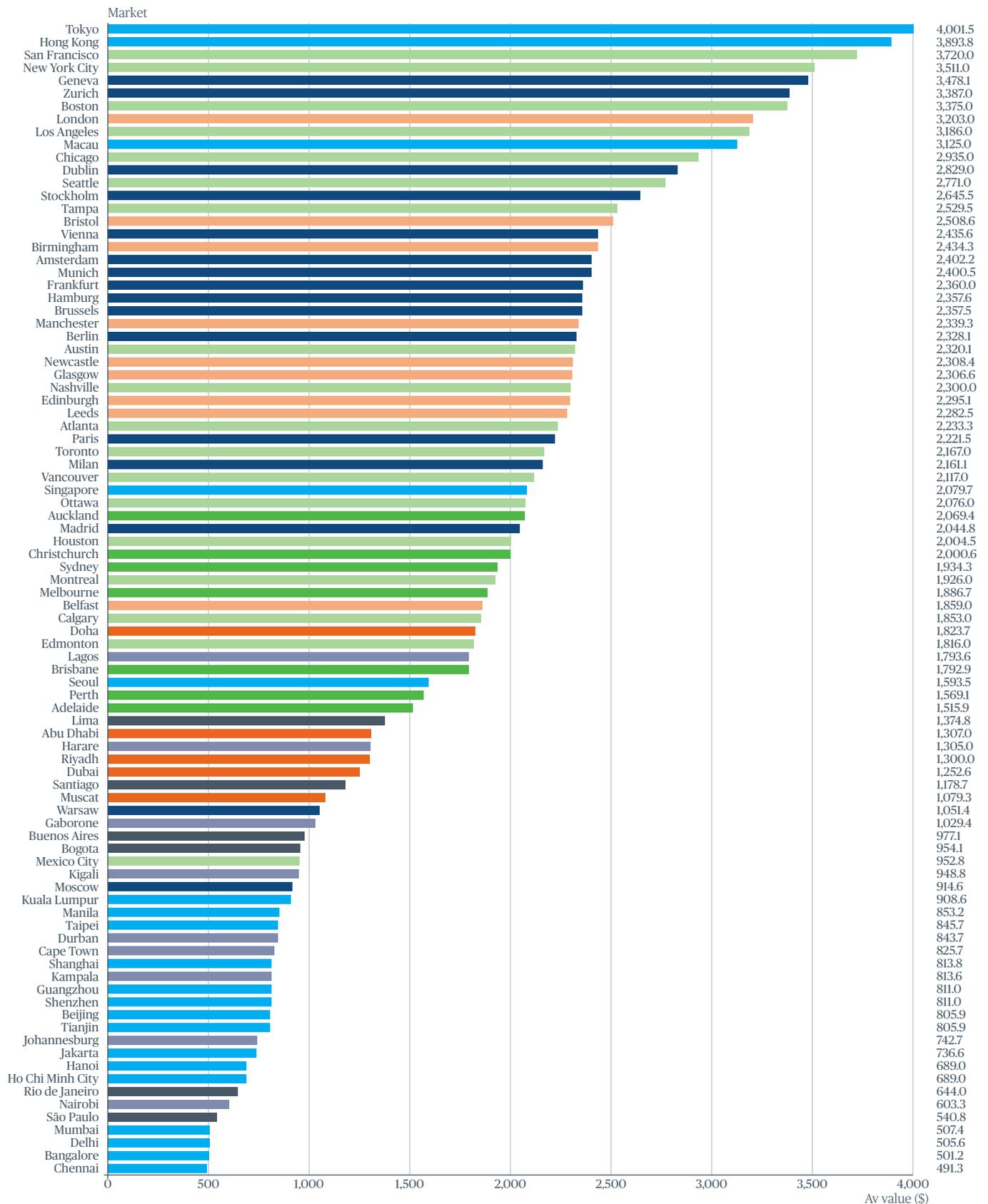


9 Los Angeles



10 Macau

Figure 11: Most expensive place to build (m2), average cost of four building types in USD



Source: Turner & Townsend International construction market survey 2021

Construction labour costs

We asked our respondents to provide labour rates for their markets. These costs are the costs to the employer, not just the wage, which means that they include travel expenses, pension contributions, health insurance and any other benefits. In some cases, this can bump labour costs up substantially above the wage. These are visualised in figures 12 and 13 based on the average wage across each market, which also displays the average across each region.

Evidently, there is still a significant disparity between construction wages around the world. North America has the highest average in construction wages, with New York and San Francisco’s average wage at US\$109 and US\$104 respectively. The region has also seen relatively strong growth in construction wages for some markets, with San Francisco’s average wage increasing by 15.6 percent since our 2019 survey. New York and Chicago have also seen the average wage for construction increase by 7.0 to 8.0 percent since 2019.

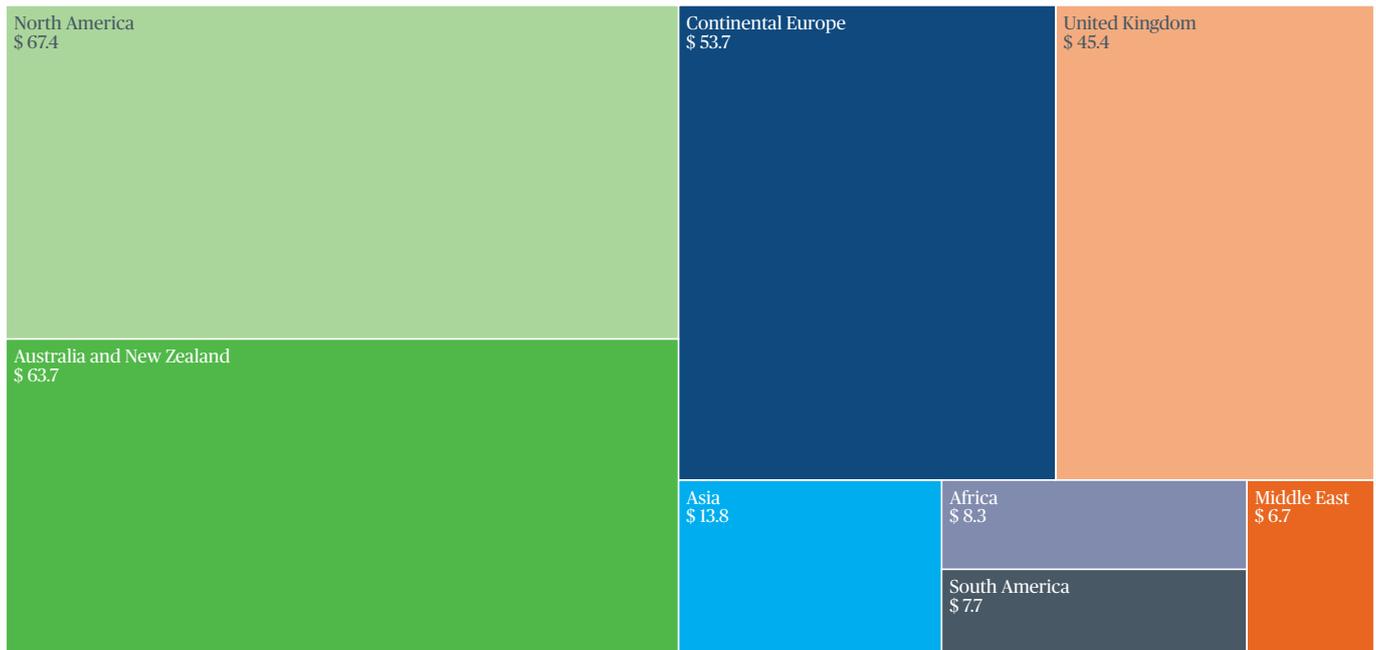
In Australia and New Zealand, Melbourne’s average construction wage increased from US\$64 to US\$73 from 2019 to 2021, while Auckland’s average wage increase from US\$39 to US\$47 over the same period, which is nearly a 20.0 percent increase. Both markets have had a high volume of construction activity underway over the past two years, which has driven up construction wages.

The average wage for Continental Europe was US\$53 and US\$45 in the United Kingdom. Out of the markets that we surveyed in Continental Europe, Amsterdam had the highest average wage at US\$54, followed by Paris with US \$52, then Munich and Dublin with US\$62 and US\$46, respectively. Since our 2019 survey, the average construction wage for Continental Europe has increased from around US\$42 to US\$53, and the UK from around US\$38 to US\$45.

Asia, Africa, the Middle East, and South America have significantly lower wages, with many markets being classified as developing economies. Typically, these regions have low-cost labour, with the exception of Hong Kong, Tokyo and Singapore, which are mid-range.

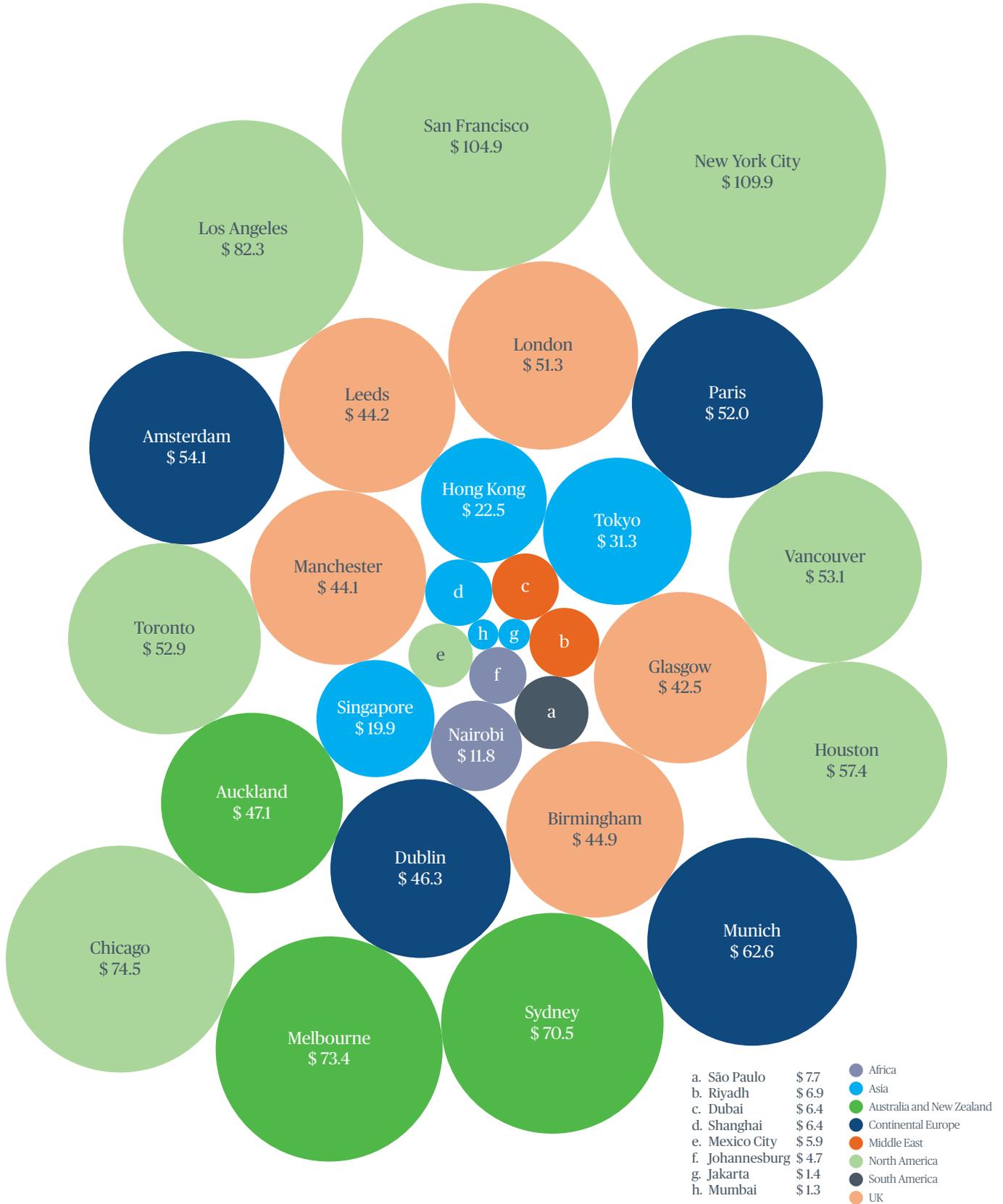
Consideration also needs to be given to education, skill level and productivity when comparing construction costs, as this can vary significantly between high-cost and low-cost labour markets. In high-cost markets closer attention is paid to labour productivity and will often have higher investment into labour-saving machinery. Whereas, in low-cost labour markets, cheap labour often means it is more cost effective and efficient to have more labour employed on a project.

Figure 12: Average hourly wage (USD) by region



Source: Turner & Townsend International construction market survey 2021

Figure 13: Average hourly wage (USD) by market



Source: Turner & Townsend International construction market survey 2021

Calculating the effect of exchange rates

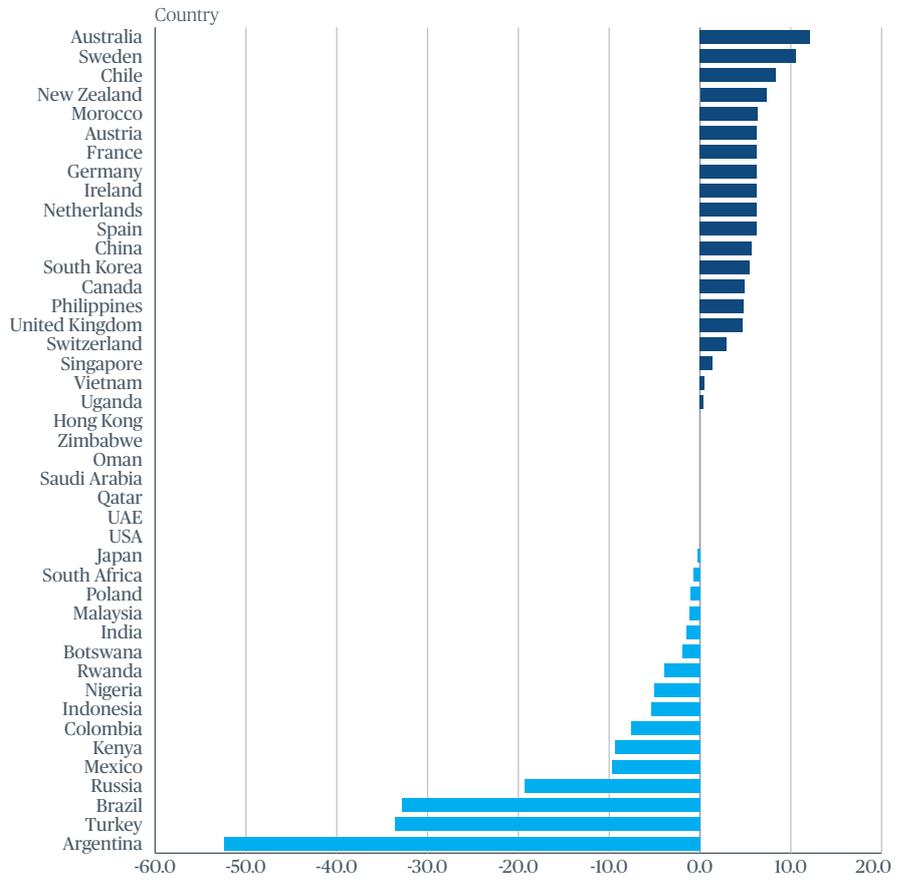
The analysis of this survey's results has been conducted by converting local currencies to USD. By converting costs into a single currency, a simple and direct comparison can be made between markets. However, this also meant that any depreciation or appreciation of a currency impacts the overall construction cost when converted into US dollars. Therefore, consideration needs to be given to the exchange rate, when drawing comparisons between markets.

Fluctuating exchange rates will also affect the cost of imported materials and equipment used in construction projects, which can significantly add to project costs. Where a local currency has depreciated against the currency of the supplier country, the cost to purchase these imports will be higher and will push up construction costs.

Since the start of the COVID-19 pandemic, there has been considerable volatility in exchange rates, as currencies have rapidly appreciated and depreciated against the US dollar. The US dollar itself has also weakened against many major trading economies over 2020 and remains heavily influenced by the pace of the vaccine roll-out and the country's economic recovery.

Figure 14 shows the impact of exchange rate fluctuations between 2020 and 2021.

Figure 14: Exchange rate movement, 2021 vs. 2020



Source: xe.com



Skilled labour shortages

One of the most significant impacts that the COVID-19 pandemic has had on construction markets is on the availability of construction labour. International border closures have meant that imported labour has not been available or has been very limited. This is having a significant impact on construction markets that depend on migrant workers to sufficiently meet market demand.

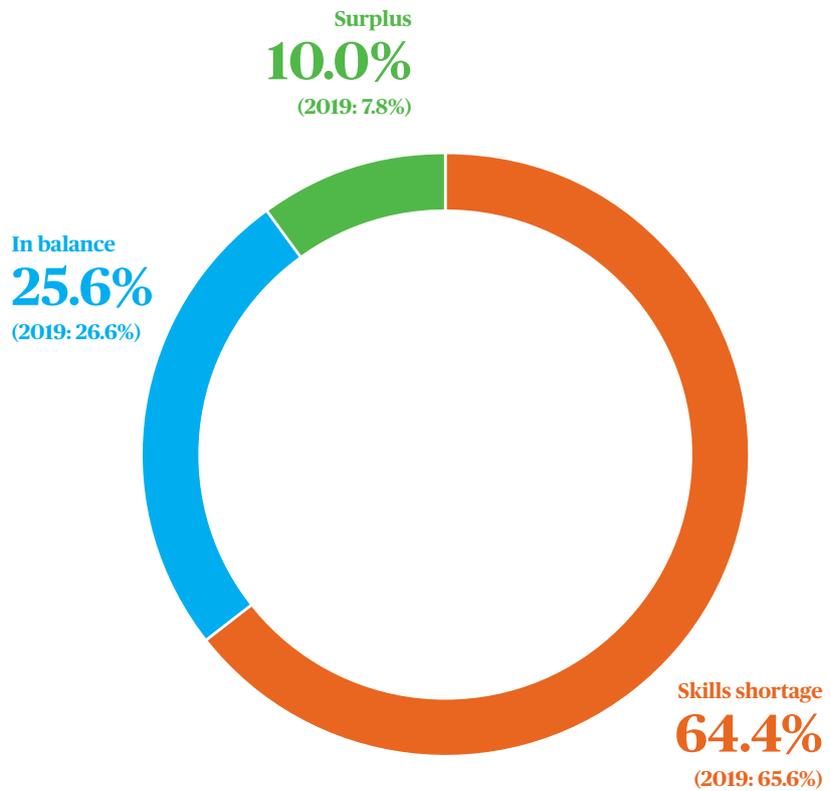
We asked respondents to describe the availability of skilled labour in their market as 'surplus', 'in balance' or 'skills shortages'. Skills shortages were identified in 58 markets, while 23 markets described labour availability as 'in balance', and 9 markets identified a surplus of labour.

Markets that indicated there was a surplus of labour were mostly in Africa and South America, where these region's pipelines of construction work have been heavily impacted by the pandemic. Construction expenditure into new projects is still subdued, leaving a surplus of construction workers competing for fewer projects.

Many markets experiencing skilled labour shortages is due to the loss of migrant labour, as mentioned above. Labour resources have been considerably displaced since the start of the pandemic when many migrant workers left their region of work to return to their home country at the start of the pandemic.

Of these skilled labour shortages, Group 1 Tradesman (e.g. plumbers, electricians) were the most in demand. This was predominant across the United Kingdom, Australia and New Zealand, North America and Europe. The Middle East, South America and Asia, all reported a much higher shortage of general labour.

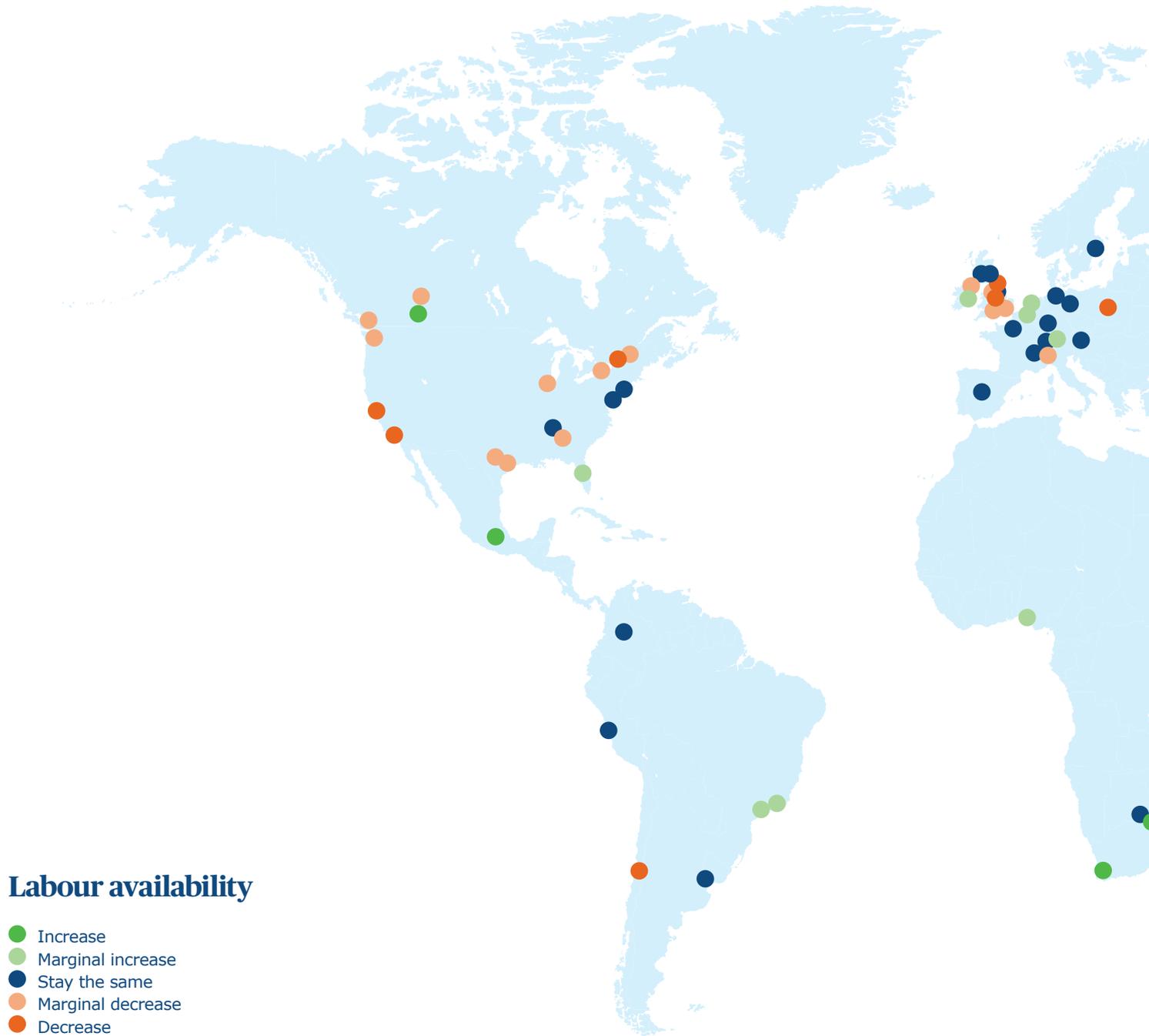
Figure 15: Availability of labour



Source: Turner & Townsend International construction market survey 2021

Surplus	In balance	Skills shortage
Austin	Abu Dhabi	Adelaide
Bogota	Atlanta	Amsterdam
Durban	Belfast	Auckland
Harare	Brisbane	Bangalore
Houston	Brussels	Beijing
Jakarta	Buenos Aires	Berlin
Lagos	Christchurch	Birmingham
Lima	Doha	Boston
Nairobi	Dubai	Bristol
	Dublin	Calgary
	Hanoi	Cape Town
	Ho Chi Minh City	Chennai
	Kuala Lumpur	Chicago
	London	Delhi
	Macau	Edinburgh
	Manchester	Edmonton
	Nashville	Frankfurt
	New York City	Gaborone
	Riyadh	Geneva
	Santiago	Glasgow
	São Paulo	Guangzhou
	Stockholm	Hamburg
	Vancouver	Hong Kong
		Johannesburg
		Kampala
		Kigali
		Leeds
		Los Angeles
		Madrid
		Manila
		Melbourne
		Mexico City
		Milan
		Montreal
		Moscow
		Mumbai
		Munich
		Muscat
		Newcastle
		Ottawa
		Paris
		Perth
		Rio de Janeiro
		San Francisco
		Seattle
		Seoul
		Shanghai
		Shenzhen
		Singapore
		Sydney
		Taipei
		Tampa
		Tianjin
		Tokyo
		Toronto
		Vienna
		Warsaw
		Zurich

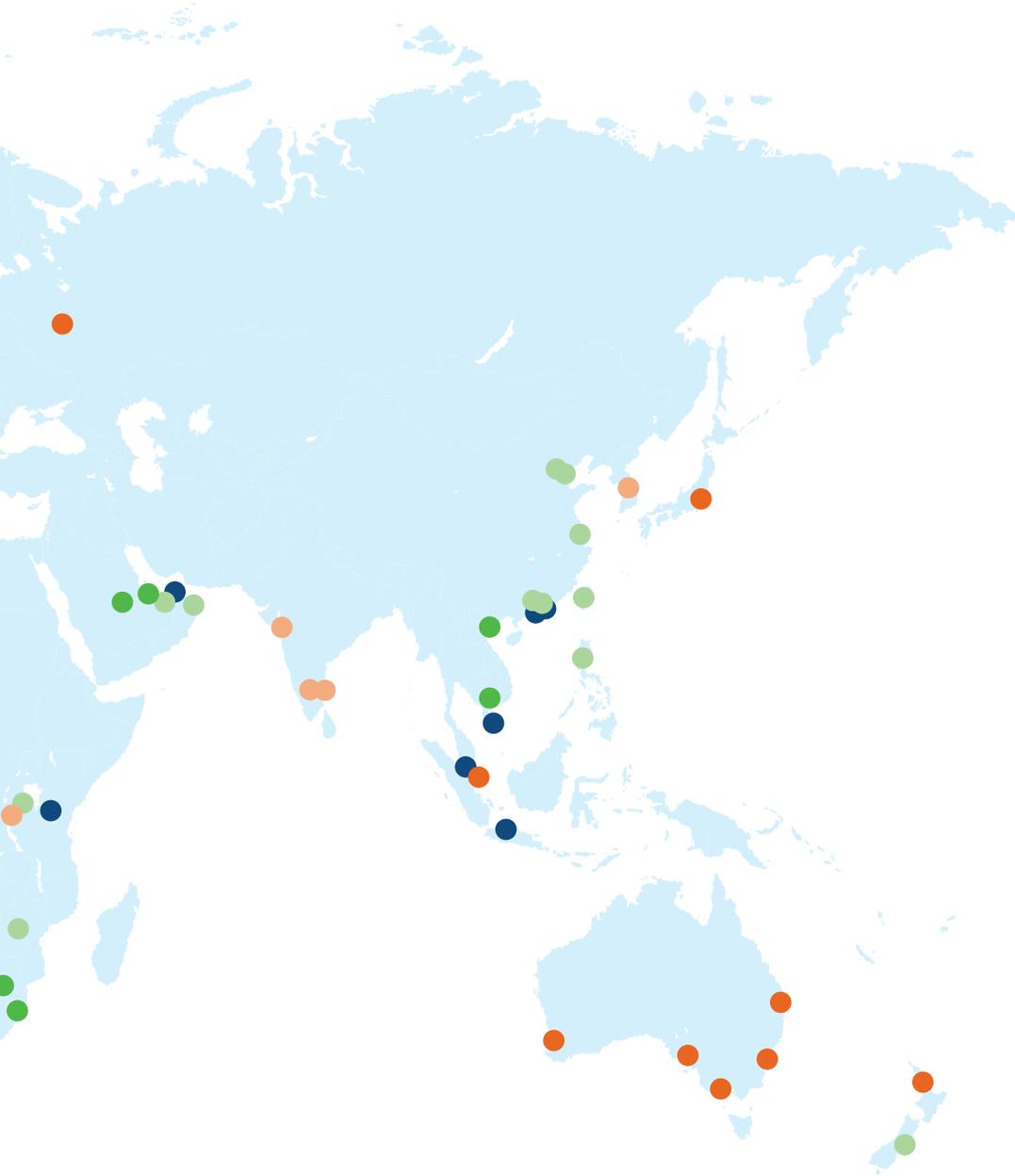
Labour availability change over the coming three years



Labour availability

- Increase
- Marginal increase
- Stay the same
- Marginal decrease
- Decrease

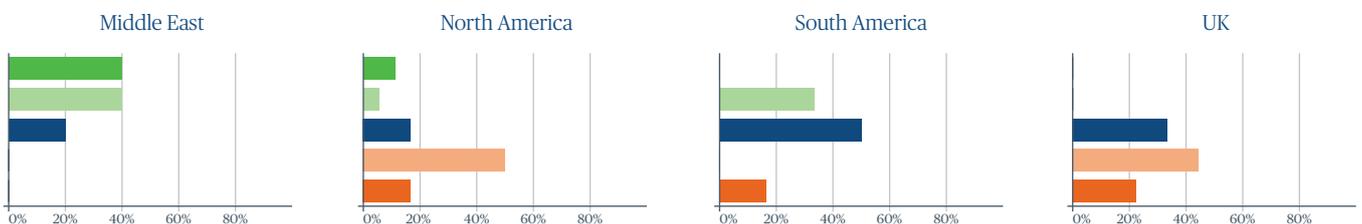




We also asked our respondents to gauge labour availability over the coming three years to understand where shortages may arise, or surpluses could emerge. It was interesting to see that potential future shortages were more acute in developed markets, which could be considered as more mature than emerging markets. This is both in terms of economic development, but also in the age profile of employees.

Nearly all locations in Australia and New Zealand and many markets in North America are expecting skills availability to 'decrease'. In the UK, where over two thirds of markets expect skills to 'decrease', or 'marginally decrease', there are many more workers approaching retirement than those entering the industry, which may contribute to a considerable skills shortfall.

The availability of labour is set to increase in the Middle East, Africa and parts of Asia, where current shortages exist, partially driven by intra-country migration. Existing shortages cover many types of trades, but many are general labourers and pressures may be alleviated once borders open further encouraging freedom of movement.



Preliminaries and margins

In the survey, we asked our respondents to indicate what typical margins and preliminaries were in their market in 2021. Preliminaries often vary significantly from market to market due to the variances in costs associated with different types of construction, the complexity of the site, and the local construction standards.

Survey participants provided typical preliminaries on a medium commercial job (5,000m² GFA) so as to understand what difference in preliminary costs there was on the same type of project across different markets.

When comparing the same project type across markets, values range from 3.0 percent in Mexico City, to 15.0 percent in several locations in Asia. On average, the United Kingdom and Australia and New Zealand have the highest at 13.6 percent and 13.3 percent respectively, while South America and Africa are at the lower end at 9.3 and 9.1 percent respectively.

We also asked our respondents to provide typical profit margins on a medium commercial job (5,000m² GFA). Several factors can influence profit

margins across regions, including tendering conditions in the local market, risks associated with the project, as well as the business culture within the market. This can result in fluctuations in margins over time.

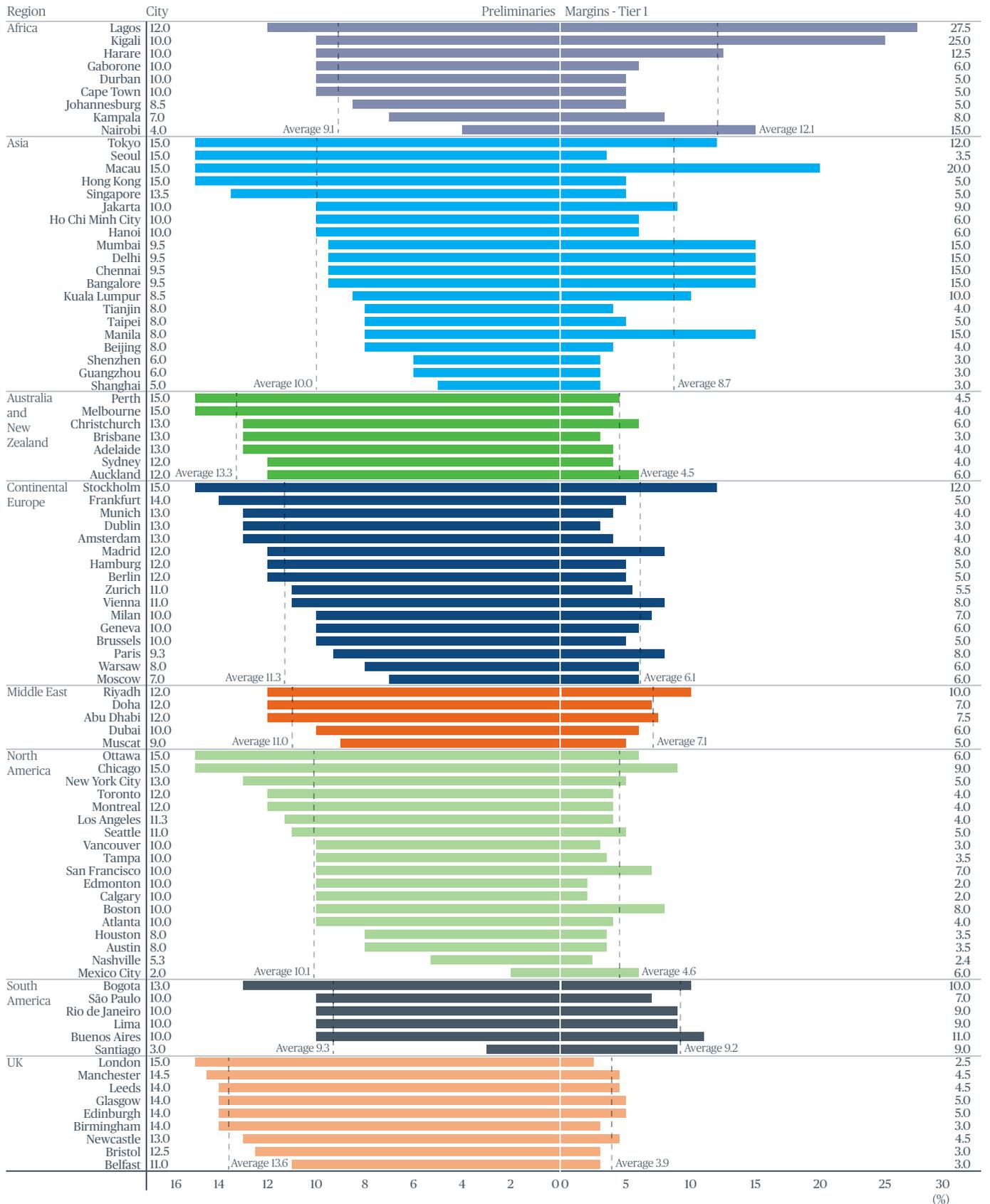
Currently, the United Kingdom has the lowest margins at 3.9 percent, followed by Australia and New Zealand at 4.5 percent and North America at 4.6 percent. Europe also has fairly low margins, at 6.1 percent. Shallower margins are typical for these regions due to high competition for projects. Often in these markets, contractors will look to increase profit through other means, such as variations.

Africa has the highest profit margins at 12.1 percent, which has been typical for the region in previous years. South America and Asia are also towards the higher end at 9.2 and 8.7 percent respectively, while the Middle East are at the midpoint at 7.1 percent. These markets typically have higher profit margins, as there is generally less competition in the market for these projects, which means higher profit margins can be attained.

Whilst these margins are typical of what we have seen in previous year's surveys, we also received reports of margins being heavily reduced over 2020 at the start of the pandemic. Due to the significant reduction in projects caused by uncertainty, competition for the limited work was extremely high, resulting in considerable margin reductions to shore up builder's pipeline of work.



Figure 17: Preliminaries and margins



Source: Turner & Townsend International construction market survey 2021

Tokyo: land of rising opportunity and cost

Jin Parisien, Associate Director at Turner & Townsend, explores why Tokyo is the most expensive construction market in our 2021 global rankings.

Japan's former Prime Minister, Shinzo Abe stood on the steps of the New York Stock Exchange in late 2013 and told the world to 'buy my Abenomics'. It was the start of a programme of major economic reforms, new foreign investment and global positioning which has seen Japan quietly remodel itself – a process of reinvention which continues today under the premiership of Abe's successor, Yoshihide Suga.

While longstanding economic issues prevail, including deflation and the world's fastest ageing population, Japan remains the world's third largest economy with a population of 126 million and a reputation for sophisticated technological prowess.

Long overlooked against other Asian neighbours in the 1990s and during the first part of this century, Japan and Tokyo are once again being seen globally as promising investment propositions. Well-educated workers, excellent public transport systems and established institutions make the country a safe and attractive place to invest.

As the world prepares to celebrate the Tokyo Olympics this summer, the nation looks on track to join the economic recovery now gaining pace in east Asia.

Drivers of growth

There are a number of market and government policies currently driving decisions. Private and international interest is balanced and supported by the government's own spending, with Japan investing US\$2.2tn – a figure which remains the highest of any nation.

Global investors including the US tech giants are especially interested in real estate as Japan offers the potential for significant growth in e-commerce, given consumer take-up remains behind China and Europe. Similarly, a stable power grid and proximity to other Asian hubs is fuelling significant growth in a buoyant data centre market.

Prime Minister Suga's ambition to attract 60 million tourists by 2030 and double

the size of the industry is driving investment for real estate and new infrastructure. A swathe of projects are moving forward from new integrated resorts and large hotel developments (including the recently announced teardown and rebuild of the renowned 'Imperial Hotel'); train station upgrades at Shibuya, Toranomon and Tokyo stations; new stadiums such as Nagoya's Aichi Smart Arena; and new cultural facilities ready for Japan to host EXPO in 2025.

Japan's commitment to the Paris Agreement and net zero emissions by 2050 is another catalyst for new investment in renewables such as offshore wind, as well as reopening of some of its existing nuclear power plants.

The country remains the world's second-largest automotive exporter and while some manufacturers are rumoured to be looking at establishing EV battery plants in Europe, several of its marques are rebalancing their global footprint towards domestic manufacture once again.

The pipeline of real estate and infrastructure projects, together with the uniqueness of the Japanese construction industry, has seen Tokyo become the number one most expensive place to build in the world.

Against this backdrop, what do real estate clients embarking on construction projects in Tokyo need to consider? What steps should they take to mitigate rising prices in order to set up projects for success?

Full order books

Firstly, clients must understand the resource challenges that are driving construction price inflation. With only five major contractors in the Japanese market, Olympic Games construction meant that some firms were not able to take on other projects, with many long-planned schemes only now coming on stream.

Based on demand and current pipeline, contractor order books are full for the next four to six years and they are therefore able to command >10 percent

margins – significant figures compared to margins of 1.5–2.0 percent in some parts of the western world.

The drive to net zero and infrastructure projects around offshore wind in particular will further squeeze capacity. While there will be international contractors entering the market to deliver these renewable projects, they are likely to form joint ventures with Japan's five main contractors – so resource challenges will still prevail.

Looking beyond cost per sq ft

While clients and real estate investors need to benchmark costs, they should ultimately move beyond a simplistic cost per sq ft methodology in the Tokyo market. A broader understanding is needed of what costs have been in the past, and where, based on capacity and resource availability, they could go in the future.

Comparison with other global cities is not always useful given the unique local market dynamics. Even within the Japanese market, prices can vary significantly depending on the contractor, landlord, management company and construction methodology.

Labour costs are also not a barometer. While Tokyo labour costs are lower at an average of US\$31.3 per hour compared to US\$109.0 per hour in New York, the volume of man hours typically invested on a Japanese construction project makes the total labour cost higher than that of a similar-sized project in other global cities such as San Francisco and Geneva, which sit within our ranking of the top five most expensive places to build.

Navigating complexity

Because of these nuances, there is a real need for clients to engage cost managers early before project budgets have been agreed. The complexity of the market requires a cost and programme manager with a deep understanding of the Japanese industry to work with the client's real estate team to define the budget. For example, the cost of construction logistics in Tokyo remains a



“Even within the Japanese market, prices can vary significantly depending on the contractor, landlord, management company and construction methodology.”

Jin Parisien, Associate Director

\$2.2tn

Government stimulus

>10%

Contractor's margin

15-20%

Seismic uplift

key factor in defining a realistic budget. Some projects in densely populated central Tokyo should allow up to 30 percent of the build cost to be from the logistical and access challenges of working in a confined urban hub.

As construction in every market in the world grapples with material supply challenges, Japan and Tokyo are clearly not immune to material shortages and price inflation. Japanese buildings, particularly tall towers, are largely built from steel due to the need to protect against seismic activity. Recent increases in permitted tall building heights in Tokyo mean steel is hotly in demand for new skyscrapers.

As steel fabrication must conform to the Japan Industrial Standard (JIS), this often means steel must be locally sourced from Japanese steel fabricators

who meet these specifications. This typically adds a further 15–20 percent onto steel costs, which can't be mitigated against through alternative sourcing.

Counting the cost of offsite

Like all markets, offsite construction offers an opportunity in Japan to drive productivity and reduce reliance on site labour. With an ageing workforce and capacity challenge, greater automation and offsite manufacturing is vital, however, like in many other countries, modern methods of construction in Japan still remains in its infancy.

Yet new approaches will not be the silver bullet to tackling cost in the short to medium term. In Japan, perhaps more so than other developed nations, new technologies will always come with higher costs during the initial implementation

stages due to the need to upskill and retool a contractor pool that is wedded to traditional approaches and that has limited incentive to change, given the current abundance of demand and their continued monopoly.

Investing in the land of opportunity

The launch of Abenomics was the starting gun for new foreign investment in Japan. In an Olympic year, the investor race in Tokyo looks set to continue.

Tech occupiers are investing, the Bank of Japan is pouring money into the economy and the country is preparing for the infrastructure and industrial and commercial real estate it needs for a net zero world. The challenge for clients who are embarking on projects in the buoyant Tokyo market is to realise the opportunity and get them over the finishing line, on time, and on budget.

Industrialising the global retrofit market

By Richard McWilliams, Director, Sustainability UK at Turner & Townsend

With the international community increasingly focused on climate action in the countdown to COP26, the global real estate sector is coming under an intense spotlight.

As one of the most significant contributors to global carbon emissions, the way that the real estate industry constructs, manages and operates built assets is a central focus for governments and policymakers in the race to reach net zero.

Yet, while a lot of investment and innovation has focused on reducing carbon in new-build construction, this is only part of the problem. Given that 80 percent of the building stock we will have in 2050 has already been built, battle lines should arguably be drawn with greater emphasis on reducing the daily operational emissions created by inefficient existing properties.

Retrofit is therefore key to achieving net zero carbon (NZC) with its focus on optimising the energy performance of existing assets. However, our International construction market survey points to a nascent retrofit industry plagued by low maturity, risk and poor practice.

Without urgent intervention at all levels, the retrofit market could overheat within the next five years, leading to price escalation, delays and poor performance, fuelled by a shortage of green materials and skills.

A transformational global opportunity

Net zero is a singularly global challenge and requires an “all-in” approach across nations. The drivers for retrofit are similarly global, with many nations experiencing high levels of energy wastage, fuel poverty and an increase in excess deaths due to overheating or underheating as climates change.

However, in our survey most regions reported that fewer than 20 percent of projects have a commitment to net zero carbon and fewer than five percent involve retrofit. Even within this low base, 48 percent stated there was not enough capability in their local supply

chain to deliver on carbon reduction ambitions.

In terms of the retrofit journey the construction sector needs to embark on, parallels can be drawn with the rise of the health and safety agenda over the past 30 years. However, the retrofit market cannot take decades to mature – a great leap forward is needed within the next five years to mitigate against risk, meet demand and unlock a sizeable opportunity.

In the United States alone, more than US\$279bn is set for investment in retrofit across the residential, commercial, and institutional market segments, according to The Rockefeller Foundation. This investment could yield more than US\$1tn of energy savings over ten years, equivalent to savings of approximately 30 percent of the annual electricity spend in the US.

All major markets have the opportunity to make huge cumulative economic, social and climate gains from a well-orchestrated retrofit programme across aged real estate assets.

Building a scalable model

Rapidly scaling up retrofit activity requires radical interventions and systemic change. Despite a recent uptick in activity in some key markets, typically focused on upgrading public sector stock, the retrofit sector still has the hallmarks of being a ‘cottage industry’ that is small scale, high intensity and decentralised.

Industrialising the existing market without first transforming the way it operates would be a strategic misstep. The current UK retrofit sector is subsidy dependent and focused on small-scale, bespoke solutions on individual homes that risk delivering limited fuel or carbon savings, with no clear return on investment.

We need to break this cycle, creating a simple and desirable retrofit product that is both business and consumer focused. To play its part in addressing the climate crisis, retrofit needs to become a fully self-funding market with a programme-led, lean and digital delivery model.

Bridging the viability gap

The UK arguably leads the world with its retrofit accelerator programmes for homes and workplaces championed by the Mayor of London and focused on public sector assets. The local authorities, housing associations, academic and health institutions benefitting from the programmes have a clear interest in delivering investment that will reduce bills for residents and occupiers and extend the lifetime of their properties. As long-term owners, these institutions and not-for-profit businesses are able to offset upfront costs.

These programmes are still stimulated by subsidy – but in a targeted way that is acting as seed funding to build retrofit expertise and capacity which will in time bring down costs. The recent formation of a new national Innovation Partnership effectively combines the buying power of public asset owners and builds a stronger bridge with the retrofit supply chain. This is already driving economies of scale and incentivising suppliers to bolster retrofit capacity.

In time, the ambition for these initiatives is to bridge the viability gap, lowering barriers to entry into the market so as to encourage a wider group of asset owners to invest in a retrofit product that is commercially attractive, self-financing and environmentally sound.

Exporting expertise

For national industries and governments seeking to promote green industrial strategies, the opportunity to not only build but also export expertise is significant. Very few markets have clear plans in place around how to retrofit legacy stock at pace and scale.

In the UK, a centre of excellence has recently been established to further accelerate the sharing of retrofit knowledge and expertise beyond the capital.

The European Union (EU) recently announced its ‘renovation wave’, whereby it is putting significant public subsidy into the retrofit of 35 million buildings over the next ten years, creating more than 160,000 new jobs in the construction



“It is imperative that we leverage the growing demand for, and development of, a new global retrofit market as a vehicle to create a truly 21st century construction sector.”

Richard McWilliams, Director

sector. The scale of this investment could fast-track the EU to a leadership position in the retrofit market, giving the bloc invaluable exportable skills and knowledge.

Start of the green industrial revolution

We face an unrivalled opportunity to move towards a virtuous circle of retrofit investment that will ultimately help generate a 'gold standard' model for retrofit, which can be rolled out across global regions.

Market adoption of new practices and upskilling workers can typically take multiple decades, but when it comes to net zero, we do not have the luxury of time. We are set to see an exponential rise in demand for retrofit projects in the coming years from the current low base – growing in both complexity and scope.

To meet this requirement, it is imperative we rigorously apply construction sector best practice.

Many of the areas that have been a focus for the construction sector for decades – digital design and build, off-site manufacture and precision engineering – will be critical to the successful delivery of retrofit programmes. BIM, for example, provides essential modelling to build a clear picture of whole-life carbon impacts.

Retrofit is a rare, greenfield opportunity for our industry that is driven by a critical and socially motivated purpose. It is therefore our collective responsibility to use retrofit as a catalyst for a 'green industrial revolution' – which will help our market, clients and future generations to thrive.

<20%

Of projects have a significant commitment to NZC in most regions

85%

Expect NZC commitments to increase within three years

69%

Already report skills shortages for green collar jobs

48%

Say there is not enough capacity in their local supply chain to meet carbon reduction ambitions

Case study

The Greater London Authority's Retrofit Accelerator programmes are breaking new ground, as part of the Mayor of London's ambitious agenda to make the capital a zero-carbon city.

The programmes, part-funded by the European Regional Development Fund, are set up to channel sources of funding and provide expertise for the comprehensive retrofit of homes and workplaces - making them more sustainable, saving carbon and reducing energy bills.

Director Richard McWilliams is leading our role, responsible for engaging organisations in the initiative and coordinating a world-leading technical supply chain to deliver it.

Africa

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With the exception of Zimbabwe, held back by hyperinflation, drought and recession, and a stagnant South Africa, much of Africa saw solid economic growth in 2019. But COVID-19 has hit the economies of the world's second largest continent hard, albeit unevenly.

IMF data shows Kenya, Nigeria, Rwanda and Uganda experienced relatively small falls in GDP in 2020 given the scale of the crisis, thanks mainly to strong underlying economic momentum. South Africa and Botswana, by contrast, saw much higher numbers of COVID-19 cases and, along with Zimbabwe, took hits of around 8 percent to GDP, as the pandemic amplified pre-existing economic weaknesses.

In April 2021, the IMF forecast that Rwanda, Kenya and Uganda would this year see solid annual growth averaging 6 percent, their economies picking up as the pandemic fades. But uncertainties remain with the region experiencing another wave of COVID-19 impacting economic activity. First-dose vaccination rates in May 2021 were below 2 percent in most African nations, with vaccine supplies limited and the global Covax initiative struggling.

Construction sector performance

COVID-19 disrupted construction markets in Africa more than elsewhere, leaving most markets running lukewarm or cold, and many observers expecting the continent to take at least two years to return to pre-pandemic levels of output.

However, the more buoyant countries of those surveyed, Kigali (Rwanda), Kampala (Uganda), and Lagos (Nigeria), expect to gain momentum, particularly Rwanda. The latter was booming pre-pandemic with its open market attracting strong private investment and complementing already healthy public spending. Nigeria, on the other hand, may find lower oil revenues a drag on its economic recovery. Meanwhile, the cold markets in Harare (Zimbabwe), Gaborone (Botswana) and Nairobi (Kenya) look set to cool further.

Other challenges dog markets in the region, including red tape, increasing contractor insolvencies, lack of confidence, uncertainty, rising costs and an excess of contractors. Meanwhile, the divergence in growth rates between warmer and cooler markets are creating growing pockets of both labour shortages and surpluses.

Encouragingly, labour availability is expected to increase rather than decrease over the next three years. However, build costs have risen sharply in many markets, often topping 10 percent in 2020, with a similar pattern expected in 2021. Build cost inflation appears to be higher in Africa than in other regions.

Top-performing sectors

The pandemic did little to shift the hierarchy of top-performing sectors in the region. Housing, transport, data centres, and the industrial, manufacturing and distribution sector continue to attract most investment.

Increasing digital adoption is fuelling rising data centre demand, but a technical skills gap is leaving the data centre industry stretched. As hyperscalers and overseas providers focus on expanding into Africa, growth forecasts for the data centre sector look more promising.

Health and education have risen in importance at the expense of mining and major mixed-use developments.

This changed pattern of projects reflects reduced confidence within the private sector to invest in new projects and a fall in foreign investment. Ultimately, this increases the reliance on state funding to stoke the recovery.

Progress of the environmental agenda

Africa presents a mixed picture on sustainability. Only South Africa has a policy commitment to zero carbon, though it generates a third of carbon emissions in a continent that accounts for less than 4 percent of the world's emissions, but 17 percent of its population.

Zero-carbon projects may be relatively rare in Africa, but there are strong expectations for "green" job creation and rising availability of "green" skills. The skills in greatest demand relate to solar PV, understandably given Africa's huge potential to become a solar powerhouse able to produce twice as much energy for a given land area than in Europe as a result of its greater seasonal stability.

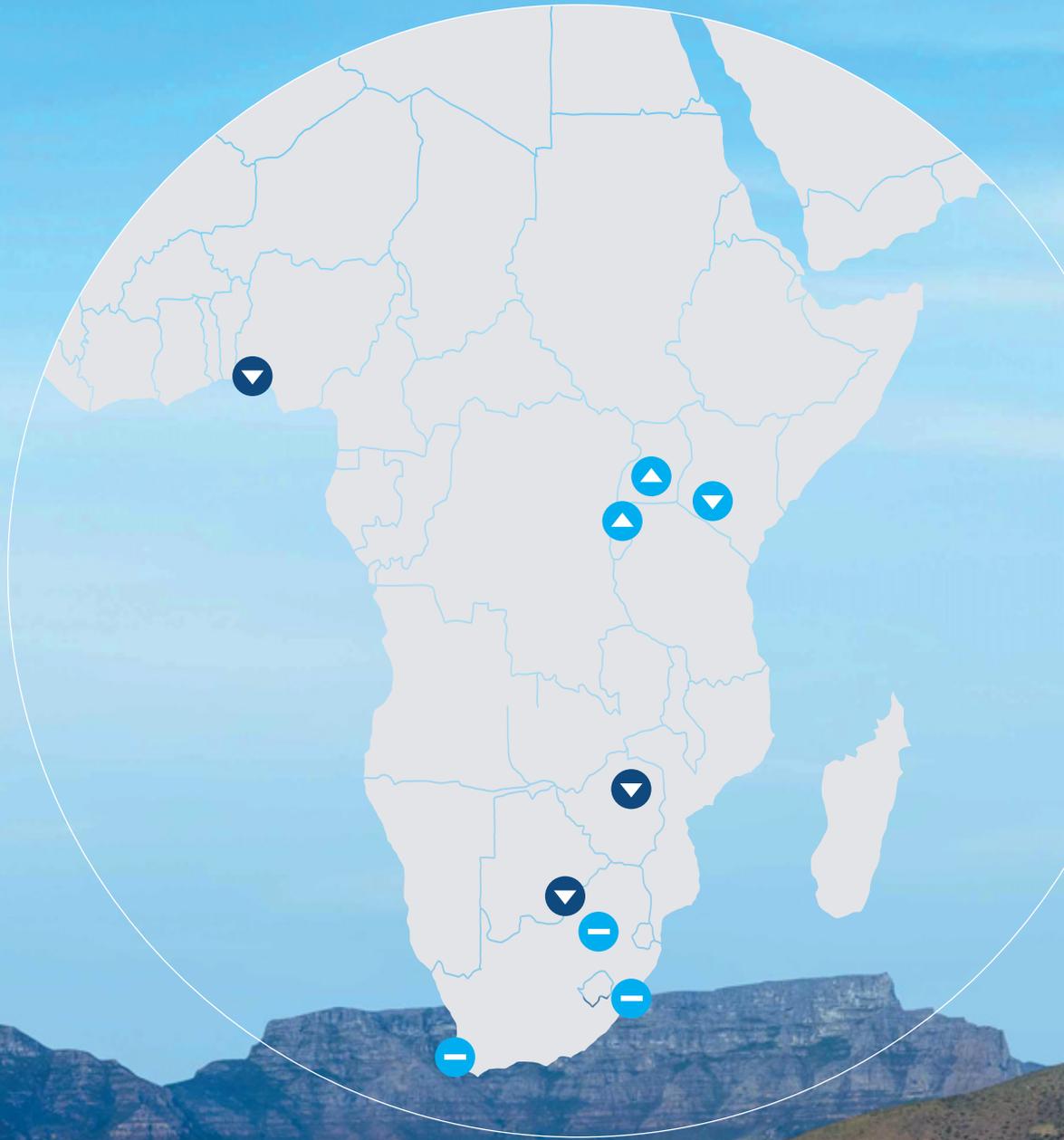
Future outlook

Despite the challenging backdrop of the global pandemic and external economic shocks, the African Development Bank forecasts that the African continent as a whole is expected to recover from its worst recession in half a century and reach 3.4 percent growth in 2021.

Africa will need to look to the international community for support with its debt and development finance challenges. It will need to unlock a multi-pronged policy approach to deal with the consequences of the pandemic, including key investments in health and social care, increased social safety nets and retooling of Africa's labour force.

Defining market temperature in region

- ⬅ Cape Town
- ⬅ Durban
- ▼ Gaborone
- ▼ Harare
- ➡ Johannesburg
- ▲ Kampala
- ▲ Kigali
- ▲ Lagos
- ▼ Nairobi



Current tendering condition

- Overheating
- Hot
- Warm
- Lukewarm
- Cold

Future market outlook

- ▲ Warmer
- No change
- ▼ Cooler

Africa

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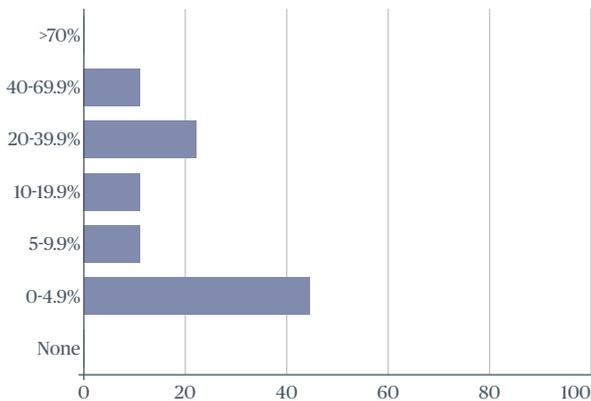
“Governments across Africa will need to unlock a multi-pronged policy approach to deal with the consequences of the pandemic, including key investments in health and social care, increased social safety nets and retooling of Africa’s labour force.”

Stephen McCartney, Managing Director

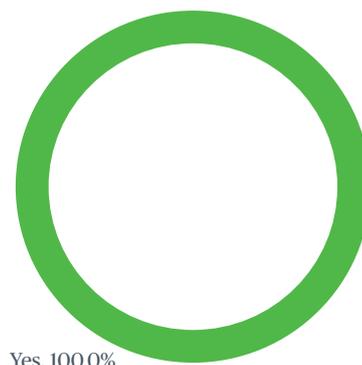
Construction market metrics

	Cape Town	Durban	Gaborone	Harare	Johannesburg	Kampala	Kigali	Lagos	Nairobi
Tendering:	Lukewarm	Lukewarm	Cold	Cold	Lukewarm	Lukewarm	Lukewarm	Lukewarm	Cold
Market:	Staying the same	Staying the same	Cooler	Cooler	Staying the same	Warmer	Warmer	Warmer	Cooler
Inflation 2020:	6.0%	5.0%	5.0%	10.0%	6.0%	-3.1%	6.0%	5.0%	5.0%
Inflation 2021:	5.0%	5.0%	10.0%	5.0%	5.0%	9.7%	10.0%	12.0%	10.0%
Inflation 2022:	4.0%	5.0%	5.0%	5.0%	4.0%	4.0%	8.0%	9.0%	8.0%
Inflation 2023:	4.0%	5.0%	3.5%	5.0%	4.0%	6.0%	7.0%	8.0%	-5.0%
Contractor's margin:	5.0%	5.0%	6.0%	12.5%	5.0%	8.0%	25.0%	27.5%	15.0%
Preliminaries:	10.0%	10.0%	10.0%	10.0%	8.5%	7.0%	10.0%	12.0%	4.0%
Location index (London = 100):	25.8	26.3	32.1	40.7	23.2	25.4	29.6	56.0	18.8

What percentage of projects in your region have a commitment to net zero carbon?



Has COVID-19 caused clients in your region to diversify their supply chain?



Top three regional construction challenges

67% of respondents said **COVID-19** had a significant or high impact on the delivery of construction projects

67% of respondents said that **excessive lead times** had a significant or high impact on the delivery of construction projects

56% of respondents said that **rising costs of construction** had a significant or high impact on the delivery of construction projects

Region construction cost performance

International building costs per m ² of internal area, in 2021	Johannesburg	Nairobi	US\$
Commercial			
CBD Offices – high-rise prestige	1,159.0	910.7	
CBD Offices – up to 20 floors medium (A-Grade)	925.9	683.0	
Office fit-out (30,000sq ft) low specification	1,298.9	510.0	
Office fit-out (30,000sq ft) medium specification	1,432.1	605.6	
Office fit-out (30,000sq ft) high specification	1,965.0	910.7	
Hotels			
3-Star travellers	1,149.0	1,183.9	
5-Star luxury	1,805.1	1,366.0	
Resort style	1,742.8	1,092.8	
Industrial			
High-tech factory/laboratory	944.2	1,001.7	
Large warehouse distribution centre	393.0	500.9	
Retail			
Large shopping centre including mall	1,019.1	637.5	
Neighbourhood incl supermarket	757.3	550.9	
Prestige car showroom	845.9	660.2	
Residential			
Apartments high-rise	939.2	637.5	
Townhouses medium standard	632.8	591.9	

Labour, material and plant costs	Johannesburg	Nairobi	US\$
Labour costs			
Group 1 Tradesman e.g. plumber, electrician	6.0	13.7	
Group 2 Tradesman e.g. carpenter, bricklayer	4.7	13.7	
Group 3 Tradesman e.g. carpet layer, tiler, plasterer	4.7	13.7	
Group 4 Green collar installation operative e.g. insulation/solar/heat pump	6.0	13.7	
General labourer	3.3	6.4	
Site foreman	14.0	22.8	
Material costs			
13 mm plasterboard (m ²)	10.0	13.8	
Concrete 30 MPa (m ³) (1500m ³ job)	105.2	116.2	
Concrete block (400x200) per 1000 (>10,000 block job)	349.7	910.7	
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m+ job)	2.8	3.3	
Copper pipe 15 mm (metre) (1,000m + job)	7.3	13.7	
Emulsion paint (litre)	10.0	5.0	
Glass pane 10mm tempered (m ²)	183.2	45.5	
Reinforcement bar 16mm (tonne) (120 tonne job)	915.9	983.5	
Softwood timber for framing 100mm X 50mm (m)	5.5	9.1	
Standard brick per 1000	105.9	500.9	
Structural steel beams (tonne) (100 tonne+ job)	1,189.0	2,003.5	
Plant costs			
Hire 50t mobile crane + operator (day)	832.6	1,092.8	

Asia

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The Asian economy as a whole has been less impacted by COVID-19 than other regions, largely because the economic powerhouse that is China maintained GDP growth above 2 percent in 2020. Japan, the second largest economy in the region, saw GDP shrink almost 5 percent, but other economies were much harder hit. GDP fell 9.5 percent in the Philippines in 2020, 8 percent in India, 6 percent in Hong Kong, 5 percent in Singapore and Malaysia, with GDP in Macao falling by half.

Despite these challenges, the IMF forecasts a solid recovery for most Asian economies, although uncertainty relating to COVID-19 remains. Vietnam is seen as a star performer, forecast to see annual growth top 6 percent per annum over the next five years. Its swift containment of COVID-19 and rapid introduction of a policy support package build on reforms that turned it from an agrarian to a modern economy within three decades. While India is forecast for strong growth once recovery takes hold, spikes in COVID-19 infections may slow its progress.

Construction sector performance

Most Asian construction markets weathered COVID-19 relatively well and, on balance, are running warmer than the global average. Most cities surveyed are warm or lukewarm, with the current economic verve in both Hanoi and Ho Chi Minh City, coupled with China's investment in the development of the Greater Bay Area as an international scientific and technological innovation centre, with heavy investment in Guangzhou and Shenzhen, leading to double digit rises in build costs in these locations.

Meanwhile, Singapore and Chennai (India) are cold after being hit disproportionately hard by COVID-19. Restrictions pushed Singapore's activity down to a ten-year low. Chennai experienced unprecedented reverse migration during lockdown, disrupting project timelines. Positively, most markets are now warming with hints of faster growth than seen over the past two years.

With some exceptions, Asian countries handled COVID-19 better than most, yet the pandemic still created a huge challenge for construction. Few markets are above 90 percent of their pre-pandemic productivity. The region faced

other tough challenges, many aggravated by the pandemic, such as skills shortages, notably in Japan, Singapore, Hong Kong and Shanghai. Pockets of labour shortages are common, but actions to control the pandemic have inhibited movement, slowing the rebalancing of labour markets, particularly those heavily reliant on migrant labour. In cooler markets, there is growing concern over too many contractors chasing work.

Top-performing sectors

Data centres are the hottest sector in almost half the region's markets and, along with industrial and distribution facilities, are among the top three sectors in over half. The pandemic appears to have strengthened their relative attractiveness to investors, particularly as shifts in behaviours during the pandemic mean data consumption has surged to new heights, with more goods and services transacted online.

China continues to strengthen its position as one of the world's most dominant players in the distribution sector due to its global position as a manufacturing hub and the huge demand generated by its population of 1.4 billion.

Progress of the environmental agenda

Many Asian markets score relatively low on sustainability measures, reflecting tensions over net zero targets and their fairness to developing nations. Japan, South Korea and China have policy commitments to achieve net zero emissions by 2050 and 2060 respectively, but other Asian nations do not, notably India. Singapore has also set the target to work towards achieving net zero emissions as soon as viable in the second half of the century. This divide partly explains where net zero projects are more likely to occur, although global clients have a big say on sustainability.

As with most of the world's economies, much of the region's transition to net zero carbon is contingent upon China's progress. China consumes around 24 percent of the world's energy and emits 29 percent of global carbon dioxide, twice that of the US. China aims to reach net zero by 2060 after peaking in 2030. This requires a huge investment to clean its energy supply. The latest five-year plan outlines eight planned clean energy bases across the nation. Encouragingly, last year China was responsible for more than 80 percent of the huge rise in installed renewable sources.

Future outlook

The underlying strength of most Asian markets should ensure recovery in the region is reasonably rapid. India's recent COVID-19 spike presents a challenge, as does the resurgence of COVID-19 cases and slow roll-out of vaccines in many Asian nations. But the region remains one with significant promise, as China continues to expand its significant technology base, and investment in manufacturing capacity expands outwards to lower cost nations such as India and Vietnam.

Defining market temperature in region

- ▲ Bangalore
- ▲ Beijing
- Chennai
- ▲ Delhi
- ▲ Guangzhou
- ▲ Hanoi
- ▲ Ho Chi Minh City
- Hong Kong
- ▲ Jakarta
- ▲ Kuala Lumpur
- ▼ Macau
- ▲ Manila
- ▲ Mumbai
- ▲ Seoul
- ▲ Shanghai
- ▲ Shenzhen
- ▲ Singapore
- Taipei
- ▲ Tianjin
- Tokyo



Current tendering condition

- Overheating
- Hot
- Warm
- Lukewarm
- Cold

Future market outlook

- ▲ Warmer
- No change
- ▼ Cooler

Asia

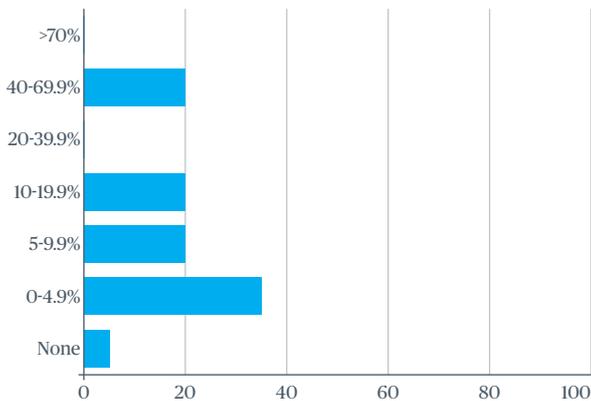
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Construction market metrics

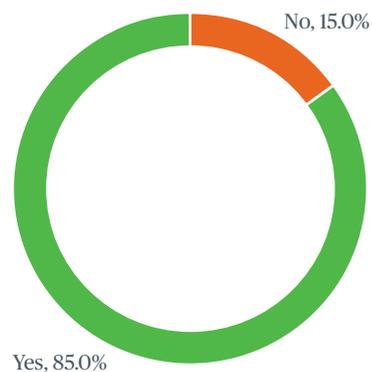
	Bangalore	Beijing	Chennai	Delhi	Guangzhou	Hanoi	Ho Chi Minh City	Hong Kong	Jakarta	Kuala Lumpur
Tendering:	Lukewarm	Warm	Cold	Warm	Warm	Warm	Warm	Warm	Lukewarm	Lukewarm
Market:	Warmer	Warmer	Staying the same	Warmer	Warmer	Warmer	Warmer	Staying the same	Warmer	Warmer
Inflation 2020:	4.5%	2.5%	4.5%	4.5%	3.0%	2.0%	2.0%	-3.0%	-4.0%	1.0%
Inflation 2021:	3.5%	3.0%	3.5%	3.5%	3.0%	2.0%	2.0%	1.0%	4.0%	3.0%
Inflation 2022:	3.5%	4.0%	3.5%	3.5%	3.0%	2.0%	2.0%	1.0%	2.0%	1.5%
Inflation 2023:	2.3%	3.0%	2.3%	2.5%	3.0%	3.0%	3.0%	2.0%	2.0%	3.0%
Contractor's margin:	15.0%	4.0%	15.0%	15.0%	3.0%	6.0%	6.0%	5.0%	9.0%	10.0%
Preliminaries:	9.5%	8.0%	9.5%	9.5%	6.0%	10.0%	10.0%	15.0%	10.0%	8.5%
Location index (London = 100):	15.6	25.2	15.3	15.8	25.3	21.5	21.5	121.6	23.0	28.4

	Macau	Manila	Mumbai	Seoul	Shanghai	Shenzhen	Singapore	Taipei	Tianjin	Tokyo
Tendering:	Lukewarm	Warm	Warm	Lukewarm	Warm	Warm	Cold	Warm	Warm	Warm
Market:	Cooler	Warmer	Warmer	Staying the same	Warmer	Warmer	Warmer	Staying the same	Warmer	Staying the same
Inflation 2020:	-5.0%	5.0%	5.0%	3.8%	4.2%	3.0%	5.0%	5.0%	2.5%	2.0%
Inflation 2021:	3.0%	5.0%	4.0%	6.5%	3.0%	3.0%	10.0%	5.0%	3.0%	1.0%
Inflation 2022:	5.0%	5.0%	4.0%	5.2%	3.0%	3.0%	8.0%	3.0%	4.0%	2.0%
Inflation 2023:	5.0%	5.0%	3.0%	5.2%	3.0%	3.0%	5.0%	3.0%	3.0%	1.0%
Contractor's margin:	20.0%	15.0%	15.0%	3.5%	3.0%	3.0%	5.0%	5.0%	4.0%	12.0%
Preliminaries:	15.0%	8.0%	9.5%	15.0%	5.0%	6.0%	13.5%	8.0%	8.0%	15.0%
Location index (London = 100):	97.6	26.6	15.8	49.8	25.4	25.3	64.9	26.4	25.2	124.9

What percentage of projects in your region have a commitment to net zero carbon?



Has COVID-19 caused clients in your region to diversify their supply chain?



Top three regional construction challenges

61% of respondents said **COVID-19** had a significant or high impact on the delivery of construction projects

50% of respondents said that **government red tape, bureaucracy, delayed approvals** had a significant or high impact on the delivery of construction projects

61% of respondents said that **too many contractors chasing too few projects** had a significant or high impact on the delivery of construction projects

Region construction cost performance

International building costs per m ² of internal area, in 2021	Hong Kong	Jakarta	Mumbai	Shanghai	Singapore	US\$ Tokyo
Commercial						
CBD Offices – high-rise prestige	4,119.1	1,102.3	713.8	1,367.8	2,451.0	5,030.5
CBD Offices – up to 20 floors medium (A-Grade)	3,539.8	832.0	686.9	1,169.1	2,228.2	4,573.1
Office fit-out (30,000sq ft) low specification	1,029.8	305.1	497.9	557.8	817.0	1,554.9
Office fit-out (30,000sq ft) medium specification	1,930.8	499.2	795.1	883.4	1,188.4	2,972.5
Office fit-out (30,000sq ft) high specification	3,089.3	651.7	1,203.8	1,123.3	2,005.4	3,658.5
Hotels						
3-Star travellers	4,119.1	936.0	1,546.4	970.5	2,822.4	5,716.4
5-Star luxury	5,148.9	1,549.5	1,684.5	1,803.4	3,639.4	8,003.0
Resort style	5,535.0	1,906.6	1,456.5	1,138.6	4,307.9	6,173.7
Industrial						
High-tech factory/laboratory	4,634.0	1,102.3	624.2	993.4	2,302.5	4,801.8
Large warehouse distribution centre	3,025.0	797.3	381.8	512.0	1,411.2	3,201.2
Retail						
Large shopping centre including mall	4,505.3	728.0	515.7	894.0	2,525.3	4,115.8
Neighbourhood incl supermarket	3,539.8	589.3	427.5	611.3	2,133.7	3,786.6
Prestige car showroom	4,312.2	1,143.9	549.9	649.5	2,673.8	5,259.1
Residential						
Apartments high-rise	3,861.6	963.7	662.7	680.1	2,005.4	5,259.1
Townhouses medium standard	4,505.3	589.3	445.3	680.1	2,153.9	4,115.8

Labour, material and plant costs	Hong Kong	Jakarta	Mumbai	Shanghai	Singapore	Tokyo
Labour costs						
Group 1 Tradesman e.g. plumber, electrician	20.6	1.5	1.3	7.2	23.0	34.2
Group 2 Tradesman e.g. carpenter, bricklayer	32.2	1.5	1.5	6.9	16.3	32.7
Group 3 Tradesman e.g. carpet layer, tiler, plasterer	21.9	1.5	1.4	6.9	23.0	32.2
Group 4 Green collar installation operative e.g. insulation/solar/heat pump	20.6	1.7	2.6	7.6	23.0	42.8
General labourer	15.4	1.2	1.1	4.6	17.1	26.2
Site foreman	25.7	1.9	2.2	9.5	29.7	45.3
Material costs						
13 mm plasterboard (m ²)	12.9	6.6	4.4	3.8	6.3	5.5
Concrete 30 MPa (m ³) (1500m ³ job)	92.7	64.1	79.7	85.0	85.4	146.3
Concrete block (400x200) per 1000 (>10,000 block job)	1,802.1	776.5	645.1	703.0	551.9	1,143.3
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m+ job)	2.4	1.9	1.5	2.0	2.2	2.3
Copper pipe 15 mm (metre) (1,000m + job)	5.0	8.0	5.2	7.3	13.4	7.8
Emulsion paint (litre)	9.0	6.2	3.0	5.8	14.1	5.5
Glass pane 10mm tempered (m ²)	231.7	41.6	22.9	22.9	94.3	146.3
Reinforcement bar 16mm (tonne) (120 tonne job)	810.9	734.9	681.4	645.7	714.5	686.0
Softwood timber for framing 100mm X 50mm (m)	11.6	4.6	2.9	4.7	9.7	13.7
Standard brick per 1000	579.2	50.3	87.0	91.7	275.6	1,436.0
Structural steel beams (tonne) (100 tonne+ job)	1,609.0	1,081.6	689.0	764.1	1,782.6	2,515.2
Plant costs						
Hire 50t mobile crane + operator (day)	1,415.9	741.8	497.1	427.9	1,576.1	5,487.8

Australia and New Zealand

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Among developed nations, New Zealand and Australia were particularly successful in containing the spread of COVID-19, and their economies were among the least damaged. GDP understandably fell as sectors such as tourism and hospitality incurred heavy losses, but IMF data shows the overall economic downturn was held at less than 3 percent in 2020 – an impressive feat relative to many other global economies.

The IMF forecasts a strong recovery and solid growth over the next five years of between 2 and 3 percent. This will be helped by both nations raising government spending in the wake of COVID-19 to support the economy, with hefty investment in infrastructure. As in many developed nations, most notably the UK, the region has seen rising house prices despite widespread economic uncertainty, as low interest rates and stimulus packages have ignited the market.

Construction sector performance

In New Zealand, construction activity is running comfortably warm. In Australia, the picture is similar. All of the state capital cities are warm with a market outlook that suggests markets will be increasing in activity over the coming years.

A major issue in Sydney has been clients holding back or withdrawing projects due to uncertainty. But the picture is changing rapidly. As in other regions, responses to COVID-19 have prompted optimism within the construction sector as governments have boosted spending. Expectations are significantly more positive than a year ago and point to most markets warming.

Although both nations were very effective at controlling COVID-19, the pandemic presented challenges for construction, creating delays, impeding productivity, and forcing workplace changes. Encouragingly, productivity in most markets is at, or near to, pre-pandemic levels and in many markets output has bounced back.

One of the biggest headaches remains a shortage of skilled labour in most sectors of the economy. Border restrictions have exacerbated problems, hitting the supply of overseas workers. The situation is expected to worsen. Meanwhile, as in

many nations, concerns are growing over rising costs, uncertainty and a lack of confidence among private investors.

Top-performing sectors

The hottest sectors currently tend to be those that have government support. New Zealand's top three sectors are education, health and surface transport projects. In Australia, the picture is more mixed, and market specific. Transport and education still top the list, and health features, but residential real estate has gained ground in Sydney and Brisbane, with home loans and house prices rising across Australia with government initiatives stimulating demand.

In Melbourne, retail projects feature prominently, reflecting plans to reinvigorate commercial areas, such as those set out last September in Melbourne City's COVID-19 Reactivation and Recovery Plan.

In Sydney, sectors reducing in activity include commercial office and discretionary retail development. Pre-COVID, commercial office development was a particularly hot sector but is now a victim of temporary hesitance among investors who are delaying investment decisions in new office developments as they wait to see the longer-term impact of new ways of office working as the market emerges from COVID.

Reduced oil and gas prices explain the low levels of project expenditure and work receding in parts of the Perth market. Conversely, high iron-ore and lithium prices mean that the Western Australian mining sector remains a major source of construction work.

Progress of the environmental agenda

On zero-carbon, there is policy divergence between New Zealand, which has legal commitments, and Australia, which has no zero-carbon target. Australia has greater economic interest in carbon fuels and, compared with New Zealand, emits about double the carbon dioxide for each citizen. This makes achieving zero-carbon a far tougher task.

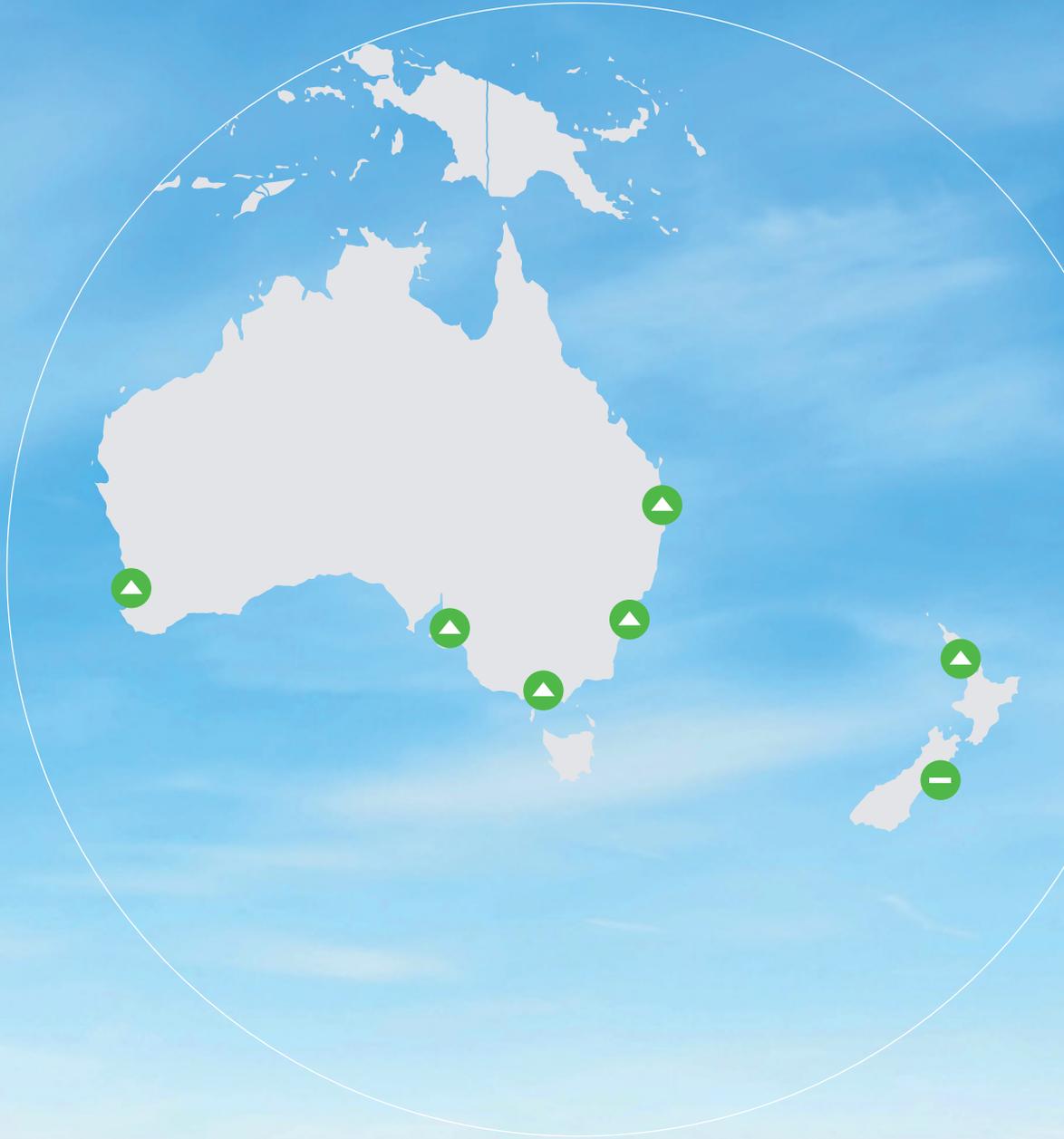
The survey suggests that, across the region, projects with a high commitment to zero-carbon are relatively less common. However, the view is firmly that the proportion is set to rise.

Future outlook

The region's prospects look solid, particularly in sectors supported by public sector stimulus packages, and COVID-19 rates remain exceptionally low. But while current economic forecasts are positive, risks remain. The vaccination roll-out has been slow in the region compared with Europe or North America, and there is the inevitable spectre of interest rate rises correcting the house price boom given the level of economic uncertainty.

Defining market temperature in region

- ▲ Adelaide
- ▲ Auckland
- ▲ Brisbane
- Christchurch
- ▲ Melbourne
- ▲ Perth
- ▲ Sydney



Current tendering condition

- Overheating
- Hot
- Warm
- Lukewarm
- Cold

Future market outlook

- ▲ Warmer
- No change
- ▼ Cooler

Australia and New Zealand

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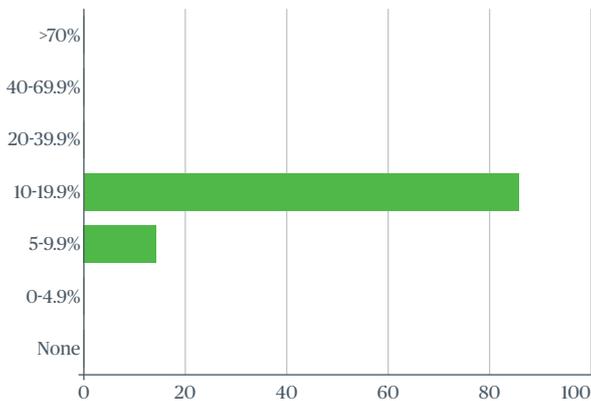
“Although both nations were very effective at controlling COVID-19, the pandemic presented challenges for construction, creating delays, impeding productivity, and forcing workplace changes.”

Matt Billingham, Managing Director WA

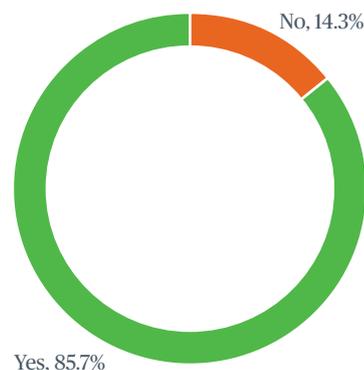
Construction market metrics

	Adelaide	Auckland	Brisbane	Christchurch	Melbourne	Perth	Sydney
Tendering:	Warm	Warm	Warm	Warm	Warm	Warm	Warm
Market:	Warmer	Warmer	Warmer	Staying the same	Warmer	Warmer	Warmer
Inflation 2020:	-3.0%	3.0%	0.5%	2.0%	2.0%	0.5%	-1.5%
Inflation 2021:	3.0%	4.0%	4.0%	3.5%	3.0%	4.0%	4.0%
Inflation 2022:	2.5%	3.5%	3.5%	3.0%	2.5%	4.0%	3.5%
Inflation 2023:	2.0%	2.5%	2.5%	2.0%	2.0%	3.0%	3.0%
Contractor's margin:	4.0%	6.0%	3.0%	6.0%	4.0%	4.5%	4.0%
Preliminaries:	13.0%	12.0%	13.0%	13.0%	15.0%	15.0%	12.0%
Location index (London = 100):	47.3	64.6	56.0	62.5	58.9	49.0	60.4

What percentage of projects in your region have a commitment to net zero carbon?



Has COVID-19 caused clients in your region to diversify their supply chain?



Top three regional construction challenges

43% of respondents said **skilled labour shortages** had a significant or high impact on the delivery of construction projects

57% of respondents said that **lack of confidence in the market to invest in new projects** had a significant or high impact on the delivery of construction projects

29% of respondents said that **rising costs of construction** had a significant or high impact on the delivery of construction projects

Region construction cost performance

International building costs per m ² of internal area, in 2021	Auckland	Melbourne	US\$ Sydney
Commercial			
CBD Offices – high-rise prestige	3,210.3	3,506.6	3,811.5
CBD Offices – up to 20 floors medium (A-Grade)	2,547.3	2,591.8	2,782.4
Office fit-out (30,000sq ft) low specification	837.5	1,143.4	1,105.3
Office fit-out (30,000sq ft) medium specification	1,256.2	1,753.3	1,677.1
Office fit-out (30,000sq ft) high specification	2,442.6	3,125.4	3,049.2
Hotels			
3-Star travellers	2,442.6	2,058.2	2,363.1
5-Star luxury	3,978.0	4,268.9	4,568.4
Resort style	3,489.5	2,973.0	3,171.2
Industrial			
High-tech factory/laboratory	3,234.7	3,201.6	3,582.8
Large warehouse distribution centre	1,054.5	914.8	914.8
Retail			
Large shopping centre including mall	2,791.6	2,439.4	2,325.0
Neighbourhood incl supermarket	1,570.3	1,638.9	1,776.2
Prestige car showroom	1,940.8	2,286.9	2,286.9
Residential			
Apartments high-rise	2,652.0	2,439.4	2,439.4
Townhouses medium standard	1,884.3	1,600.8	1,715.2

Labour, material and plant costs	Auckland	Melbourne	Sydney
Labour costs			
Group 1 Tradesman e.g. plumber, electrician	59.3	91.5	82.3
Group 2 Tradesman e.g. carpenter, bricklayer	45.4	72.4	72.4
Group 3 Tradesman e.g. carpet layer, tiler, plasterer	45.4	72.4	70.9
Group 4 Green collar installation operative e.g. insulation/solar/heat pump	52.3	68.6	67.1
General labourer	38.4	57.2	56.4
Site foreman	66.3	91.5	91.5
Material costs			
13 mm plasterboard (m ²)	8.7	8.4	8.4
Concrete 30 MPa (m ³) (1500m ³ job)	279.2	190.6	183.7
Concrete block (400x200) per 1000 (>10,000 block job)	3,559.3	2,820.5	2,744.3
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m+ job)	2.8	2.3	2.3
Copper pipe 15 mm (metre) (1,000m + job)	12.6	8.4	7.6
Emulsion paint (litre)	20.9	11.4	11.4
Glass pane 10mm tempered (m ²)	206.6	266.8	218.0
Reinforcement bar 16mm (tonne) (120 tonne job)	2,442.6	1,372.1	1,321.1
Softwood timber for framing 100mm X 50mm (m)	5.6	3.8	3.8
Standard brick per 1000	1,046.8	609.8	715.8
Structural steel beams (tonne) (100 tonne+ job)	1,524.9	2,058.2	2,303.7
Plant costs			
Hire 50t mobile crane + operator (day)	2,442.6	2,286.9	2,906.6

Continental Europe

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European economies suffered far greater damage than most in 2020, with an average fall in GDP across the EU above 6 percent. The distress, however, was not spread evenly. IMF data shows that Spain was especially hard hit on continental Europe, its economy shrinking by 11 percent. In contrast, Russia's economy dipped by just over 3 percent. Ireland was an outlier. GDP grew 2.5 percent in 2020, although its gross national product grew less than 1 percent. Unlike other European nations, it saw exports rise.

The IMF forecasts it will take around two years to rebuild economic output across Europe to pre-pandemic levels, with Spain and Italy lagging behind others.

Construction sector performance

Construction across the EU performed stronger than the overall economy, but fortunes varied between nations, depending greatly on the restrictions imposed.

In general, the building sector was harder hit than the civil engineering sector. In the early stages of the pandemic, Germany, one of the nations lesser hit by the pandemic, saw construction activity rise almost 3 percent, according to EU indicators.

Among other big European economies, France saw construction activity fall almost 70 percent between February and May 2020 and, along with Spain, saw double-digit drops in activity across 2020. On the whole, there has been a pronounced bounce back but, comparing February 2020 with February 2021, construction activity across the EU was still down about 8 percent.

Despite the pandemic, most markets are seen as warm or hot, and overall likely to heat up. More widely, confidence has been boosted by the European Commission putting the construction sector central to its drive towards a green and digital future.

However, the industry faces challenges, not least skills shortages across most markets, particularly for electricians and plumbers. These have been exacerbated by restrictions to free movement caused by COVID-19 and Brexit. The pandemic is causing ongoing disruption, increasing costs and delays and fuelling market uncertainty.

In particular, price pressures have increased, with costs for key materials soaring in 2021. At the most extreme, steel rates have shot up in some EU countries by up to 50% due to a combination of iron ore price rise, restricted supply and increased shipping costs.

The expectation across the region is that inflation in the construction sector will increase over the next two years. Currently, the Warsaw and Moscow markets are seeing the highest rates of inflation, with at, or close to, double-digit rises expected this year.

Top-performing sectors

The balance of construction activity has shifted over the past 12 months, with greater emphasis on key industrial sectors, including data centres, distribution and warehousing. Commercial office development, particularly in central business district locations has suffered. In many European nations, the residential sector has been booming.

Progress of the environmental agenda

A significant part of the progress made over the past decade in the cutting of global carbon emissions has come from Europe, with emissions down about 10 percent between 2009 and 2019 and Sweden, France, Denmark and Hungary, all having legal net-zero targets of 2050 or earlier. More than a third of EU electricity now comes from renewable sources, excluding nuclear which generates a further quarter.

However, the figures tend to flatter more advanced nations, especially those now less industrialised that have seen "dirty" industries move abroad. This has widened the gap between carbon emissions consumed and produced.

Looking ahead, Europe faces a major challenge to improve its large stock of older buildings that will require retrofitting, particularly in the commercial and residential sectors, which jointly account for 40 percent of EU energy consumption.

Future outlook

Overall, the European construction sector seems to be moving from crisis to boom with remarkable speed, with many nations recovering within the year. The €672.5bn committed as part of the EU's Recovery and Resilience Facility (RRF) should soon start to make an impact. Public investment, as a proportion of GDP, is set to reach its highest level in more than a decade in 2022.

With the crystallisation of economic development around the environment and the digital economy, this should provide a strong platform for consistent growth in the region in the long term.

Defining market temperature in region

- ▲ Amsterdam
- Berlin
- ▲ Brussels
- ▲ Dublin
- Frankfurt
- ▲ Geneva
- Hamburg
- Madrid
- ▲ Milan
- Moscow
- ▲ Munich
- ▲ Paris
- ▲ Stockholm
- Vienna
- ▲ Warsaw
- Zurich



Current tendering condition

- Overheating
- ▲ Hot
- ▲ Warm
- Lukewarm
- Cold

Future market outlook

- ▲ Warmer
- No change
- ▼ Cooler

Continental Europe

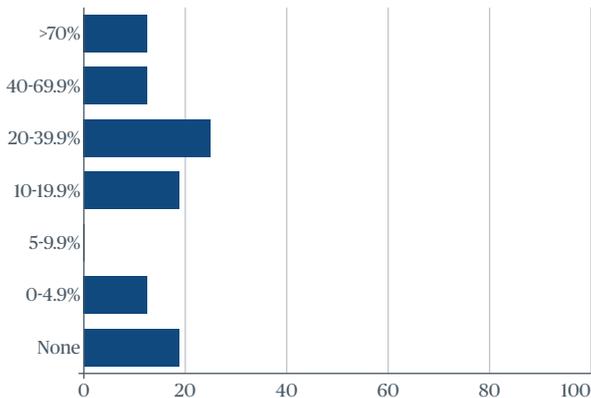
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Construction market metrics

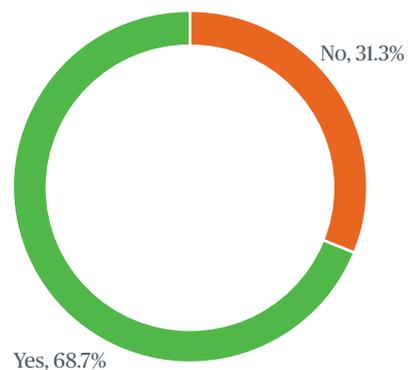
	Amsterdam	Berlin	Brussels	Dublin	Frankfurt	Geneva	Hamburg	Madrid
Tendering:	Lukewarm	Hot	Warm	Warm	Hot	Hot	Hot	Lukewarm
Market:	Warmer	Staying the same	Warmer	Warmer	Staying the same	Warmer	Staying the same	Staying the same
Inflation 2020:	0.9%	1.0%	2.0%	2.0%	1.0%	0.0%	1.0%	0.0%
Inflation 2021:	1.8%	3.0%	2.0%	7.5%	2.0%	0.5%	3.6%	2.0%
Inflation 2022:	0.0%	3.0%	2.0%	4.0%	3.0%	0.5%	3.6%	0.5%
Inflation 2023:	-1.0%	3.0%	2.0%	4.0%	2.0%	0.5%	3.7%	0.5%
Contractor's margin:	4.0%	5.0%	5.0%	3.0%	5.0%	6.0%	5.0%	8.0%
Preliminaries:	13.0%	12.0%	10.0%	13.0%	14.0%	10.0%	12.0%	12.0%
Location index (London = 100):	75.0	72.7	73.6	88.3	76.4	108.6	73.9	63.8

	Milan	Moscow	Munich	Paris	Stockholm	Vienna	Warsaw	Zurich
Tendering:	Hot	Lukewarm	Hot	Hot	Warm	Warm	Warm	Hot
Market:	Warmer	Staying the same	Warmer	Warmer	Warmer	Staying the same	Warmer	Staying the same
Inflation 2020:	1.0%	8.0%	1.0%	1.6%	0.0%	0.9%	5.0%	0.5%
Inflation 2021:	3.0%	10.0%	2.0%	2.7%	2.5%	2.0%	8.0%	0.5%
Inflation 2022:	3.0%	5.0%	3.0%	3.0%	2.0%	2.1%	5.0%	0.5%
Inflation 2023:	3.0%	5.0%	3.0%	3.2%	2.0%	2.0%	5.0%	0.0%
Contractor's margin:	7.0%	6.0%	4.0%	8.0%	12.0%	8.0%	6.0%	5.5%
Preliminaries:	10.0%	7.0%	13.0%	9.3%	15.0%	11.0%	8.0%	11.0%
Location index (London = 100):	67.5	28.6	74.2	69.4	82.6	76.0	32.8	105.7

What percentage of projects in your region have a commitment to net zero carbon?



Has COVID-19 caused clients in your region to diversify their supply chain?



Top three regional construction challenges

47% of respondents said **skilled labour shortages** had a significant or high impact on the delivery of construction projects

60% of respondents said that **government red tape, bureaucracy, delayed approvals** had a significant or high impact on the delivery of construction projects

20% of respondents said that **COVID-19** had a significant or high impact on the delivery of construction projects

Region construction cost performance

International building costs per m ² of internal area, in 2021	Amsterdam	Dublin	Munich	Paris
Commercial				
CBD Offices – high-rise prestige	4,602.8	4,597.2	4,535.1	4,100.0
CBD Offices – up to 20 floors medium (A-Grade)	3,265.5	3,536.3	3,441.7	3,150.0
Office fit-out (30,000sq ft) low specification	1,223.6	1,066.8	1,321.0	1,254.2
Office fit-out (30,000sq ft) medium specification	1,825.9	1,597.2	1,922.0	1,758.4
Office fit-out (30,000sq ft) high specification	2,484.8	2,257.3	2,964.6	2,781.5
Hotels				
3-Star travellers	2,739.6	3,241.6	2,601.0	2,513.8
5-Star luxury	4,838.5	4,597.2	5,055.7	4,551.3
Resort style	3,605.3	3,772.0	3,348.5	3,352.2
Industrial				
High-tech factory/laboratory	2,595.6	3,064.8	3,112.4	2,341.0
Large warehouse distribution centre	1,331.5	1,827.1	1,368.7	1,144.5
Retail				
Large shopping centre including mall	3,225.7	3,536.3	2,937.9	2,958.4
Neighbourhood incl supermarket	2,895.0	3,418.4	2,902.4	2,478.7
Prestige car showroom	3,372.3	3,772.0	3,165.9	3,215.7
Residential				
Apartments high-rise	2,784.8	3,182.7	2,528.5	2,560.0
Townhouses medium standard	1,786.2	2,416.5	1,853.6	1,633.2

Labour, material and plant costs	Amsterdam	Dublin	Munich	Paris
Labour costs				
Group 1 Tradesman e.g. plumber, electrician	66.8	51.9	76.6	65.8
Group 2 Tradesman e.g. carpenter, bricklayer	54.5	49.5	64.2	54.9
Group 3 Tradesman e.g. carpet layer, tiler, plasterer	51.8	44.8	64.2	48.5
Group 4 Green collar installation operative e.g. insulation/solar/heat pump	66.8	49.5	91.9	70.8
General labourer	43.3	38.9	45.4	38.7
Site foreman	74.9	58.9	70.1	54.7
Material costs				
13 mm plasterboard (m ²)	6.9	9.4	5.3	6.4
Concrete 30 MPa (m ³) (1500m ³ job)	127.2	106.1	156.7	170.8
Concrete block (400x200) per 1000 (>10,000 block job)	4,905.7	825.1	4,257.6	3,333.0
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m+ job)	3.4	4.7	6.6	5.1
Copper pipe 15 mm (metre) (1,000m + job)	8.4	11.8	12.0	10.2
Emulsion paint (litre)	12.7	13.0	8.0	8.9
Glass pane 10mm tempered (m ²)	186.3	176.8	147.1	206.9
Reinforcement bar 16mm (tonne) (120 tonne job)	1,014.3	884.1	1,238.9	1,317.9
Softwood timber for framing 100mm X 50mm (m)	2.6	8.8	5.5	4.1
Standard brick per 1000	592.9	766.2	976.1	881.1
Structural steel beams (tonne) (100 tonne+ job)	1,840.3	2,593.3	2,684.4	2,292.2
Plant costs				
Hire 50t mobile crane + operator (day)	1,381.5	1,178.8	1,554.3	1,552.8

Middle East

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During 2020, Gulf State nations saw deeper declines in their economies than the global average, largely due to the pandemic leading to falling oil revenues due to lockdowns and reduced output. There were big falls, too, in revenues from key non-oil sectors, specifically tourism, which these nations are fostering as they seek to lower their economic reliance on oil production.

IMF data suggest Oman was worst hit, seeing GDP fall 6.4 percent in 2020. It appears to have been harder hit by COVID-19. Qatar posted the smallest fall at 2.6 percent. Saudi Arabia and UAE saw GDP fall 4.1 percent and 5.9 percent respectively.

The IMF forecasts that it will take more than a year for economic activity to return to pre-pandemic levels, and longer in many of the non-oil related sectors, particularly tourism and travel. Regionally, much will depend on vaccinations and reducing rates of infection. Qatar and UAE, for example, are vaccinating rapidly while Oman lags behind the global average.

Construction sector performance

The economic hit from COVID-19 saw construction output fall in the region. Qatar saw output slip by 4 percent. UAE saw an estimated fall of almost 5 percent. Oman's construction sector saw a double-digit drop in output.

On the ground, there is lukewarm sentiment across most of the region, with Saudi Arabia heating up, while Oman's cold snap is expected to continue in at least the short term. Saudi Arabia has continued to forge ahead with its nation building, with a focus on 'mega projects' including NEOM, Red Sea Resort, Amaala, Diriyah Gate, Qiddiya and King Salman Park.

The rising cost of imported materials on which its construction sector relies heavily may prove a big barrier to shrugging off the current market malaise. It feeds into other major challenges seen in the region, such as market uncertainty and lack of confidence among investors. If this translates into lower activity, this in turn would add to the challenges of too many contractors chasing the available work.

Top-performing sectors

The prevailing theme in the Gulf States is to build sustainable economies that look beyond oil, which is inevitably reflected in the main sectors. Transport remains a major focus, as do power and utilities projects. And with events such as the World Cup in Qatar and the desire to build tourism, sports and leisure projects also continue to feature heavily.

But with the impact of COVID-19 on the population, ongoing pressure to tackle inequalities, and the need to embrace green and digital growth, the pattern of projects will invariably shift. Residential is higher up the table of hot sectors and the rhetoric for greener energy production is increasing, with solar a key focus, as well as hydrogen production over the longer term.

Progress of the environmental agenda

As a major oil-producing region, the Middle East is inevitably compromised on the environmental agenda. Cheap oil lowers the incentive to shift to zero-carbon fuels that currently provide a negligible element of supply. However, the region has huge potential for solar generation and the adoption of clean energy, with PV outputs potentially double those available in Europe. And the pace of installation has accelerated materially over the past five years.

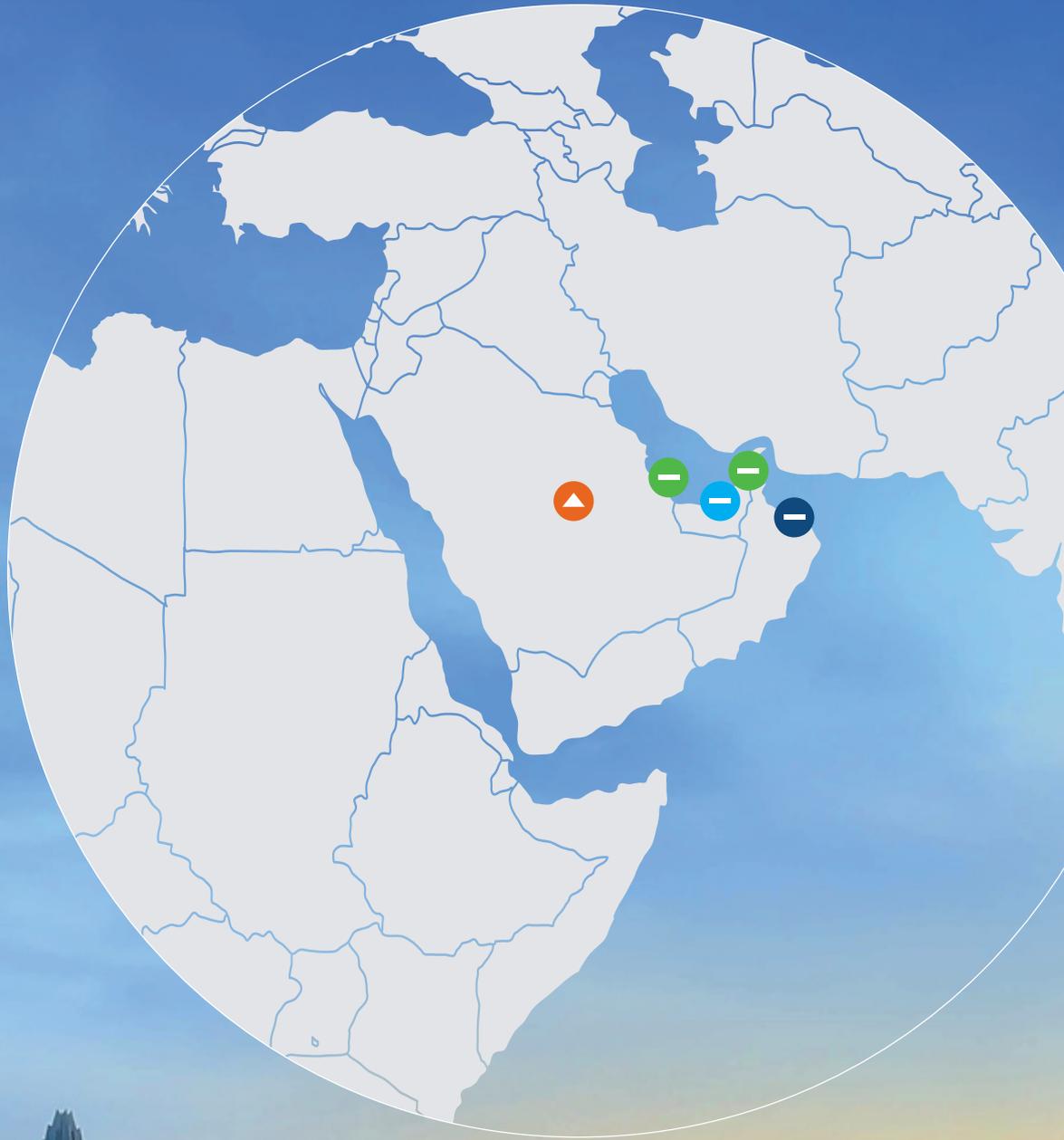
Gulf States made various commitments under the Paris Agreement in 2015 to reduce carbon emissions. Saudi Arabia, the biggest regional emitter, pledged to cut its emissions by 130 million tons, just over 20 percent. Emissions are down since 2015, as in Qatar, which made environmental commitments in its bid for the World Cup. UAE, where emissions are up since 2015, recently increased its commitment to make similar cuts by 2030.

Future outlook

Major social, economic and environmental transitions continue in the Middle East as it seeks to create a more sustainable future. Construction will play a key role in enabling these ambitions. But there are immediate challenges, not least those that flow from increasingly stretched resources within the global construction sector.

Defining market temperature in region

- Abu Dhabi
- Doha
- Dubai
- Muscat
- Riyadh



Current tendering condition

- Overheating
- Hot
- Warm
- Lukewarm
- Cold

Future market outlook

- Warmer
- No change
- Cooler

Middle East

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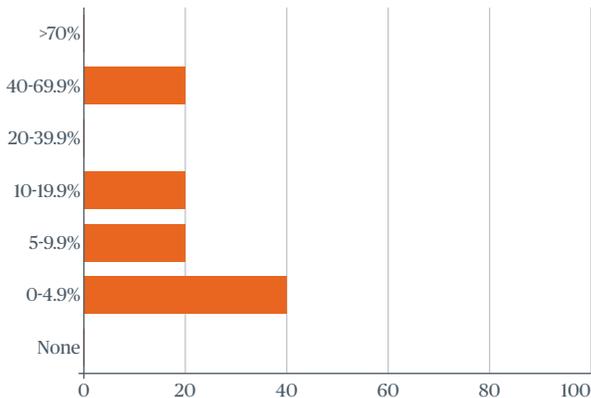
“Major social, economic and environmental transitions continue in the Middle East as it seeks to create a more sustainable future. Construction will play a key role in enabling these ambitions.”

Hudson Fountain, Director

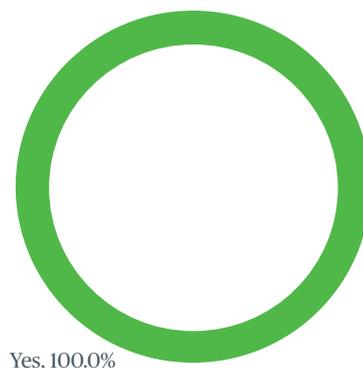
Construction market metrics

	Abu Dhabi	Doha	Dubai	Muscat	Riyadh
	Lukewarm	Warm	Warm	Cold	Overheating
Tendering:					
Market:	Staying the same	Staying the same	Staying the same	Staying the same	Warmer
Inflation 2020:	-2.0%	-0.5%	0.0%	-2.0%	5.0%
Inflation 2021:	2.0%	2.5%	0.0%	0.0%	10.0%
Inflation 2022:	2.0%	4.0%	1.5%	1.0%	5.0%
Inflation 2023:	0.0%	-3.0%	1.5%	2.0%	5.0%
Contractor's margin:	7.5%	7.0%	6.0%	5.0%	10.0%
Preliminaries:	12.0%	12.0%	10.0%	9.0%	12.0%
Location index (London = 100):	40.8	56.9	39.1	33.7	40.6

What percentage of projects in your region have a commitment to net zero carbon?



Has COVID-19 caused clients in your region to diversify their supply chain?



Top three regional construction challenges

40% of respondents said **too many contractors chasing too few projects** had a significant or high impact on the delivery of construction projects

60% of respondents said that **market uncertainty** had a significant or high impact on the delivery of construction projects

40% of respondents said that **government red tape, bureaucracy, delayed approvals** had a significant or high impact on the delivery of construction projects

Region construction cost performance

International building costs per m ² of internal area, in 2021	Dubai	Riyadh
Commercial		
CBD Offices – high-rise prestige	1,715.5	1,733.3
CBD Offices – up to 20 floors medium (A-Grade)	1,388.7	1,400.0
Office fit-out (30,000sq ft) low specification	1,497.6	1,386.7
Office fit-out (30,000sq ft) medium specification	2,178.4	2,000.0
Office fit-out (30,000sq ft) high specification	2,722.9	2,533.3
Hotels		
3-Star travellers	1,497.6	1,560.0
5-Star luxury	2,450.6	2,613.3
Resort style	3,131.4	3,333.3
Industrial		
High-tech factory/laboratory	1,497.6	1,333.3
Large warehouse distribution centre	953.0	933.3
Retail		
Large shopping centre including mall	1,443.2	1,600.0
Neighbourhood incl supermarket	1,470.4	1,280.0
Prestige car showroom	2,450.6	2,080.0
Residential		
Apartments high-rise	1,225.3	1,466.7
Townhouses medium standard	1,225.3	1,266.7

Labour, material and plant costs	Dubai	Riyadh
Labour costs		
Group 1 Tradesman e.g. plumber, electrician	7.1	7.5
Group 2 Tradesman e.g. carpenter, bricklayer	6.8	7.5
Group 3 Tradesman e.g. carpet layer, tiler, plasterer	6.8	7.5
Group 4 Green collar installation operative e.g. insulation/solar/heat pump		
General labourer	4.9	5.3
Site foreman	15.0	9.3
Material costs		
13 mm plasterboard (m ²)	4.1	3.7
Concrete 30 MPa (m ³) (1500m ³ job)	73.5	53.3
Concrete block (400x200) per 1000 (>10,000 block job)	953.0	453.3
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m+ job)	3.3	3.2
Copper pipe 15 mm (metre) (1,000m + job)		7.5
Emulsion paint (litre)	2.7	9.3
Glass pane 10mm tempered (m ²)	185.2	189.3
Reinforcement bar 16mm (tonne) (120 tonne job)	751.5	693.3
Softwood timber for framing 100mm X 50mm (m)	3.8	4.8
Standard brick per 1000		586.7
Structural steel beams (tonne) (100 tonne+ job)	2,287.3	2,000.0
Plant costs		
Hire 50t mobile crane + operator (day)	735.2	880.0

North America

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Despite suffering higher cases during the pandemic than in many advanced economies, the economic performance of the US in 2020 was close to the global average. GDP fell 3.5 percent according to IMF data. This compares with 3.3 percent globally and above 6 percent in Europe.

Even though Canada contained the pandemic better, it saw an annual GDP fall of 5.4 percent. The IMF forecasts strong growth at, or above, 5 percent for both nations this year, easing to 2 percent or less over the next five years.

Mexico, already in recession before the pandemic, saw GDP fall 10 percent and 8.2 percent respectively in 2020. Activity remains subdued into 2021.

The election of President Biden has had major implications for the US economic strategy. The promise of a once-in-a-lifetime injection of funding to upgrade the nation's aged infrastructure, as well as broadening the definition of infrastructure to include investments in broadband internet and electrifying transportation, looks set to lift construction activity, with potential positive spill-over effects on US neighbours.

Construction sector performance

Compared with the other sectors in its economy, construction in North America was less impacted during the pandemic than most. US construction statistics show that, in cash terms, the pandemic led to a slight slowdown in activity in late spring 2020.

The impact was felt unevenly across markets. New York, for instance, was hard hit and faced tough lockdowns. The market inevitably cooled but is now heating up again. However, across the US, total construction output in 2020 in cash terms was up almost 5 percent compared with 2019.

Canadian construction statistics show a heavy hit in the spring and summer of 2020. While activity has recovered broadly to pre-pandemic levels, annual output in 2020 was down around 3.5 percent in real terms. The sense on the ground is that most markets are currently lukewarm to warm, but there are clear signs of activity heating up.

Despite much of construction in the region seeming to power through the pandemic, COVID-19 has remained a drag on most markets. As workloads have accelerated in 2021, most regions are experiencing labour shortages. Construction employment declined by 7,000 between May and June of 2021 as the industry still employs 238,000 fewer people in the US than before the pandemic, according to an analysis by the Associated General Contractors of America of government data released in July 2021. President Biden's Secretary of Labour, Marty Walsh – a former construction union leader, will be focused on increasing the workforce as quickly as possible to support the President's American Jobs Plan.

Meanwhile, disruption to supply chains from the pandemic, obstruction of the Suez Canal, and natural disasters – like the wildfires in the Western US and the deep freeze in Texas – have increased concerns over cost escalation, widespread project delays, and prolonged lead times for materials across key markets. This is likely to lead the industry to transition from a "just in time" to a "just in case" delivery approach, which may increase cost but reduce risk. President Biden has also taken steps to begin re-shoring supply chains and materials sourcing back to the US.

Top-performing sectors

Health, housing, data centres, logistics warehousing, and transport fall into the most active sectors in most sub-markets in North America. The strength of investment in housing, health and life sciences facilities have been reinforced by the impact of the pandemic.

A number of major cities have provided very attractive economic and tax incentives to the pharmaceutical and life sciences industries who are seeking locations closer to metropolitan areas to improve speed-to-market. These will

drive significant development in areas like Research Triangle Park in North Carolina, the greater Chicago area, the Cleveland-Dayton area, Houston and Southern California.

While the need to improve existing infrastructure in the US has long been appreciated, the US cities where transport seems to be at the fore are those where population growth is very high, notably Austin and Atlanta. There is also a hotbed of infrastructure-related activity in the big cities in Canada.

Progress of the environmental agenda

Average carbon emissions per person in the US are more than double the average in Europe or China, with the US accounting for 14.5 percent of global carbon emissions.

The decision by US President Biden to rejoin the Paris Agreement and call for a \$1.2tn jobs plan, which involves huge infrastructure investment aimed at tackling climate change, marks a volte-face for the US on the environmental agenda. This opens huge opportunities for construction businesses active in green solutions.

Future outlook

Both Canada and the US have high rates of vaccinations, which should allow for a quicker return to normality within their economies. In the US and Canada, the 2021 GDP is expected to grow between 6–7 percent, significantly eclipsing recent year-on-year growth of approximately 3 percent.

The big game changer for construction in the US is likely to be the proposed Biden jobs plan. With the aim to spend 1 percent of GDP upgrading the nation's infrastructure over eight years, the construction sector is set to be a key beneficiary. Given that the sector accounts for just 6 to 7 percent of the US economy currently, the mathematics suggest a potentially massive uplift in activity.

Defining market temperature in region

- ▲ Atlanta
- ▲ Austin
- ▲ Boston
- ◀ Calgary
- ◀ Chicago
- ◀ Edmonton
- ◀ Houston
- ▲ Los Angeles
- ▼ Mexico City
- ▲ Montreal
- ◀ Nashville
- ▲ New York City
- ▲ Ottawa
- ▲ San Francisco
- ▲ Seattle
- ▲ Tampa
- ▲ Toronto
- ▲ Vancouver



Current tendering condition

- Overheating
- Hot
- Warm
- Lukewarm
- Cold

Future market outlook

- ▲ Warmer
- No change
- ▼ Cooler

North America

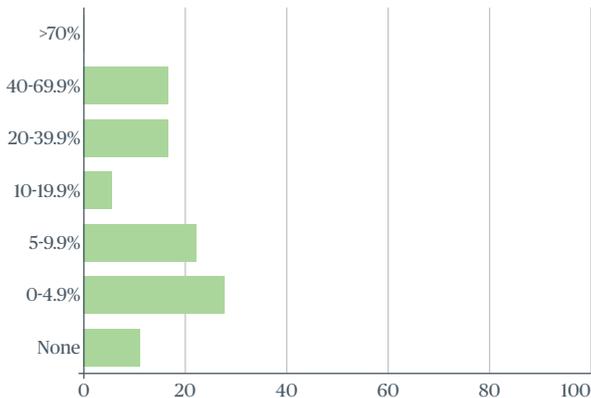
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Construction market metrics

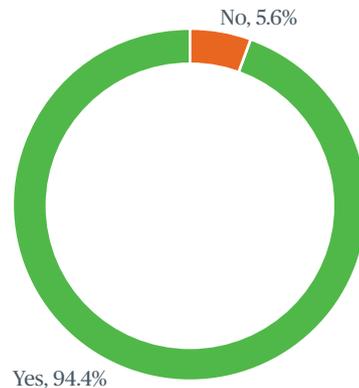
	Atlanta	Austin	Boston	Calgary	Chicago	Edmonton	Houston	Los Angeles	Mexico City
Tendering:	Warm	Lukewarm	Warm	Lukewarm	Warm	Lukewarm	Lukewarm	Warm	Lukewarm
Market:	Warmer	Warmer	Warmer	Staying the same	Staying the same	Staying the same	Staying the same	Warmer	Cooler
Inflation 2020:	1.0%	2.0%	0.2%	2.5%	5.0%	3.0%	2.0%	2.5%	3.8%
Inflation 2021:	3.9%	2.0%	4.0%	3.5%	4.0%	3.0%	2.0%	3.5%	4.5%
Inflation 2022:	3.0%	3.0%	2.0%	4.0%	5.0%	2.5%	3.0%	4.5%	4.5%
Inflation 2023:	2.5%	3.0%	2.0%	2.5%	5.0%	3.0%	3.0%	4.5%	4.5%
Contractor's margin:	4.0%	3.5%	8.0%	2.0%	9.0%	2.0%	3.5%	4.0%	6.0%
Preliminaries:	10.0%	8.0%	10.0%	10.0%	15.0%	10.0%	8.0%	11.3%	2.0%
Location index (London = 100):	69.7	72.4	105.4	57.9	91.6	56.7	62.6	99.5	29.7

	Montreal	Nashville	New York City	Ottawa	San Francisco	Seattle	Tampa	Toronto	Vancouver
Tendering:	Warm	Lukewarm	Lukewarm	Hot	Warm	Warm	Lukewarm	Warm	Warm
Market:	Warmer	Staying the same	Warmer	Warmer	Warmer	Warmer	Warmer	Warmer	Warmer
Inflation 2020:	5.0%	5.0%	4.0%	5.0%	3.5%	3.0%	3.0%	3.0%	3.0%
Inflation 2021:	5.0%	3.0%	2.0%	6.0%	4.5%	5.0%	5.0%	5.0%	4.0%
Inflation 2022:	5.0%	3.0%	4.0%	5.0%	5.0%	6.0%	5.0%	5.0%	4.0%
Inflation 2023:	3.0%	3.0%	3.0%	5.0%	5.0%	6.0%	5.0%	5.0%	4.0%
Contractor's margin:	4.0%	2.4%	5.0%	6.0%	7.0%	5.0%	3.5%	4.0%	3.0%
Preliminaries:	12.0%	5.3%	13.0%	15.0%	10.0%	11.0%	10.0%	12.0%	10.0%
Location index (London = 100):	60.1	71.8	109.6	64.8	116.1	86.5	79.0	67.7	66.1

What percentage of projects in your region have a commitment to net zero carbon?



Has COVID-19 caused clients in your region to diversify their supply chain?



Top three regional construction challenges

44% of respondents said **COVID-19** had a significant or high impact on the delivery of construction projects

33% of respondents said that **skilled labour shortages** had a significant or high impact on the delivery of construction projects

33% of respondents said that **excessive lead times** had a significant or high impact on the delivery of construction projects

Region construction cost performance

International building costs per m ² of internal area, in 2021	Chicago	Houston	Los Angeles	Mexico City	New York City	San Francisco	Toronto	Vancouver	US\$
Commercial									
CBD Offices – high-rise prestige	5,576.0	3,764.0	5,793.0	1,581.2	6,752.0	7,070.0	3,473.2	3,418.3	
CBD Offices – up to 20 floors medium (A-Grade)	4,359.0	2,769.0	4,965.0	1,206.9	5,833.0	5,840.0	2,814.1	2,571.1	
Office fit-out (30,000sq ft) low specification	1,461.7	1,058.9	1,367.6	919.1	1,617.2	1,588.3	1,319.6	1,192.4	
Office fit-out (30,000sq ft) medium specification	2,195.2	1,590.2	2,053.9	1,134.9	2,428.8	2,385.4	2,019.2	1,907.9	
Office fit-out (30,000sq ft) high specification	3,280.5	2,376.4	3,069.3	1,914.4	3,629.6	3,564.6	3,239.5	3,179.8	
Hotels									
3-Star travellers	3,123.0	1,824.0	3,200.0	1,020.2	3,234.0	3,590.0	1,987.4	2,543.9	
5-Star luxury	6,212.0	4,034.0	6,217.0	1,961.3	5,977.0	6,830.0	3,696.6	3,974.8	
Resort style	3,913.0	2,473.0	3,972.0	2,357.7	4,096.0	4,280.0	2,782.4	3,974.8	
Industrial									
High-tech factory/laboratory	6,117.0	5,125.0	5,407.0	2,897.8	5,955.0	6,020.0	4,769.8	4,598.9	
Large warehouse distribution centre	2,109.0	1,184.0	1,600.0	716.1	1,880.0	1,840.0	1,325.9	1,482.0	
Retail									
Large shopping centre including mall	3,512.0	2,959.0	3,862.0	1,202.3	4,083.0	4,330.0	2,804.6	2,420.1	
Neighbourhood incl supermarket	1,806.1	1,318.7	3,098.0	848.0	2,207.0	2,200.0	2,173.7	1,655.5	
Prestige car showroom	3,244.0	3,222.0	3,350.0	1,433.4	3,659.0	3,670.0	2,543.9	2,305.4	
Residential									
Apartments high-rise	2,780.0	2,055.0	3,641.0	947.4	3,993.0	4,220.0	2,265.6	3,020.9	
Townhouses medium standard	1,760.0	1,106.0	2,317.0	685.8	2,248.0	2,870.0	1,723.4	1,994.8	

Labour, material and plant costs	Chicago	Houston	Los Angeles	Mexico City	New York City	San Francisco	Toronto	Vancouver	US\$
Labour costs									
Group 1 Tradesman e.g. plumber, electrician	85.0	71.5	97.0	6.7	140.0	138.0	60.8	58.8	
Group 2 Tradesman e.g. carpenter, bricklayer	79.0	62.0	83.0	6.4	108.0	107.0	53.8	54.9	
Group 3 Tradesman e.g. carpet layer, tiler, plasterer	79.0	51.0	80.0	6.7	100.0	90.0	50.3	50.9	
Group 4 Green collar installation operative	87.0	68.0	97.0	12.5	140.0	138.0	63.6	63.6	
General labourer	55.0	45.0	69.0	3.9	88.0	81.0	46.7	47.7	
Site foreman	120.0	101.0	112.0	8.8	150.0	155.0	72.3	71.5	
Material costs									
13 mm plasterboard (m ²)	11.0	11.3	12.0	6.2	12.0	16.0	10.4	10.3	
Concrete 30 MPa (m ³) (1500m ³ job)	160.0	165.0	179.0	130.3	165.0	190.0	163.8	147.1	
Concrete block (400x200) per 1000 (>10,000 block job)	1,040.0	1,580.0	1,350.0	460.1	1,425.0	2,150.0	1,470.7	1,544.6	
Copper cable (m) (3C + E, 2.5mm PVC) (100,000m+ job)	8.0	8.2	12.0	1.8	9.0	7.5	7.5	7.9	
Copper pipe 15 mm (metre) (1,000m + job)	17.0	16.3	20.0	6.2	17.0	15.0	10.4	10.3	
Emulsion paint (litre)	9.0	7.8	7.0	4.5	8.0	8.0	10.4	10.3	
Glass pane 10mm tempered (m ²)	320.0	303.0	286.0	119.9	285.0	310.0	318.0	327.5	
Reinforcement bar 16mm (tonne) (120 tonne job)	1,202.0	1,193.0	1,500.0	843.4	1,232.0	1,650.0	1,709.2	2,106.7	
Softwood timber for framing 100mm X 50mm (m)	8.0	2.9	14.0	3.6	6.0	7.0	6.4	6.4	
Standard steel per 1000	510.0	639.6	575.0	143.8	610.0	700.0	941.6	965.9	
Structural steel beams (tonne) (100 tonne+ job)	2,488.0	2,500.0	3,200.0	2,179.5	2,995.0	4,250.0	2,861.9	2,430.2	
Plant costs									
Hire 50t mobile crane + operator (day)	3,600.0	2,260.2	3,200.0	904.5	3,675.0	3,600.0	1,788.7	1,944.5	

South America

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Brazil and Peru have been among some of the worst hit nations by COVID-19. However, while the overall region lags well behind North America and Europe, it is currently performing better than most on vaccinations, driven in part by Chile which has been among the fastest to vaccinate its population.

IMF data for 2020 shows a 7 percent contraction across South American economies. Regionally, this was the sharpest downturn in the world. Peru's economy shrank 11 percent, while Argentina and Brazil, Chile and Colombia posted marginally better falls of 4.1 percent, 5.8 percent, and 6.8 percent respectively. Already high unemployment rates increased sharply across the region as a whole.

IMF forecasts suggest that, of the South American economies, only Chile is likely to see activity restored to pre-pandemic levels this year, based in part on its view that the outlook heavily rests on a race between vaccines and the virus. And it sees economic recovery as being very uneven within and between nations.

Construction sector performance

Construction in the region took a battering during the pandemic. Already fragile before COVID-19, construction markets experienced double-digit declines in activity in the year. Colombia, for example, saw production shrink by a quarter. Brazil, with a construction market among the least hit of the South American economies, saw a 7 percent fall in activity. As with economies around the world, most of the damage done was in the second quarter, with activity down by more than half. Markets bounced back late in 2020 but settled in early 2021 below 2019 levels.

Despite the collapse in workload, the major urban centres are, on the ground, still regarded as warm and expected to pick up. This may reflect the high level of urbanisation and the growing proportion living in the region's megacities. Nevertheless, the consensus is that it will take more than two years in some cases to rebuild workloads to pre-pandemic levels.

South America appears to face more challenges than any region other than Africa. COVID-19 clearly tops the list, but the industry is dogged by delays and red tape, market uncertainties and rising costs – and even skills shortages, despite a material fall in activity levels. There is also some concern emerging that the high levels of investment that had been provided by China may be starting to wane. Despite, or perhaps due to, a history of unrest, political instability ranks relatively low on the list of challenges.

Top-performing sectors

One positive consequence of the pandemic is a nascent tech boom which is making economies in the region more competitive. Investment in the region's tech companies exceeded US\$4bn in 2020. E-commerce penetration has been dramatically accelerated. In this context, both data centres and the distribution sectors have been some of the top performers.

Transport and mining remain among the top sectors, but oil and gas along with power and utilities have lost some lustre.

Progress of the environmental agenda

South America accounts for less than 5 percent of global carbon emissions and its emissions per capita are well below the global average. However, Argentina and Brazil have plans to increase their production of fossil fuels.

While wind and solar capacity is growing rapidly in the region, it only represents 6.5 percent of current energy capacity, while fossil fuels account for around 75 percent.

Among Central and South American nations, Costa Rica remains the only country to have officially presented, and started to implement, a long-term decarbonisation strategy. Chile is also amongst the most advanced on striving for net zero-carbon status, with proposals to fix a 2050 target in law.

Meanwhile, Chile, Argentina and Peru have all strengthened their initial nationally determined contribution under the Paris Agreement. But with Brazil the main custodian of the Amazon "lungs of the planet", the continent's role is pivotal in reducing global warming.

Future outlook

After enduring the sharpest contraction of any region, South America is poised for a strong bounce back. But it faces many challenges.

The pandemic exposed weaknesses in the region's housing and infrastructure. This should be a catalyst for investment but, as ever, attracting foreign investors will be key. Foreign direct investment (FDI) has been on a downward trend since peaking in 2012. Having seen FDI fall by an estimated half in 2020, this will be a tough battle.

Defining market temperature in region

- ▲ Bogota
- ▲ Buenos Aires
- ▲ Lima
- ▲ Rio de Janeiro
- ▲ Santiago
- ▲ São Paulo



Current tendering condition

- Overheating
- Hot
- Warm
- Lukewarm
- Cold

Future market outlook

- ▲ Warmer
- No change
- ▼ Cooler

South America

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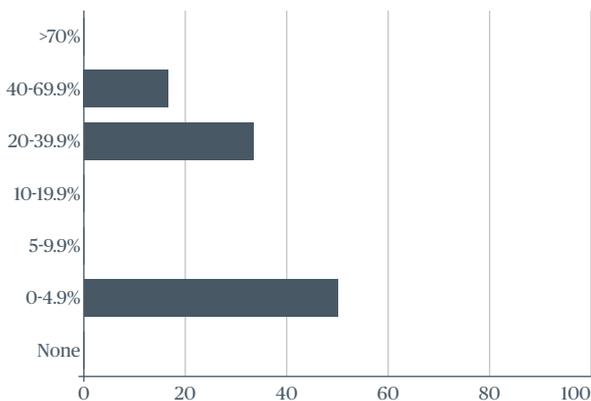
“After enduring the sharpest contraction of any region, South America is poised for a strong bounce back. But it faces many challenges. The pandemic exposed weaknesses in the region’s housing and infrastructure.”

Gareth Whisson, Country Manager

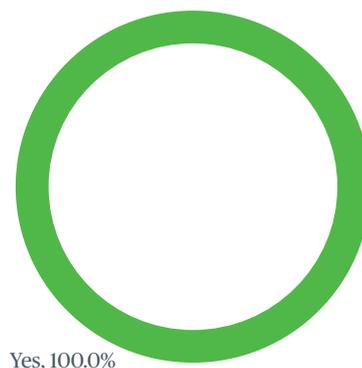
Construction market metrics

	Bogota	Buenos Aires	Lima	Rio de Janeiro	Santiago	São Paulo
Tendering:	Warm	Lukewarm	Warm	Warm	Warm	Warm
Market:	Warmer	Warmer	Warmer	Warmer	Warmer	Warmer
Inflation 2020:	4.0%	-5.0%	2.2%	-5.0%	3.0%	-5.0%
Inflation 2021:	6.0%	10.0%	3.7%	10.0%	5.0%	10.0%
Inflation 2022:	5.0%	5.0%	4.5%	5.0%	5.0%	5.0%
Inflation 2023:	4.0%	5.0%	3.5%	5.0%	5.0%	5.0%
Contractor's margin:	10.0%	11.0%	9.0%	9.0%	9.0%	7.0%
Preliminaries:	13.0%	10.0%	10.0%	10.0%	3.0%	10.0%
Location index (London = 100):	29.8	30.5	42.9	20.1	36.8	16.9

What percentage of projects in your region have a commitment to net zero carbon?



Has COVID-19 caused clients in your region to diversify their supply chain?



Top three regional construction challenges

67% of respondents said **COVID-19** had a significant or high impact on the delivery of construction projects

50% of respondents said that **government red tape, bureaucracy, delayed approvals** had a significant or high impact on the delivery of construction projects

33% of respondents said that **excessive lead times** had a significant or high impact on the delivery of construction projects

Region construction cost performance

International building costs per m ² of internal area, in 2021		US\$ São Paulo
Commercial		
CBD Offices – high-rise prestige		727.4
CBD Offices – up to 20 floors medium (A-Grade)		616.7
Office fit-out (30,000sq ft) low specification		684.5
Office fit-out (30,000sq ft) medium specification		744.3
Office fit-out (30,000sq ft) high specification		1,169.7
Hotels		
3-Star travellers		1,321.0
5-Star luxury		2,174.1
Resort style		2,001.6
Industrial		
High-tech factory/laboratory		1,276.8
Large warehouse distribution centre		523.0
Retail		
Large shopping centre including mall		535.3
Neighbourhood incl supermarket		710.0
Prestige car showroom		826.9
Residential		
Apartments high-rise		576.0
Townhouses medium standard		488.2

Labour, material and plant costs		São Paulo
Labour costs		
Group 1 Tradesman e.g. plumber, electrician		8.9
Group 2 Tradesman e.g. carpenter, bricklayer		8.0
Group 3 Tradesman e.g. carpet layer, tiler, plasterer		8.0
Group 4 Green collar installation operative e.g. insulation/solar/heat pump		8.5
General labourer		6.1
Site foreman		21.2
Material costs		
13 mm plasterboard (m ²)		5.5
Concrete 30 MPa (m ³) (1500m ³ job)		91.0
Concrete block (400x200) per 1000 (>10,000 block job)		585.0
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m+ job)		3.5
Copper pipe 15 mm (metre) (1,000m + job)		4.7
Emulsion paint (litre)		2.5
Glass pane 10mm tempered (m ²)		61.3
Reinforcement bar 16mm (tonne) (120 tonne job)		1,025.1
Softwood timber for framing 100mm X 50mm (m)		1.2
Standard brick per 1000		167.3
Structural steel beams (tonne) (100 tonne+ job)		2,599.0
Plant costs		
Hire 50t mobile crane + operator (day)		1,135.6

UK

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Following two years of slow growth, the UK economy suffered far worse than most in 2020 with GDP falling almost 10 percent, compared with around 6 percent across the EU. COVID-19 has been a major factor, but its coincidence with the nation's EU departure has added further complexity and challenges. The IMF forecasts it will take two years to return to pre-pandemic levels, at which point GDP growth will settle at, or below, 2 percent.

The UK Government's move to put in place stimulus packages to sustain the economy helped to mitigate against some of the damage brought about by the COVID-19 pandemic but has led to a substantial rise in already high debt levels. This will need attention at a time when the government is committed to the long road to rebalancing economic opportunities between regions.

Construction sector performance

Construction output dropped by almost half in the initial lockdown but bounced back rapidly, with the result that most UK markets are lukewarm, warm or hot – and expected to warm further.

COVID-19 created many challenges, including project delays and productivity problems. The unevenness of recovery has also led to pockets of labour shortages. The loss of migrant workers, many returning to their home countries, exacerbates the problem as many may not return. At the end of 2019, non-UK born workers occupied 14 percent of construction jobs. Labour Force Survey data figures assembled by the Construction Products Association (CPA) suggest that, in 2020, the overseas-born workforce shrank by a significant 30 percent. A ready supply of skilled overseas labour may be more limited in future, given the UK's position outside the EU single market.

With global supply chains disrupted and construction seen the world over as a motor to lift economies out of a pandemic-enforced slump, materials shortages are becoming a critical challenge, exacerbated by high demand for key resources such as timber, plastics and steel, from international sources. The CPA estimates that prices of much imported timber have risen more than 80 percent over 12 months, admittedly from a low base. Imported copper and steel prices are also up 40 to 60 percent,

with the price of plastics and polymers up 60 percent.

Top-performing sectors

The pandemic greatly distorted the balance of construction activity. The shutdown of workplaces has impacted on investor confidence in office development in major commercial centres, London particularly. Meanwhile, a desire to expand to meet increased online retail activity has encouraged investment in new distribution facilities.

Most notably, the past year has seen the reignition of the residential property market, which had been in a Brexit-induced limbo for a number of years. Both new-build housing and home improvement activity surged when the country exited the first lockdown, and it is now operating above pre-pandemic levels. This is also true of infrastructure work, which saw a shallower decline in lockdown. Other sectors that are also thriving include health, data centres and life sciences.

Progress of the environmental agenda

The UK is one of six nations to have put a zero-carbon target into law. It has recently committed to cutting emissions by 78 percent by 2035. The much-used political slogan, "build back better", clearly suggests action and adds pressure to meet these targets.

The UK has made huge strides in decarbonising the energy supply system, with carbon emissions halved over the past decade. Construction remains key to delivering yet more wind, nuclear and solar power. It is also central to decarbonising housing and transport, the next two big emitting sectors. The UK arguably has the world's oldest housing stock. The estimated investment needed to adequately retrofit this stock is put at more than £530bn (US\$700bn) over the next 20 years.

Future outlook

Prospects for UK construction look positive with the promise of more normality as vaccinations are rolled out at pace.

Construction cost inflation is expected to run hottest in Birmingham, at 5 percent this year and rising to around 7 percent in 2022. Inflation in most English markets should hold within 2 percent this year, with Scotland and Northern Ireland seeing higher inflation. Again, the pattern is for inflation to increase in 2022. Cost inflation in London should be contained within 2 percent for the foreseeable future.

But plenty of potential squalls may blow progress off course, as the industry adjusts to trading outside the EU and a highly energised global construction market creates shortages and price rises in materials.

Defining market temperature in region

- ⬇️ Belfast
- ⬆️ Birmingham
- ⬇️ Bristol
- ⬇️ Edinburgh
- ⬇️ Glasgow
- ⬆️ Leeds
- ⬆️ London
- ⬆️ Manchester
- ⬆️ Newcastle



Current tendering condition

- Overheating
- Hot
- Warm
- Lukewarm
- Cold

Future market outlook

- ▲ Warmer
- No change
- ▼ Cooler

UK

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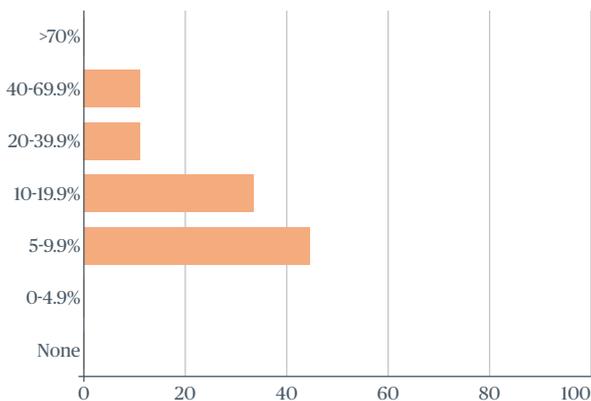
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Patricia Moore, UK Managing Director

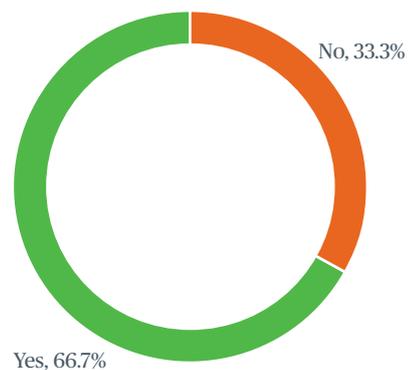
Construction market metrics

	Belfast	Birmingham	Bristol	Edinburgh	Glasgow	Leeds	London	Manchester	Newcastle
Tendering:	Lukewarm	Warm	Lukewarm	Lukewarm	Lukewarm	Warm	Warm	Lukewarm	Warm
Market:	Staying the same	Warmer	Staying the same	Staying the same	Staying the same	Warmer	Warmer	Warmer	Warmer
Inflation 2020:	-2.0%	0.0%	-1.0%	0.0%	0.0%	-0.5%	-2.5%	-1.0%	-1.0%
Inflation 2021:	1.0%	1.5%	1.3%	2.3%	2.3%	1.3%	2.0%	2.0%	1.0%
Inflation 2022:	2.5%	4.0%	2.5%	4.0%	4.0%	2.5%	3.0%	2.5%	2.3%
Inflation 2023:	3.5%	5.0%	3.5%	5.0%	5.0%	3.0%	4.0%	3.5%	3.5%
Contractor's margin:	3.0%	3.0%	3.0%	5.0%	5.0%	4.5%	2.5%	4.5%	4.5%
Preliminaries:	11.0%	14.0%	12.5%	14.0%	14.0%	14.0%	15.0%	14.5%	13.0%
Location index (London = 100):	58.0	76.0	78.3	71.7	72.0	71.3	100.0	73.0	72.1

What percentage of projects in your region have a commitment to net zero carbon?



Has COVID-19 caused clients in your region to diversify their supply chain?



Top three regional construction challenges

56% of respondents said **skilled labour shortages** had a significant or high impact on the delivery of construction projects

44% of respondents said that **COVID-19** had a significant or high impact on the delivery of construction projects

33% of respondents said that **rising costs of construction** had a significant or high impact on the delivery of construction projects

Region construction cost performance

International building costs per m ² of internal area, in 2021	Birmingham	Glasgow	Leeds	London	Manchester	US\$
Commercial						
CBD Offices – high-rise prestige	3,580.4	3,683.7	3,167.3	5,164.0	3,002.0	
CBD Offices – up to 20 floors medium (A-Grade)	3,511.5	2,891.8	3,029.6	4,062.4	3,167.3	
Office fit-out (30,000sq ft) low specification	1,473.5	1,377.1	1,445.9	1,704.0	1,480.4	
Office fit-out (30,000sq ft) medium specification	2,065.6	2,065.6	2,065.6	2,518.9	2,203.3	
Office fit-out (30,000sq ft) high specification	3,029.6	2,891.8	2,960.7	3,556.1	3,029.6	
Hotels						
3-Star travellers	2,606.8	2,478.7	2,513.2	3,993.5	2,526.9	
5-Star luxury	4,092.7	3,855.8	3,792.5	6,334.5	3,546.0	
Resort style	3,373.8	3,580.4	3,428.9	4,475.5	3,959.1	
Industrial						
High-tech factory/laboratory	1,389.5	2,616.4	2,685.3	3,090.1	2,616.4	
Large warehouse distribution centre	1,239.4	1,308.2	1,211.8	1,543.6	1,239.4	
Retail						
Large shopping centre including mall	2,712.8	2,685.3	2,685.3	3,006.0	2,699.1	
Neighbourhood incl supermarket	1,834.4	1,730.7	1,790.2	2,075.2	1,844.2	
Prestige car showroom	2,350.7	2,409.9	2,203.3	2,540.7	2,196.4	
Residential						
Apartments high-rise	3,198.9	3,167.3	3,353.2	5,095.2	3,408.3	
Townhouses medium standard	2,273.5	2,341.0	2,203.3	4,200.1	2,251.5	

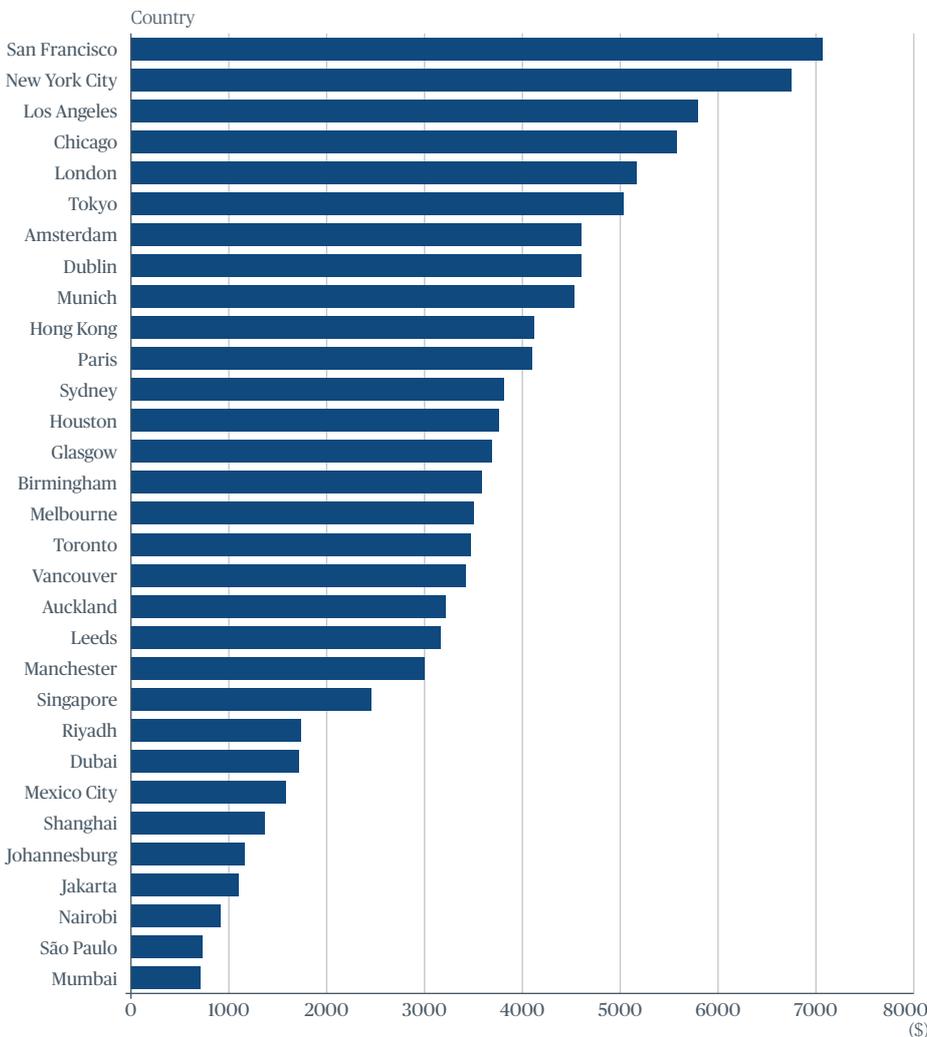
Labour, material and plant costs	Birmingham	Glasgow	Leeds	London	Manchester
Labour costs					
Group 1 Tradesman e.g. plumber, electrician	53.7	53.7	48.2	68.9	47.8
Group 2 Tradesman e.g. carpenter, bricklayer	48.2	44.1	48.2	55.1	47.8
Group 3 Tradesman e.g. carpet layer, tiler, plasterer	45.4	39.9	48.2	48.2	47.8
Group 4 Green collar installation operative e.g. insulation/solar/heat pump	55.1	53.7	55.1	68.9	57.1
General labourer	32.4	32.4	32.4	33.0	33.0
Site foreman	49.6	53.7	55.1	63.3	54.5
Material costs					
13 mm plasterboard (m ²)	6.9	8.3	6.9	12.4	6.3
Concrete 30 MPa (m ³) (1500m ³ job)	146.0	172.1	165.2	192.8	141.8
Concrete block (400x200) per 1000 (>10,000 block job)	1,198.1	1,198.1	1,198.1	1,652.5	1,204.9
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m+ job)	4.8	5.2	4.1	5.5	4.1
Copper pipe 15 mm (metre) (1,000m + job)	6.9	8.3	6.2	9.6	6.2
Emulsion paint (litre)	6.9	10.3	5.5	9.0	6.2
Glass pane 10mm tempered (m ²)	154.2	151.5	151.5	172.1	151.5
Reinforcement bar 16mm (tonne) (120 tonne job)	1,528.5	1,528.5	1,514.8	1,583.6	1,514.8
Softwood timber for framing 100mm X 50mm (m)	5.9	8.0	5.8	9.0	5.8
Standard brick per 1000	663.7	895.1	688.5	757.4	709.2
Structural steel beams (tonne) (100 tonne+ job)	3,029.6	3,029.6	2,754.1	3,442.7	2,754.1
Plant costs					
Hire 50t mobile crane + operator (day)	1,177.4	1,363.3	1,514.8	1,748.9	1,377.1

Comparing construction costs

It is important to compare construction costs between countries to inform expansion decisions. It can enable productivity comparisons and highlight how different practices and tools such as BIM can improve design and delivery. Opportunities to improve the efficiency of the construction sector and reduce costs are also opportunities to grow the global economy faster.

Here we look at the advantages and disadvantages of three methods of comparing construction costs using an example building type: Central Business District (CBD) offices – high-rise prestige.

CBD offices - high-rise prestige using a single currency USD exchange rates



Source: Turner & Townsend International construction market survey 2021

Convert to a single currency such as USD

This is the most common means of comparison, useful for a multinational organisation paying for projects in its home currency.

Advantages

- Easy to understand and visualise.
- Gives the cost of typical building in each country.

Disadvantages

- A change in the exchange rate makes a huge difference: if a particular currency is strong compared to the base currency, the cost of construction looks expensive.
- Is not a reliable indicator of relative costs and efficiency of construction between countries.

Location index

The location index provided in this document offers a common base to compare costs of construction across different markets. London equals 100 as the initial reference point, with the deviation from 100 determined by the average cost in USD of four different building types of construction, specified on page 20.

Terms and references

Building costs per m²

In this survey, building costs per m², sometimes referred to as direct costs (as opposed to indirect costs), are for construction of the building, including preliminaries (or general conditions) costs and substructure, columns, upper floors, staircases, roof, external walls, external doors, internal walls, internal doors, wall finishes, floor finishes, ceiling finishes, fitments, plumbing, HVAC, fire protection, electrical and communication systems and transportation systems.

It is assumed that building costs are based on the typical building standards and building methods for the region.

All data was collected in Q1 2021.

Exclusions from building costs per m²

External works, landscaping, professional fees, demolition, loose furniture, fittings and equipment, developer's internal costs and finance, local authority fees and headworks charges, land, legal, finance and holding costs, GST or sales taxes, site investigation and test bores, removal of significant obstructions in the ground, abnormal footings. Allowance for underground or onsite car parking is also excluded from the building cost unless stated otherwise.

Fit-out cost data

We have provided a low, medium and high fit out cost range for our data. This scale denotes the quality of space, capacity, resilience, number of cellular spaces (meeting rooms, offices) and interventions of the base building. There are however projects that are above the upper end of this scale that are highly specified and provide even higher quality office space.

For ease of comparison across global markets we have used 'Category B construction costs' as the baseline in our fit-out data. This cost is expressed against the usable square meterage of office space.

Category B Construction costs include: main contractor preliminaries and fees/overheads, internal walls, partitions and doors, floor finishes, wall finishes, ceiling finishes, joinery (millwork/architectural woodwork), mechanical, electrical and plumbing systems to suit layout, structured cabling, Loose furniture (desks, chairs, breakout furniture) and AV (TV screens, conference room VC equipment, room booking systems).

Category B construction costs exclude: Category A works (developer specification raised access floors, ceilings, basic lighting and basic cooling), Professional Fees, IT Equipment and Software and move costs). All local taxes are excluded.

All regions have individual nuances. Please reach out to a local Turner & Townsend lead to provide cost data on the exclusions listed above.

Labour costs

Labour costs are the all-inclusive cost to the employer, which includes the basic hourly wage, allowances, taxes, and annual leave costs. Where paid by the employer, this can also include workers' compensation and health insurance, pensions, and travel costs and fares. Labour costs exclude overheads, margins and overtime bonuses.

Construction costs and exchange rates

This survey's construction cost data comes from programmes underway at the beginning of 2020 and excludes applicable taxes. All exchange rates are from March 2021.

Further reading

International Monetary Fund (IMF) World Economic Outlook: Database April 2021 Edition
<https://www.imf.org/en/Publications/WEO/weo-database/2021/April>

International Monetary Fund (IMF) World Economic Outlook: Managing Divergent Recoveries, April 2021
<https://www.imf.org/en/Publications/WEO/Issues/2021/03/23/world-economic-outlook-april-2021>

Organisation for Economic Co-operation and Development (OECD): Economic Forecast
<https://oecd.org/economic-outlook>

Organisation for Economic Co-operation and Development (OECD): Housing Prices
<https://data.oecd.org/price/housing-prices.htm>

Our World in Data: Coronavirus Data Explorer
<https://ourworldindata.org/explorers/coronavirus-data-explorer>

Bloomberg: COVID-19 Deals Tracker
<https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/contracts-purchasing-agreements.html>

Energy & Climate Intelligence Unit: Net Zero Tracker
<https://eciu.net/netzerotracker>

United Nations: Nationally Determined Contributions (NDCs) Registry
<https://www4.unfccc.int/sites/NDCStaging/Pages/All.aspx>

Bank for International Settlements (BIS) Central Bank Policy Rates
<https://www.bis.org/statistics/cbpol.htm>

International Energy Agency (IEA) Renewable Energy Market Update 2021
<https://www.iea.org/reports/renewable-energy-market-update-2021/renewable-electricity>

European Construction Industry Federation
<https://www.fiec.eu/fiec-opinions/press-releases-1/construction-heart-updated-industrial-strategy>

Steel Benchmarker
<http://www.steelbenchmarker.com/>

S&P CoreLogic Case-Shiller 20-City Composite Home Price NSA Index
<https://www.spglobal.com/spdji/en/indices/indicators/sp-corelogic-case-shiller-20-city-composite-home-price-nsa-index/#overview>

Construction Products Association
<https://www.constructionproducts.org.uk/>

The World Bank: Solar Photovoltaic Power Potential by Country
<https://www.worldbank.org/en/topic/energy/publication/solar-photovoltaic-power-potential-by-country>

Wall Street Journal: Container Ship Prices Skyrocket, July 2021
<https://www.wsj.com/articles/container-ship-prices-skyrocket-as-rush-to-move-goods-picks-up-11625482800>

The Financial Times: Biden's Stimulus Package
<https://www.ft.com/content/f4eee199-87c6-4291-ada0-67204a700063>

United States Census: Government Spending
<https://www.census.gov/construction/c30/c30index.html>

Nasdaq: Market Activity – Commodities
[Lumber Price: Latest Futures Prices, Charts & Market News | Nasdaq](https://www.nasdaq.com/markets/commodities)

Government of Japan: Abenomics
<https://www.japan.go.jp/abenomics/index.html>

Construction Leadership Council: National Retrofit Strategy V2
<https://www.constructionleadershipcouncil.co.uk/news/national-retrofit-strategy-v2-launches/>

Mayor of London: London Assembly – Retrofit Accelerator: Homes
<https://www.london.gov.uk/what-we-do/environment/energy/retrofit-accelerator-homes>

Office for National Statistics (ONS) Construction Output in Great Britain, March 2021
<https://www.ons.gov.uk/businessindustryandtrade/constructionindustry/bulletins/constructionoutputingreatbritain/march2021>

KPMG: The Changing Face of Infrastructure in Latin America
https://assets.kpmg/content/dam/kpmg/co/sac/pdf/2021/02/kpmg-infraestructura-americalatina_eng2.pdf

Australian Bureau of Statistics: Residential Property Price Indexes
<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/residential-property-price-indexes-eight-capital-cities/latest-release>



We build trust between clients, suppliers, governments at all levels and society; delivering better outcomes that have a positive impact on the world around us. Our purpose is to make the difference: it's why we exist. We work smarter to face the challenges of the future; bringing the clarity that helps teams realise their full potential across the real estate, infrastructure and natural resources sectors.

We make stronger investment cases, raise delivery standards and maintain schedules and budgets, transforming performance to create a green, inclusive and productive world.

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