

City Council Questions
April 30, 2019 Council Meeting

ITEM 4.3 2018-19 CITY BRIDGES AND CULVERTS REPAIR STRUCTURAL INSPECTION AND REPAIRS, PROJECT 19-40-APPROVE PLANS AND SPECIFICATIONS AND AUTHORIZE BIDDING

1. I've read that some cities, Los Angeles included, are using a viscous street coating (AKA cool pavement) like a slurry seal. They're doing this to reduce temperature rises caused by pavement reflection. Has Mountain View looked into something like this?
2. I've also heard that some cool pavement materials create more carbon emissions in their manufacture than they prevent in their use, but that other products may be a net benefit. Has Mountain View explored this question?

Staff has not researched either of these topics but can do so. Staff recommends returning with additional information during next year's Capital Improvement Program cycle, as there may be budget implications to using new materials.

ITEM 4.5 WYANDOTTE PARK, PROJECT 18-34-APPROVE PLANS AND SPECIFICATIONS AND AUTHORIZE BIDDING

1. I think the Council direction was to make the furniture/fixtures artsy rather than have a stand-alone piece of art. It looks like standalone art is being done. Is that the case?

Staff in conjunction with the Visual Arts Committee (VAC) followed the City standard public art implementation process with a call for artists and included language that art pieces could be incorporated into park fixtures and furniture, like benches and bike racks. The art selection is currently underway and a few artists have submitted artwork for bench-like pieces. The VAC will be making selection recommendations next week and the Community Development Department is scheduled to bring forth the selected artwork for Council approval at the May 21 Council meeting.

ITEM 6.1 NEW RESIDENTIAL DEVELOPMENT AT 525, 531, 555, 565, 569, AND 769 EAST EVELYN AVENUE

1. Of the \$3.53 million spent on environmental cleanup, how much of that will ultimately be paid for by Prometheus? Is any of this amount paid for by the parties responsible for the environmental contamination? Is any of this amount paid for by the sellers of the property either directly or by a reduction in the price of the property?

Prometheus completely funded the \$3.53M costs of environmental cleanup of the site, in advance of the entitlements and at their risk. If the entitlements do not go through, they would be out the full amount. Staff does not know the extent to which this influenced the price of the property.

2. Why does this parcel have to be rezoned to R4? Was the proposed rezoning discussed at the gatekeeper meeting?

The project site is currently split-zoned, and the applicant proposes to rezone the entire site from the P-30 (Sylvan-Dale) Precise Plan and the R3-2.2 (Multiple-Family Residential) District to the R4 (High-Density Residential) District (consistent with the requested General Plan designation of High-Density Residential). The project is designed to meet the applicable standards of the R4 zoning district, and could not be approved (as currently designed) without being rezoned to the R4 district. This request is consistent with the proposal and project presented to the City Council at the Gatekeeper hearing.

3. What other parcels in the City are currently zoned R4? For those parcels, what are the surrounding parcels zoned?

There are two other parcels in the City of Mountain View with R4 (High-Density Residential) Zoning designations. The first is the ROEM project located immediately to the east of the 555 E. Evelyn project site, and the second is an existing apartment site at the northwest corner of North Whisman Road and Devonshire Avenue.

The ROEM Development is surrounded by the 555 E. Evelyn site (proposed to be zoned R4), a gas station located in P-30 (Sylvan-Dale) Precise Plan and R3-2.2, and, in Sunnyvale, properties zoned R3 (Medium Density Residential - use and occupancy of not more than twenty-four dwelling units per acre) and MS (Industrial and Service).

The existing apartment site (with R4 Zoning) is surrounded by properties zoned R3-2, P-32 (Evandale) Precise Plan, which allows multi-family development at densities between 20-38 dwelling units to the acre, similar to R3 zoning districts. To the east, across Whisman Road, the R4 property faces the currently under development East Whisman Precise Plan area

4. What additional traffic calming measures could be done in the Sylvan area? Which additional measures would be required to go through the NTMP process?

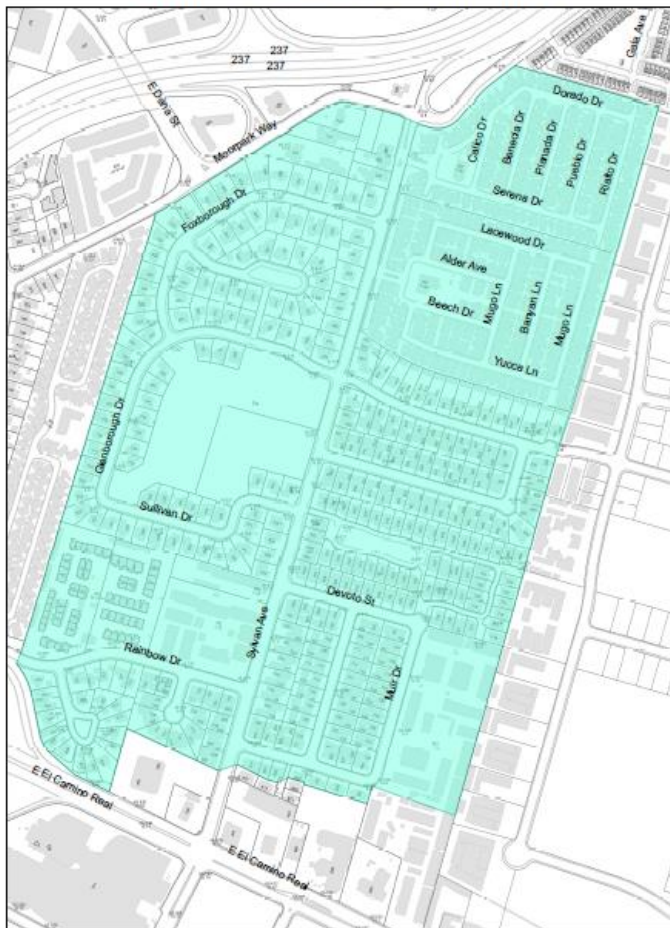
The following traffic calming measures are options listed in the City's adopted Neighborhood Traffic Management Program:

- Turn Restriction Signs
- Curb side trees
- Speed Humps
- Narrow Median Islands
- Traffic Circles
- Chokers/Necked Intersections/Bulb-outs
- Street Closures/Cul de Sacs
- One way entrance/exit to two way streets
- Forced Turn-Channelization
- One-way chicanes

- Woonerf
- Raised Intersection

The City’s program requires staff to host a Neighborhood Meeting to discuss options and to have the meeting attendees agree on a narrower set of options which are then voted on by postcard by those affected by the changes. Because most residences of the Sylvan Area must exit the neighborhood via Sylvan Avenue, an unusually large number of residents are affected by any changes to the street (postcards for voting were sent to 1182 residents and property owners).

Sylvan Avenue - Notification Area



Council can implement any of these options without a neighborhood vote, but to date the City has not done so.

Staff has recommended additional NTMP measures as conditions of approval (such as on Linda Vista), but only with a positive (67% of the votes received) vote of the residents.

The Average Daily Traffic on Sylvan is 7000 vehicles per day. The neighborhood was presented with all the options in the NTMP toolbox at a Neighborhood Meeting in 2017. The neighbors at the meeting agreed that two of the NTMP methods (Speed Feedback

Signs and Speed Humps) be voted on by the neighborhood. Two additional items for enhanced pedestrian crossings near the park were also considered (though are not NTMP measures).

The post card vote for Sylvan included:

- Electronic Speed Feedback Signs
- In-Roadway Warning Lights (IRWLs) (not an NTMP measure)
- Pedestrian activated RRFB/LED Enhanced Signs (not an NTMP measure)
- Speed Humps

The first three options passed with over 75% yes votes but the speed humps had only 54% yes votes (needed 67%). Five hundred sixteen out of 1182 postcards were returned (which is a good return rate).

The City installed reflective banners on existing speed limit and pedestrian signage poles in 2018. The enhanced pedestrian crossings near the park and the radar speed signs were just completed.

Staff will do a new traffic count/speed survey in the fall of 2019 to see what effect the new measures have on the traffic volumes and speeds and report these to the Council Transportation Committee (CTC). Staff would recommend waiting to see the results of the new volume/speed survey before considering additional NTMP measures.

5. Can you please provide a copy of the P-30 Precise Plan? While it is listed on the City's website, there is not a link to the plan.

The P-30 (Sylvan-Dale) Precise Plan was originally approved in the early to mid-1970's, to facilitate specific developments proposed at the time. Relative to other Precise Plans, P-30 offers more limited zoning standards/guidelines and land use direction for future projects, and hence, the more recent projects in the area have been reviewed and processed through rezoning applications (like the Mondrian rowhouse project to the west and the ROEM project to the east).

6. It looks like only two parcels are part of the P-30 Precise Plan. Is that the case? Where can I find the P-30 Precise Plan?

In addition to a portion of the project site, there are three other parcels or prior project areas that are in the P-30 Precise Plan. There is a gas station at the corner of E. Evelyn/N. Bernardo, existing residential development around Bourbon Ct., and another existing residential area (Cuernavaca) around Dale Ave/Heatherstone. The Precise Plan is attached for reference.

7. Where will parking likely spill over if there is not enough parking underground?

The proposed project proposed to utilize the City's Model Parking Standard, which has been applied to other higher-intensity residential projects. Follow-up surveys at some of these prior projects have demonstrated adequate parking. There is no public parking along East Evelyn Avenue, or the nearest segments of Moorpark Way and Bernardo. The

ROEM project included bicycle improvements that removed street parking on the west side of Bernardo; at the time the ROEM project was approved, parking was not permitted on the east side of Bernardo (in Sunnyvale).

8. When was the parcel (779? Evelyn) next to the proposed developed zoned R4?

The ROEM Project (a 100% affordable development) is nearing completion. The project, including the R4 rezoning, was approved by City Council in March 2016.

9. P. 12: How much personal storage will the project offer?

A minimum of 164 cubic feet of personal storage (per unit) is proposed, in conformance with City requirements.

10. What will be in the park?

At this time, the project developer has proposed to dedicate the approximately 0.68-acre to the City. No improvements or uses have been designed for the future public park. If the City accepts the dedication of the site for park uses, it would be subject to the City's standard park design process, taking place in the CIP queue, for design of the actual park. This design process includes community outreach and additional public review through the Parks and Recreation Commission prior to Council approval of a conceptual plan.

ITEM 6.2 950 WEST EL CAMINO REAL - AFFORDABLE HOUSING PROJECT

1. What might the staff direct the applicant to do to reduce the massing of the tower feature?

Staff will ask the applicant to create a more open tower structure at the roof level. This could include greater wall punch-outs on the south and west sides of the tower's roof level. A condition of approval is for the applicant to continue to work with staff on a design solution that lightens this mass. Solar panels are planned to be placed on the roof of the tower element so removing the roof is not a good option based on the project's solar panel electricity needs. The Development Review Committee reviewed the project and recommended approval of its current design and massing so staff does not feel that more significant architectural changes are warranted.

2. Could you please break out the land cost for each of the projects listed on page 15 of the staff report? And, could you please provide the acreage for each of the projects?

The attached document provides land cost information, which has increased on a per acre basis. The costs align with the \$10 million-\$15 million range that developers are currently facing when competing for land (cost depends on location and other factors). Note that the land cost for Shorebreeze is relatively low as it is a redevelopment of units on an existing site that MidPen owns.

3. Could you please add the City subsidy per bedroom for each of the projects? The majority of the Council asked for this information to always be included in staff reports for affordable housing projects.

See attached.

4. I'd like to get information on construction costs in the Bay Area. Does a construction cost index exist, on perhaps a quarterly basis? Does staff have anything that can support the assertion that construction costs keep on going up driving up the cost of developments? Palo Alto Housing said they would send me information but they never did.

In the analysis for the study session that the City Council held last year on the of cost of residential development in North Bayshore, it was estimated that the cost per residential unit is approximately \$650,000 compared to approximately \$520,000 unit in when the North Bayshore feasibility study was first conducted in 2016/17. Recent data and developer input indicates that the cost per unit now is approximately \$700,000/unit and higher, whereas the cost per unit was between \$350K-\$450K/unit from several years ago.

There are external sources of data that tracks construction costs such as the Engineering News Record (ENR) or firms such as Turner Townsend. For example, Turner Townsend conducts an annual International Construction Market Survey taking a look at major metropolitan areas and the construction costs for residential, commercial and office (see attached). Turner and Townsend is considered a reliable source of construction cost data. Its report is based on detailed analysis of real-life construction cost data from its client projects around the world. This year, the San Francisco Bay Area was identified as the most expensive market to build (replacing NYC). It is 13% more costly to build in the Bay Area than in NYC. Leading causes of high construction costs remain rising material costs, labor shortages and steel tariffs (950 WECR was directly affected by this). The new tariffs impacted much of the project's material costs, including steel from China; the project uses standing seam metal (steel) for the siding and roofing. These unanticipated tariffs added to the significant increases to the project's material costs.

Additionally, the Government Accounting Office tracks affordable housing costs since the Low Income Housing Tax Credit (LIHTC) is the most used source of funding for affordable housing and is under federal jurisdiction. The report showed that California's affordable units cost from \$400K/unit to \$750K/unit, which is aligns with the cost of development study and recent data.

Here are construction cost indices for San Francisco per the Engineering News Record (ENR):

- **BCI - is Building Construction Index**
- **CCI - overall Construction Cost Index**

ENR COST INDEXES IN SAN FRANCISCO (1978-2019)

YEAR	MONTH	BCI	%CHG	CCI	%CHG
2019	April	7228.39	+4.4	12322.23	+2.6
2019	Mar	6954.89	+0.5	12048.19	+0.3
2019	Feb	7058.07	+1.7	12131.37	+1.0
2019	Jan	7021.57	+1.4	12114.87	+0.8
2018	Dec	7022.07	+1.5	12115.37	+0.8
2018	Nov	7016.57	+1.4	12109.87	+0.8
2018	Oct	7014.08	+1.3	12107.38	+0.8
2018	Sept	7010.58	+0.9	12103.88	+0.6
2018	Aug	6981.42	+0.5	12074.72	+0.3
2018	July	6966.67	+2.5	12050.97	+2.8
2018	June	6921.42	+1.9	12014.72	+2.5
2018	May	6921.42	+2.4	12014.72	+2.8
2018	Apr	6921.42	+2.3	12014.72	+2.7
2018	Mar	6921.42	+3.6	12014.72	+3.5
2018	Feb	6921.42	+3.6	12014.72	+3.5
2018	Jan	6921.42	+3.6	12014.72	+3.5
2017	Dec	6921.42	+3.6	12014.72	+3.5
2017	Nov	6921.42	+4.1	12014.72	+3.8
2017	Oct	6921.42	+4.1	12014.72	+3.8
2017	Sept	6945.92	+4.5	12037.27	+4.0
2017	Aug	6943.98	+4.8	12037.27	+4.2
2017	Jul	6796.47	2.6	11725.52	1.5
2017	Jun	6793.10	+2.6	11722.15	+1.5
2017	May	6761.99	+2.1	11691.03	+1.2
2017	Apr	6767.41	+2.1	11696.47	+1.2
2017	Mar	6680.37	+0.8	11609.44	+0.5
2017	Feb	6680.37	+4.2	11609.44	+3.9
2017	Jan	6680.37	+4.6	11609.44	+4.1

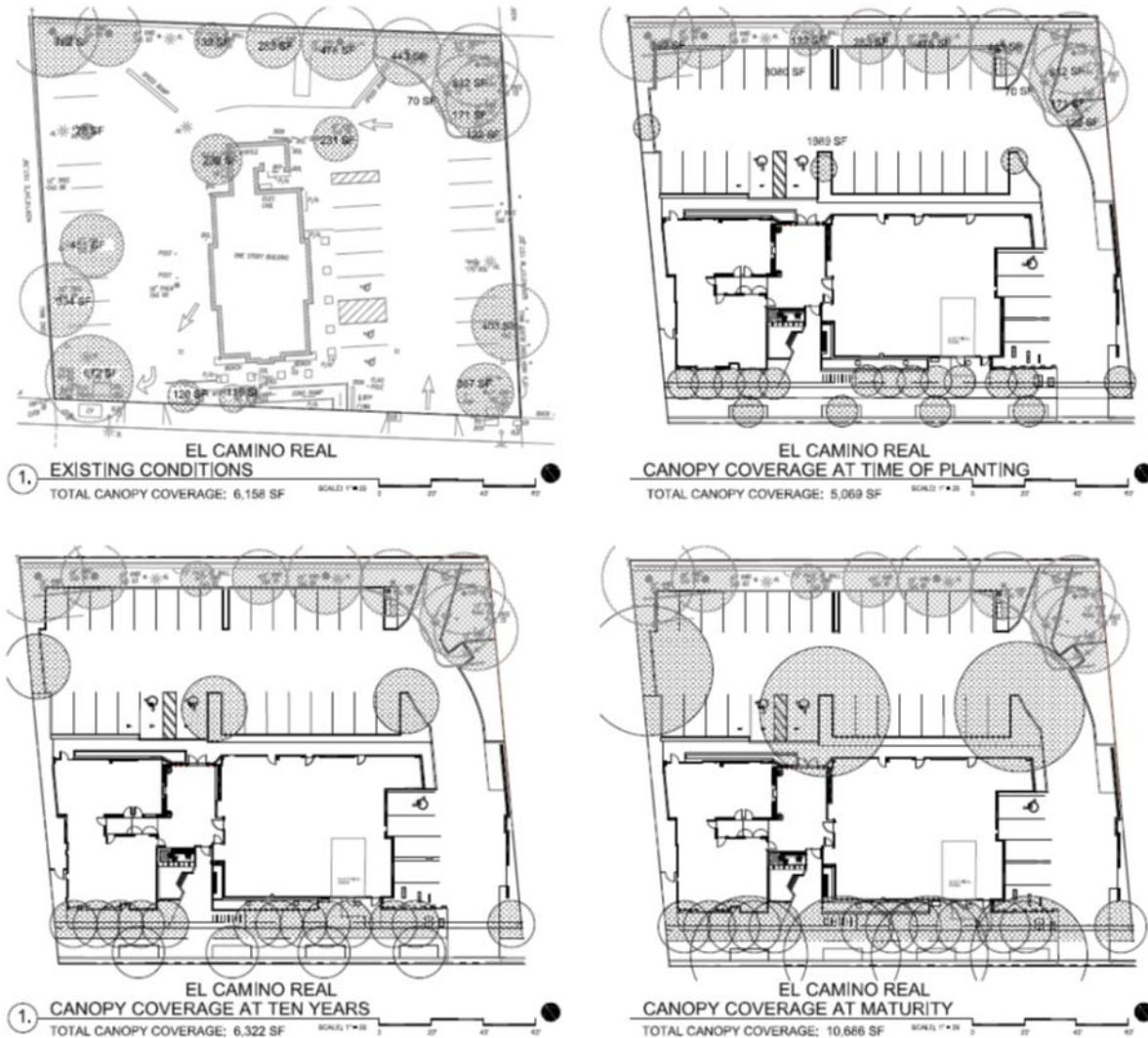
5. What is the “typical” percentage breakout of funding sources for affordable housing projects?

It is difficult to say that there is a typical breakout for affordable housing projects. Each project can vary significantly based on the characteristics of the project, the population served, available funding including funding targeted to special needs populations, the market cycle and development costs, etc. 100% affordable housing projects usually include several funding sources, but the number and types of funding sources and the amount of each can vary significantly from project to project. In the current market, the cost per unit has increased by 75%-100% over the last few years due to increases in the cost of land, construction, labor, and other costs. At the same time, State and federal funding sources are still very limited and insufficient to meet all of the need, especially given the cost increases. Staff actively works with applicants seeking City funding to identify potential external funding sources (e.g., tax credits, Housing Trust, Federal Home Loan Bank, etc.) but not all of the sources are necessarily viable/applicable. Staff also actively works with external partners to facilitate the ability to bring external

funding sources to Mountain View. However, the reality is that the cost per unit has increased significantly throughout the State and region and that the gap per unit has increased with it. As such, it is likely that the subsidy cost per unit requires an upward adjustment relative to past projects to meet the various housing needs of Mountain View, given the current realities that all jurisdictions in the region are facing.

6. Is there a drawing that shows how the project can get to 40% tree canopy coverage?

The graphic below depicts existing canopy coverage conditions (23%), canopy coverage at time of planting (19%), projection of canopy at ten years (24%), and projection of canopy at maturity (40%).



7. P. 5: Tell me more about the programmed front plaza along the El Camino Real frontage. What will the programming be? Can there be any nonprofit or general community use? How can we encourage that so El Camino doesn't turn into a wall of housing closed to the community at large?

The building is set back between six and twelve feet from the sidewalk along El Camino Real. This space contains landscaped area including a row of trees along the building side of the sidewalk to compliment the new street trees adjacent to El Camino Real. The setback area also features public bicycle racks. The center of the buildings features an entry courtyard with landscaping, benches, and special paving. The building façade facing this courtyard features artistic colored glass. This courtyard area is not dedicated for public use but its adjacency to the sidewalk provides a benefit to the "public realm."

8. P. 5: Can I get details on the airfoil-like façade material reminiscent of midcentury modernism?

The airfoil-shaped portion of the building's front façade uses standing seam metal siding in a champagne color. Façade material details can be found on Page A5.1 of the project plans.

9. P. 6: The report says that the project encourages "landscaped pedestrian amenities and gathering places." What are the pedestrian amenities and gathering places? Are they for the public or just the residents?

The project provides landscaping and sidewalk improvements along El Camino Real as well as a small plaza gathering space in the lobby entrance area adjacent to the sidewalk. The plaza is located on private property but is publicly accessible. Additional gathering space for residents is located on the roof deck.

10. P. 8: Is there any way to reduce the use of fiber cement?

Council could request the applicant reduce the amount of fiber cement on the project facade.

11. P. 15: Do we have demographic data on who occupies our affordable housing projects, by age, race/ethnicity, income, gender, special needs, where they lived before, etc.?

We do not collect demographic data on the subsidized (100%) affordable units. All residents of the affordable units must income qualify according to the funding source(s) used for the development. Where legally permissible, the City applies a live/work preference, which allows Mountain View employees and residents highest priority.

Project Cost - Summary

Project	No. of Units/ No. of Bedrooms	Project Cost	Project Cost Per Unit	City Subsidy Cost	City Subsidy Per Unit	City Subsidy Per Bd	Acres	Land Cost	Cost/ Acre
Studio 819	48 workforce studios <u>1 one-bedroom manager unit</u> 49 units total	\$17,396,762	\$355,036	\$9,000,000	\$183,673	\$183,673	.835	\$3,715,000	\$4,449,102
1585 Studios	26 studios <u>1 one-bedroom manager unit</u> 27 units total	\$10,468,465	\$387,721	\$3,616,500 (BMR and HOME Funds)	\$133,946	\$133,946	.47	\$1,175,000	\$2,500,000
779 East Evelyn Avenue	11 studios 45 one-bedroom units 44 two-bedroom units 15 three-bedroom units <u>1 manager unit</u> 116 units total	\$62,405,964	\$537,982	\$21,700,000	\$187,069	\$149,655	2.03	\$11,525,000	\$5,677,340
PAH Project 1701 West El Camino Real	62 studios 4 one-bedroom units <u>1 one-bedroom manager unit</u> 67 units total	\$28,408,189	\$424,002	\$8,000,000	\$119,403	\$119,403	.49	\$5,689,000	\$11,610,204
Shorebreeze Expansion Project	21 studios 20 one-bedroom units 8 two-bedroom units 12 three-bedroom units <u>1 one-bedroom manager unit</u> 62 units total	\$37,715,299	\$608,311	\$8,157,608 (Housing Impact, HOME and CDBG)	\$131,574	\$86,783	1.86	\$2,100,000 (acq. cost for 12 units only)	\$1,129,033
PAH Project 950 West El Camino Real	70 studios <u>1 two-bedroom manager unit</u> 71 units total	\$ 49,197,648	\$692,925	\$23,242,997 (BMR and CDBG)	\$327,366	\$322,819	.61	\$8,088,000	\$13,259,016



Turner & Townsend

International construction market survey 2019

making the **difference**



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Economic turmoil is not a barrier to growth

In the last 12 months, the economic backdrop has shifted. The International Monetary Fund has cut its forecast for global economic growth, stock markets have retreated, and house price inflation has slowed.

Added to this, political turmoil and trade-war tensions have increased uncertainty and volatility within global markets, with tariffs directly affecting the construction sector.

Despite these headwinds, the global construction sector entered this year with significant momentum, having seen growth of five percent in 2018.

Prospects throughout 2019 are equally buoyant – our 2019 international construction market survey reveals 28 percent of markets are hot or overheating and a further 36 percent continue to warm up. Just eight percent are cooling, indicating widespread and continued growth in workload throughout the year.

Demand - a double-edged sword

Increasing activity and demand, in an already hot market, presents both opportunities and challenges for the construction industry and its customers. On one hand, strong growth in construction will help support economic growth, reducing the potential of a major downturn. This could cushion some of the negative impacts on the sector and help maintain favourable conditions for business in many markets.

The challenge is, as hotter markets become more overstretched, escalating construction costs and tighter labour markets will increasingly frustrate attempts to deliver projects to desired standards, cost and timeframes.

This will also put pressure on the price gap between markets, which have also widened. In 2018, the cost of constructing one building in the ten most expensive markets was equivalent to delivering four buildings within the bottom ten markets. In 2019 that cost gap has grown to five.

No time for complacency

A future easing of economic growth may indeed take some heat out of the market. But while this may provide some relief, the symptoms of an overstretched sector – cost overruns, delays in delivery and an erosion of quality – should not be ignored.

We cannot hide from the increasing volatility markets are experiencing. Nor can we ignore growing impatience that construction is not adapting or improving fast enough. We continue to face some fundamental issues.

Clients and suppliers equally have an opportunity – and a responsibility – to drive productivity through new innovations in building, developing new ways of working and business models, using technology in a smarter way and developing new skills for the future. As a sector filled with pride and ambition, now is our time to shine.

Against this backdrop of rising costs and market volatility, it is time to join forces across the industry, identify levers, mobilise and accelerate change. By doing this together, we can benefit collectively from the whole industry and our ability to deliver next generation real estate solutions for all. Combining this with which markets offer the most attractive conditions for investment, both in terms of the potential for construction today and with a view to future growth, may yield unexpected results.

Neil Bullen

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Overview

Survey overview and highlights

About our survey

Our 2019 International construction market survey (ICMS) brings together data and experience from 64 global markets. It is our largest and most in-depth survey to date, providing insights into the current state and direction of the global construction industry.

Our 2019 survey draws on construction data and analysis from real estate projects around the world, providing asset investors and owners with an even greater insight to the constantly changing dynamics of global construction activity. With the addition of 18 new markets, this year's survey now encompasses 84 percent of global GDP.

Markets in new countries included in this year's survey are:

- Auckland and Christchurch – New Zealand
- Harare – Zimbabwe
- Mexico City – Mexico
- Riyadh – Saudi Arabia
- Stockholm – Sweden
- Vienna – Austria.

The additions of key markets within countries already covered in the survey enables more comprehensive cross-country comparisons to be drawn. This year, these are:

- Atlanta, Chicago, Indianapolis and Phoenix – USA
- Vancouver, Ottawa and Edmonton – Canada
- Berlin and Frankfurt, Germany and Barcelona, Spain – Europe
- Guangzhou – China.

2018 was the peak of the global construction cycle that started in 2009, following the global financial crisis. As a result, the construction sector has begun 2019 with considerable momentum. This impetus should continue to help support the global economy during the year. Of the markets surveyed, 28 percent are

hot or overheating and a further 36 percent continue to warm up.

Global economic turmoil will continue; markets stumbled at the end of 2018, Brexit is in full swing and trade wars are impacting. But the strength of construction in many markets shown in our survey indicates that they may be cushioned from the full effects of any economic downturn.

Our research gathers data on market conditions, as well as challenges and opportunities our local experts are seeing on the ground. We also analyse input costs such as labour and materials, and the average cost per square metre across different construction types from residential to commercial.

A variety of construction cost comparison methodologies are adopted to ensure our findings deliver accuracy and insight. As well as straight-line USD conversion, we also use purchasing power parity (PPP) and location factors. These methods remove the impact from changing exchange rates, to standardise our data and draw valid conclusions.

⊕ For more information on the methods we use see pages I12 and I13. Detailed explanations of what's included and excluded from our cost information is given on page I14.





Key highlights

35

markets are warm,
hot or overheating

23

markets are
warming up

5

markets
are cooling

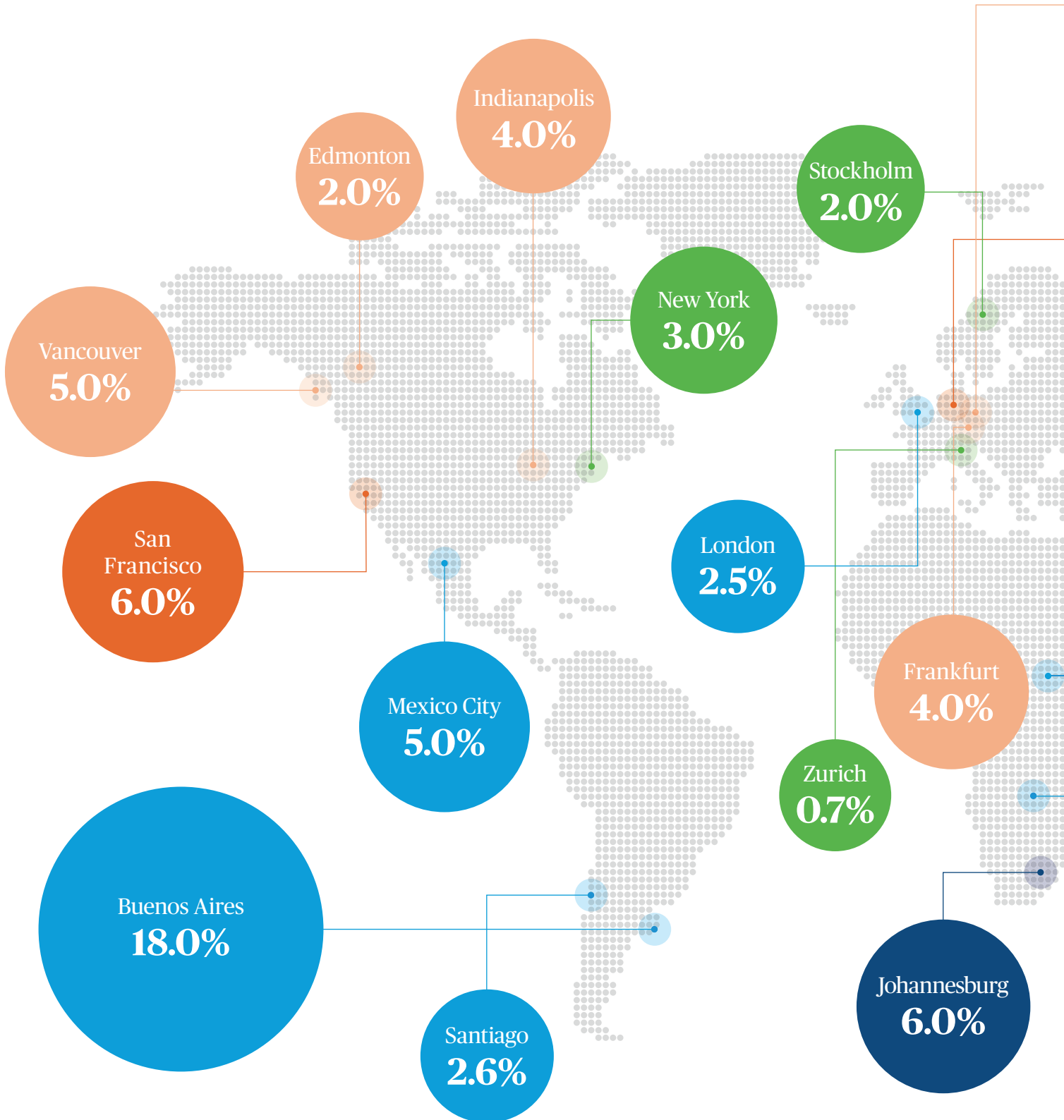
18

new markets in
the 2019 survey



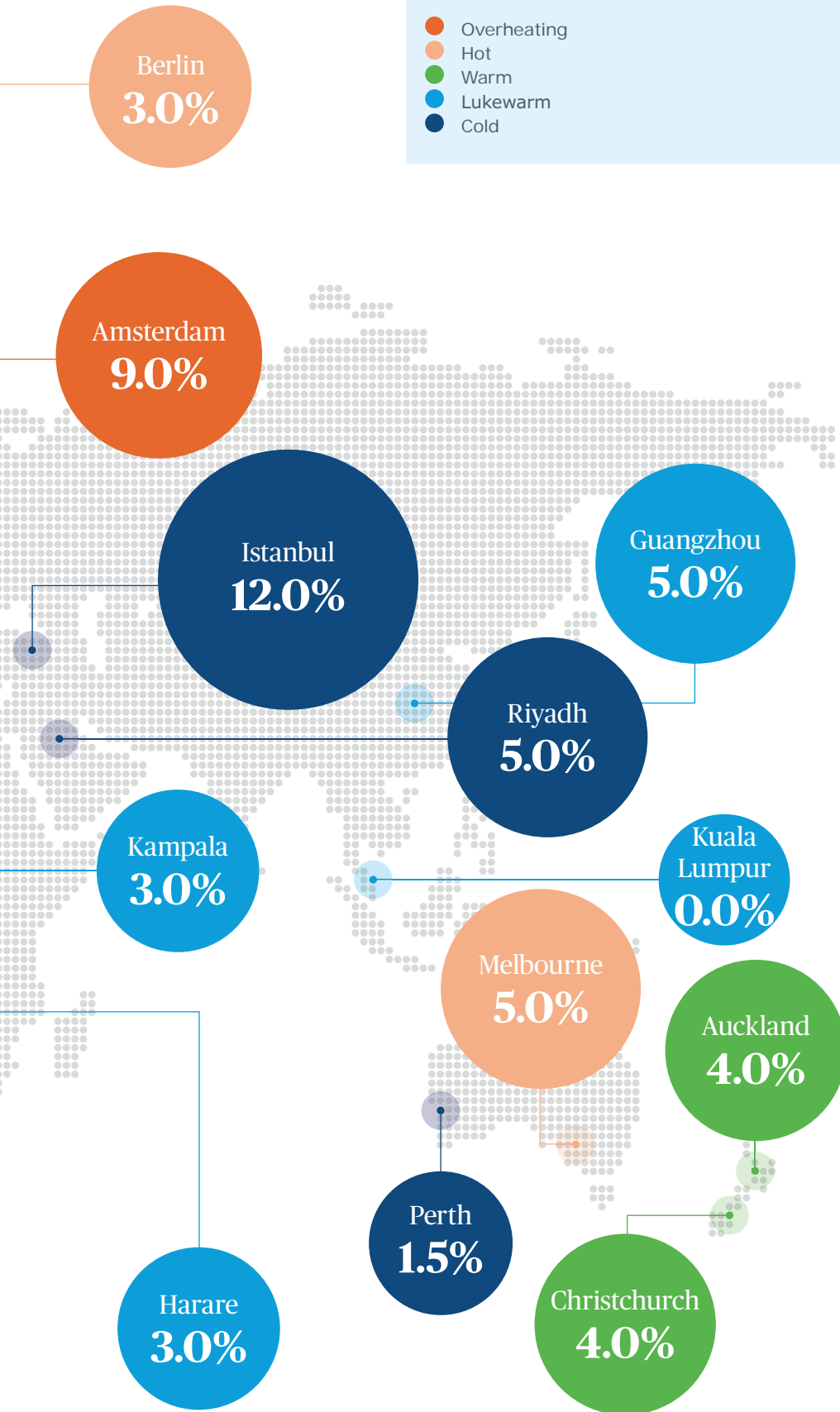
Construction costs in Auckland are the closest to the global median

Construction cost escalation 2019-2020



Current tendering conditions

- Overheating
- Hot
- Warm
- Lukewarm
- Cold



New markets in this survey

Mexico City, Mexico

With tight links to the USA and Canada, its inclusion completes the North American picture. Mexico's refreshed trade deal with the USA and Canada, a growing manufacturing base and lower than average construction costs make Mexico City a key city to follow.

Berlin and Frankfurt, Germany

Adding Berlin and Frankfurt to our survey provides a rounded picture of the German construction market. Both are considered to have hot tender market conditions, but construction costs and wages are lower than Munich, with Berlin the lower cost of the three. Frankfurt is seen as a significant e-commerce hub with distribution logistics and data centres.

Stockholm, Sweden

Stockholm becomes the first Scandinavian country included in this survey, offering insight into a nation of 10 million people and ranked, by the World Bank, 11th on GDP per capita. According to our survey, average construction costs in Sweden is aligned with other capitals, such as Paris and Berlin, despite its high living costs.

Auckland and Christchurch, New Zealand

Ranked number 1 in the World Banks rankings of Ease of Doing Business, New Zealand is an attractive destination for investment. Recently, Auckland and Christchurch's construction markets have been relatively overheated, and there has been strong cost inflation of construction costs. Overall, contractors tend to be quite small, and there are some skills shortages when work volumes increase significantly.

Overview

Global economic outlook

An uncertain economic backdrop

There are clear signs of a retreat in stock markets, of lower house-price inflation, and falls in many developed economies, where cheap credit, tax cuts and speculation have inflated the price of assets.

As a potential economic slowdown is expected, there are increased uncertainties in the political sphere which have potentially powerful economic impacts. Brexit and the implications not just for the UK but Europe, trade wars, USA government shutdown and political tensions, climate change fears rising with the perception that natural disasters are increasing, mass migrations of disenfranchised people and a rise of populist leaders, to name a few.

During 2017, global GDP reached USD80trn according to the World Bank. Of this, the group of 20 largest economies (G20) accounted for 77 percent. This same group saw five percent growth in construction during 2018, equivalent to USD315bn taking their combined expenditure on construction to USD6.2trn.

By far the largest contributor to the GDP of the G20 came from the USA, contributing 31 percent of the G20's combined GDP and 41 percent of the construction, according to World Bank data. The country also contributed 24 percent of global GDP or USD19.4trn. The next largest economy is China with USD12.2trn or 15 percent of global GDP.

The International Monetary Fund (IMF) has warned that downside risks are increasing, saying a disorganised Brexit and a faster than expected slowdown in China were potential triggers for a global slowdown. Moving into 2019, the strength of the USA, China and European economies in particular are of concern.

USA approaching a peak

Growth in the USA peaked at 4.2 percent (annualised) in the second quarter, slowing in the third and fourth quarter. By the final quarter of 2019 an expectation of higher interest rates and weaker earnings, especially in the tech sectors, caused a 16 percent sell-off in shares on the Dow Jones exchange, which affected stock markets worldwide.

The USA has now experienced more than 37 quarters of GDP growth since the global financial crisis. This number is approaching the previous upswing duration from 1989–2001 which lasted 42 quarters before falling. House prices in the country last year surpassed the previous record high on the Case Shiller 20-City index of 207 set in late 2006. Consumer spending is the most important component of the USA's GDP. High house prices not only provide consumer confidence, but also increase the ability to borrow and make major purchases.

At the end of 2018 there were several sources of concern for the US economy. The Fed raised interest rates in 2018 which caused a ripple effect through the markets. The imposition of tariffs, the government shutdown and a slump in stock markets raised fears among business and consumers. Faced with worsening confidence the Fed has resisted further monetary tightening in 2019, and this is causing the indicators to improve.

Despite this, our survey shows the construction sector is especially strong in the USA, with overheating and record high levels of construction costs in the tech cities of the West coast.



Economic overview:

Global

3.5%

forecasted GDP growth in 2019

3.6%

forecasted GDP growth in 2020

USA

2.5%

forecasted GDP growth in 2019

1.8%

forecasted GDP growth in 2020

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“The group of 20 largest economies (G20) saw five percent growth in construction in 2018, equivalent to USD315bn.”

Overview

Global economic outlook

Slowing growth rates in China

Turning to China, its slower growth of 6.5 percent reflected escalating trade tensions with the USA caused by the imposition of tariffs on steel and aluminium and further threats of USD200bn of tariffs on manufactured exports. This prompted exports to fall by 4.4 percent year-on-year. The economy is on a long-term transition from the investment-led growth of the past to growth being led by services and domestic consumption.

Nevertheless, these sectors suffered a setback in late 2018 and early 2019. Sales of cars and smartphones were down, and revenues in the real estate and retail sectors fell as tighter borrowing conditions affected consumer demand.

Finally, there is concern regarding China's massive debt overhang from the construction of infrastructure and state-owned enterprises. The overall size of the debt and China's ability to generate enough income to repay it bears down on business confidence, leading to lower Chinese demand for imports, of which further impacts on the global economy.

Europe's revival cut short

Growth in Europe also appears to be slowing. During 2017 and early 2018, growth rates in Germany, UK, Spain, Italy, Greece and France increased to levels that suggested Europe was finally on its way to a sustainable recovery following the global financial crisis. However, in the second half of 2018 rates began to fall across all regions.

The German economy is particularly concerning. It shrank by 0.2 percent in the final quarter of 2018, recording only 1.1 percent growth for the year. Weaker demand for cars, capital goods and industrial machinery from China is hitting German exports. New emissions standards and testing has also slowed the German car industry. With so much of European industry connected to supplying the German export machine, a slowdown may have far-reaching effects.

A bad Brexit

The disruption caused by Brexit is another major concern. With Brexit's final details still stuck in political turmoil, there are fears over the scale of any potential disruption to cross-border supply chains and how this might inhibit consumers and businesses getting the goods they need. Even when Brexit is resolved, both the UK and Europe are likely to see a further slowdown in growth in the short term.

Climate change debate heats up

Around the world, 2018 proved a significant year for tangible signs of climate change. It was the fourth hottest year on record, with temperatures a full 1°C above temperatures in the late 19th century. In October, the Intergovernmental Panel on Climate Change (IPCC) indicated that the time window was closing to carry out necessary actions to prevent the temperature of the planet increasing by more than 1.5°C. The IPCC report said: "Limiting global warming by 1.5°C will require far-reaching transitions in land, energy, industry, buildings, transport and cities."

Resources and commodities

In 2018, volatile commodity price movements affected construction costs and investment confidence. A glut of oil has been caused by overproduction in OPEC and the emergence of the USA shale oil sector as a global supplier. With oil prices lower, in the region of USD60/barrel, a reduction in fuel prices and delivery costs for materials is positive for construction activity.

The prices of copper, nickel and steel, which are all used in building materials, eased down a little in the second half of 2018. Copper prices affect the cost of electrical cabling. Nickel affects stainless steel prices.

However, trade tariffs on steel are imposing additional costs on USA contractors that use a high proportion of steel.



Global construction will help to cushion the landing

For now global construction remains a solid performer. Our 2019 survey indicates there is considerable momentum in the global construction sector, helping to mitigate the effects of weaker, late-cycle economic growth.

With construction projects generally spanning multiple years, once started, construction projects are likely to keep going. There are many instances where large projects, such as the natural resources sector, transcend economic cycles, often continuing during a downturn and delivering into a recovering market.

Our survey shows the global construction sector still warming up, with 28 percent of the surveyed markets potentially hot or overheating by the end of 2019. But strong growth in construction will help support economic growth, reducing the potential of a major downturn. This would cushion some of the negative impacts on the sector and help maintain favourable conditions for business.

“China’s economy is on a long-term transition from the investment-led growth of the past to growth led by services and domestic consumption.”

A strong year for construction

Even as the global economy starts to slow the construction sector remains strong. Our survey suggests there is enough activity to help cushion the worst impacts of any global economic downturn.

There are reasons to be positive. This year's survey shows the global construction sector is in a strong period, with 18 markets from nine countries describing the construction market as hot or overheating compared with just eight regions from six countries in 2018. None of the hot or overheating countries are forecast to cool in 2019. Five are expected to keep warming up. See figure 1.

By 2020 there could be 24 markets described as hot or overheating compared with 18 today. This is based on the high number of regions where the survey indicates the market is getting warmer. This significant optimism in the global construction sector gives us great confidence that the coming slowdown in the global economy is unlikely to lead to a global recession in the next 18 months. This is in line with the IMF, who are predicting a slowdown rather than a full-blown recession.

Looking deeper, 23 locations describe their construction markets as warming up. Yet only five markets are expected to get cooler. The warming regions are evenly spread across the globe, in Africa, South America and the Middle East, where last year's survey found a disproportionate number of markets described as cold or lukewarm. See figure 1.

There are 35 markets (out of 64) from 18 countries where the market is described as warm, hot or overheating and of these only one market is forecast to cool a little in 2019. This is Kuala Lumpur, a country highly dependent on oil exports and trade with China, both of which are

currently under pressure. Of the remaining 34 regions, 21 are forecast to stay the same and 13 are expected to warm up in 2019.

Only five of all 64 regions are expected to cool in 2019, Kuala Lumpur, Harare, Seoul, Stockholm and Istanbul. The number of countries described as lukewarm is set to fall dramatically from 21 to 14, with most moving into the warm category.

Turning to the UK, current construction markets can at best be described as "steady". Perhaps the markets have already factored in Brexit. Northern Ireland remains cold. Scotland, UK South and London are lukewarm. UK Central and UK North are warm. Of the six UK regions in the survey five are expected to stay the same and one (UK Central) to warm up.

Eight markets globally are described as cold. These are Johannesburg, Perth, Moscow, Istanbul, Northern Ireland, Muscat, Riyadh and Doha. Other than Northern Ireland and Istanbul, these are markets with a high natural resources exposure.

Perth, Muscat and Riyadh see a brighter future with their markets set to warm up as the early stages of a recovery in the minerals and oil and gas sectors encourage growth and construction.

Elsewhere, as in the case of Istanbul and Moscow, global geopolitics are perhaps the main driving force behind the lack of incentive to invest, which is keeping the market cold.

International improvers

- **São Paulo** moved from cold to lukewarm and is expected to warm up in 2019 as the outlook and prices for natural resources improve.
- **Houston** moved from lukewarm to warm but is expected to stay the same in 2019. With the USA energy sector undergoing long-term growth Houston's growth prospects are improving.
- **Brisbane** moved from lukewarm to warm. Several significant and large projects in road, rail and entertainment construction are getting underway giving the market a boost.
- **Toronto** moved from warm to hot. **Vancouver, Edmonton and Ottawa** are new to the survey this year and come in as hot. Each of these cities has seen solid amounts of construction despite residential construction markets slowing down.



Other newcomers to the survey

- **Vienna** is in the survey for the first time. It comes in as a **hot** market region.
- In Germany, **Berlin** and **Frankfurt** have been added to **Munich**. All are **hot** markets. Frankfurt is warming up. Despite evidence of a slowdown in the German economy, the region looks remarkably strong for construction.
- Eight markets from the USA are now part of the survey. All are warm, hot or overheating. The tech cities of **San Francisco** and **Seattle** are **overheating**. Newcomers **Phoenix** and **Indianapolis** are **hot**, and **Atlanta** and **Chicago** are **warm**.
- Another major newcomer to the survey is Mexico, a country with 123 million people, GDP of USD1.1trn and GDP growth of 2.5 percent. **Mexico City** is described as having a **lukewarm** market at the start of 2019.
- New Zealand, a country of 4 million people, includes **Auckland** and **Christchurch**, both with **warm** construction markets.

Frankfurt, Germany, is a hot market in this year's survey

Overview

Global construction cost performance

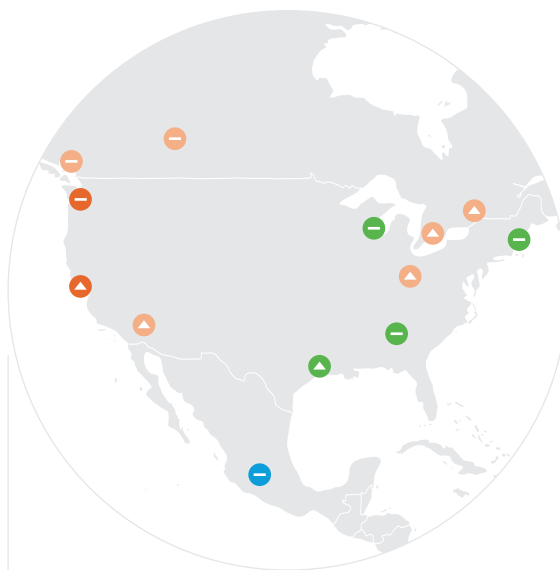
Figure 1 **Defining market temperature**

Current tendering condition

- Overheating
- Hot
- Warm
- Lukewarm
- Cold

Future market outlook

- Warmer
- No change
- Cooler



North America

- San Francisco
- Seattle
- Indianapolis
- Ottawa
- Phoenix
- Toronto
- Edmonton
- Vancouver
- Houston
- Atlanta
- Chicago
- New York City
- Mexico City



South America

- Bogotá
- Santiago
- São Paulo
- Buenos Aires



Summary:

4.7%

Overheating

23.4%

Hot

26.6%

Warm

32.8%

Lukewarm

12.5%

Cold



Europe

- ▲ Amsterdam
- ▲ Frankfurt
- Berlin
- Dublin
- Munich
- Warsaw
- Vienna
- ▲ Barcelona
- ▲ Madrid
- ▲ Paris
- ▲ UK Central
- UK North
- Zurich
- ▼ Stockholm
- London
- Scotland
- UK South
- Moscow
- Northern Ireland
- Istanbul



Middle East

- UAE
- ▲ Muscat
- ▲ Riyadh
- Doha



Asia

- Tokyo
- Bangalore
- Ho Chi Minh City
- Hong Kong
- ▲ Shanghai
- Beijing
- Guangzhou
- Jakarta
- Singapore
- ▼ Kuala Lumpur
- ▼ Seoul



Africa

- ▲ Dar es Salaam
- ▲ Kampala
- ▲ Kigali
- Nairobi
- ▼ Harare
- Johannesburg



Australasia

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

Overview

Global construction cost performance

Current market conditions

We asked our experts to describe their local construction market as cold, lukewarm, warm, hot or overheating. Comparing market heat provides useful insight relating to the strength of competition in the construction supply chain and likely cost pressures.

As a rule, we would expect hot or overheating markets to have higher price inflation. As the demand for construction services or materials increases against a relatively fixed supply, prices increase. When a market is cold, the whole supply chain must compete more vigorously to win work or a supply contract and this encourages lower prices. We should see the evidence all along the supply chain with rising labour rates, rising materials costs and rising costs of construction in hot markets.

There are exceptions to the rule. For example, even in cold markets higher prices of materials, perhaps caused by rising international commodity prices, can push up construction costs. Similarly, where a country is dependent on a high proportion of imported materials any fall in the exchange rate would also lead to inflation in overall construction costs.

In figure 2, two markets experienced exceptionally large construction cost increases in 2018. These were:

- **Buenos Aires** – lukewarm market, staying the same, 43.4 percent increase in 2019
- **Istanbul** – cold market, getting cooler, 15 percent cost increase

There were several hot or overheating markets where construction costs were increasing as might be expected in a construction boom:

- **Amsterdam** – overheating market, getting warmer, 8.8 percent cost increase.
- **Dublin** – hot, staying the same, current construction cost inflation of 7.0 percent
- **Warsaw** – hot, staying the same, construction cost inflation of 6.0 percent
- **Bogotá** – lukewarm market, warming up, 6.5 percent. As Bogotá warms up cost escalation could reach 8.0 percent in 2019.

Construction costs are lower

This year we have prepared a weighted average construction cost inflation, weighting each country by its GDP. This removes the impact of very high inflation in smaller countries or regions skewing the overall average excessively.

On this basis, using this improved method, average global construction cost inflation was 4.9 percent in 2017, easing in 2018 to 4.2 percent.

Using the same weighted average technique, we now expect cost escalation to nudge down to 4.1 percent.

Despite global construction growing by 5.0 percent during 2018, construction costs increased at a slower rate than in 2017. The principal reason for this comes from China and the USA. Both experienced slower construction cost increases:

- In China, average construction cost escalation in 2017 was 9.0 percent, and this fell to 4.3 percent in 2018. In the main, construction cost escalation in the major cities is slowing down
- In the USA, the addition of some lower-cost cities including Atlanta (3.1 percent growth in 2018) and Indianapolis (2.0 percent) has brought the average down.

Nevertheless, there are 20 markets where construction costs are increasing and are likely to be higher in 2019. In most cases, the difference is quite minor. A matter of an additional 0.5 percent or 1.0 percent.

In some cases, however, construction costs look set to jump a little more. These include:

- The warming Riyadh market where some major projects are coming to construction including a six-line Metro Rail in Riyadh, Al Faisaliah Smart City and the 1km high Al Jeddah Tower. Construction cost increases could reach 5.0 percent in 2019
- In Qatar, where preparations for the World Cup are driving construction in the Doha central business district, the airport and nine new soccer stadiums, construction cost inflation could increase from 0.5 percent in 2018 to 2.0 percent in 2019
- In Madrid, construction cost inflation could reach 5.0 percent in 2019 as growing confidence and a shortage of offices and apartments in the major cities are driving the incentive to invest
- In Jakarta, construction cost inflation could reach as high as 7.5 percent in 2019, driven by strong transport infrastructure investment and up to USD60bn of potential Chinese investment in belt and road projects
- In Mexico City, construction cost inflation could reach 5.0 percent in 2019. Despite the market being described as lukewarm, up to 3 million square metres of high-quality mixed residential office towers are under construction in the five major cities of Mexico City, Guadalajara, Monterrey, Querétaro and Puebla, driving the demand for construction services, labour and materials
- Within Australia, Melbourne looks set to see the largest rises in construction cost inflation, from only 2.0 percent in 2017 to 5.0 percent. In 2019, a big expansion in road and rail construction together with a buoyant commercial construction sector are now adding to cost increases.

Figure 2 Construction cost inflation

Region	Markets	Cost inflation in 2018	Forecasted cost inflation in 2019	
Africa	Johannesburg	4.7%	6.0%	
	Dar es Salaam	4.0%	4.0%	
	Kigali	3.2%	3.2%	
	Harare	3.0%	3.0%	
	Kampala	3.0%	3.0%	
	Nairobi	3.0%	3.0%	
Asia	Guangzhou	5.0%	5.0%	
	Jakarta	5.0%	7.5%	
	Seoul	5.0%	2.0%	
	Shanghai	5.0%	5.0%	
	Beijing	3.0%	2.0%	
	Ho Chi Minh City	3.0%	3.0%	
	Tokyo	2.8%	4.0%	
	Hong Kong	2.5%	4.0%	
	Bangalore	1.0%	3.0%	
	Singapore	1.0%	2.0%	
	Kuala Lumpur	0.0%	0.0%	
	Australasia	Melbourne	4.0%	5.0%
		Auckland	3.5%	4.0%
Christchurch		3.5%	4.0%	
Sydney		3.5%	3.5%	
Brisbane		2.0%	2.5%	
Perth		1.0%	1.5%	
Europe	Istanbul	15.0%	12.0%	
	Amsterdam	8.8%	9.0%	
	Dublin	7.0%	7.0%	
	Warsaw	6.0%	4.0%	
	Berlin	4.7%	3.0%	
	Frankfurt	4.7%	4.0%	
	Munich	4.7%	3.0%	
	Madrid	4.0%	5.0%	
	Moscow	4.0%	4.0%	
	Stockholm	4.0%	2.0%	
	Vienna	4.0%	3.5%	
	Barcelona	3.5%	2.5%	
	UK Central	3.3%	2.3%	
	Paris	2.7%	3.5%	
	UK North	2.3%	2.1%	
	London	2.1%	2.5%	
	Scotland	2.1%	3.1%	
	UK South	2.0%	2.5%	
	Northern Ireland	0.5%	1.5%	
Zurich	0.5%	0.7%		
Middle East	UAE	1.5%	2.0%	
	Doha	0.1%	2.0%	
	Riyadh	0.0%	5.0%	
	Muscat	-1.0%	0.0%	
North America	San Francisco	5.0%	6.0%	
	Seattle	5.0%	6.0%	
	Vancouver	5.0%	5.0%	
	Ottawa	4.5%	3.0%	
	Chicago	4.0%	4.0%	
	Houston	4.0%	4.0%	
	Mexico City	4.0%	5.0%	
	Phoenix	4.0%	3.0%	
	New York City	3.5%	3.0%	
	Atlanta	3.1%	4.2%	
	Toronto	3.0%	3.0%	
	Edmonton	2.0%	2.0%	
	Indianapolis	2.0%	4.0%	
South America	Buenos Aires	43.4%	18.0%	
	Bogotá	6.5%	8.0%	
	São Paulo	4.5%	4.5%	
	Santiago	2.1%	2.6%	

Overview

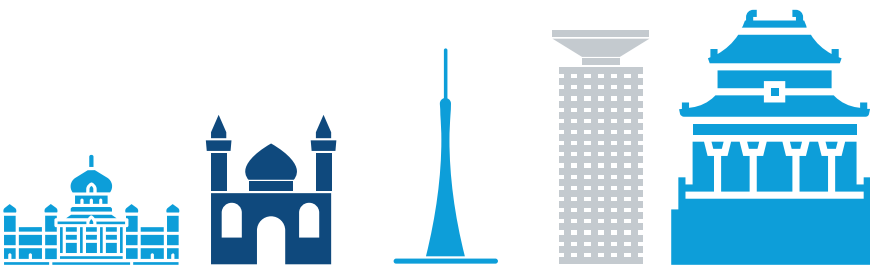
Global construction cost performance

Five most expensive places to build



- 1. San Francisco
- 2. New York city
- 3. London
- 4. Zurich
- 5. Hong Kong

Five least expensive places to build



- 1. Bangalore
- 2. Istanbul
- 3. Guangzhou
- 4. Nairobi
- 5. Beijing



San Francisco

takes the top spot as the most expensive place to build in the world, with the average cost of construction increasing 5.0 percent in 2018.

Where is the most expensive region to build?

To identify the most expensive place to build, the average build cost in USD of six different types of construction was assessed:

- Apartment high-rise
- Office block prestige
- Large warehouse distribution centre
- General hospital
- Primary and secondary school
- Shopping centre including mall.

The five highest cost cities remain San Francisco, New York, London, Zurich and Hong Kong. This year, San Francisco removes New York from the top spot, having increased by 5.0 percent in the last year. See figure 3.

Singapore has construction costs closest to the average, while the closest to the median cost of USD2,272 is Auckland.

Low construction costs in Chinese and Indian cities are not much of a surprise, having been in this position in previous surveys. However, Istanbul continues to surprise by having such low construction costs. The Turkish lira has fallen from close to USD0.50 to USD0.19 since 2015, which helps explain the dramatically low construction costs when converted back to US dollars.

Figure 3 Average cost of six building types in USD

Region	Markets	Average cost of six building types	USD
Africa	Harare		1,683.3
	Kigali		1,085.4
	Kampala		967.3
	Johannesburg		952.2
	Dar es Salaam		922.3
	Nairobi		738.4
Asia	Hong Kong		3,749.0
	Tokyo		2,660.7
	Singapore		2,100.1
	Seoul		1,702.8
	Kuala Lumpur		992.7
	Jakarta		879.7
	Ho Chi Minh City		813.7
	Shanghai		764.0
	Beijing		756.7
	Guangzhou		728.7
	Bangalore		582.2
Australasia	Sydney		2,735.5
	Melbourne		2,415.5
	Auckland		2,272.2
	Brisbane		2,262.0
	Christchurch		2,238.9
	Perth		2,165.8
Europe	London		3,790.1
	Zurich		3,756.9
	Dublin		3,245.1
	UK South		2,938.2
	Munich		2,924.7
	Amsterdam		2,866.4
	Vienna		2,816.0
	Frankfurt		2,707.2
	Scotland		2,698.1
	UK North		2,693.9
	UK Central		2,685.7
	Paris		2,668.4
	Berlin		2,645.8
	Stockholm		2,584.4
	Northern Ireland		2,291.7
	Barcelona		2,238.3
Madrid		2,205.2	
Warsaw		1,013.8	
Moscow		933.3	
Istanbul		611.6	
Middle East	Doha		2,420.6
	UAE		1,742.1
	Muscat		1,314.1
	Riyadh		1,288.0
North America	San Francisco		4,482.7
	New York City		3,958.3
	Seattle		3,640.0
	Chicago		3,188.1
	Vancouver		2,720.8
	Indianapolis		2,628.6
	Phoenix		2,592.7
	Atlanta		2,584.8
	Houston		2,551.5
	Toronto		2,550.7
	Edmonton		2,506.5
	Ottawa		2,415.7
	Mexico City		1,144.7
South America	Santiago		1,430.0
	Buenos Aires		1,310.1
	Bogotá		1,224.6
	São Paulo		968.2

Overview

Global construction cost performance

The overall spread of average construction costs is remarkable and increasing. Bangalore costs are just 13 percent of those in San Francisco. The bottom ten markets have average construction costs of just 22 percent of the top ten regions. In other words, you could build five similar structures in the bottom ten regions for the same cost as one in the top ten regions.

In 2018, the average construction cost of the bottom ten regions were 25 percent of the average of the top ten regions. At this time, the lowest cost regions could build four similar structures for the same cost as the average top ten markets.

Construction labour

The survey includes an assessment of the cost of construction trade labour by

region (figure 4) and by market (figure 5). We also asked the respondents to indicate the cost to the employer rather than just the wage, so the rates include, where appropriate, travel expenses, pension contributions and health insurance as well as other benefits. In some cases, these bump the labour cost up substantially above the wage.

The survey again highlights the massive disparity between labour costs worldwide. China, India, and Africa regions have the lowest costs, while North America has the highest costs with Europe and Australasia a little behind. The highest labour costs were recorded in Zurich, where even a general labourer could cost as much as USD99 per hour, and a skilled electrician might cost USD118 per hour.

When comparing high-cost and low-cost labour regions it is worth considering education, skill levels and overall labour productivity. Generally, high labour-cost regions will invest much more heavily in labour-saving machinery and pay close attention to labour productivity. But, where labour is very low cost it is cost-effective and efficient to employ more labour.

Labour skills shortages

Survey respondents were asked to advise on the state of labour skills shortages in their local market. Are there trades labour skills shortages or is the market in balance or even in surplus? In this survey the proportion of markets experiencing skills shortages continues to increase. Two thirds of the markets in this year's survey are experiencing skills shortages.

Figure 4 Average hourly wage (USD) by region

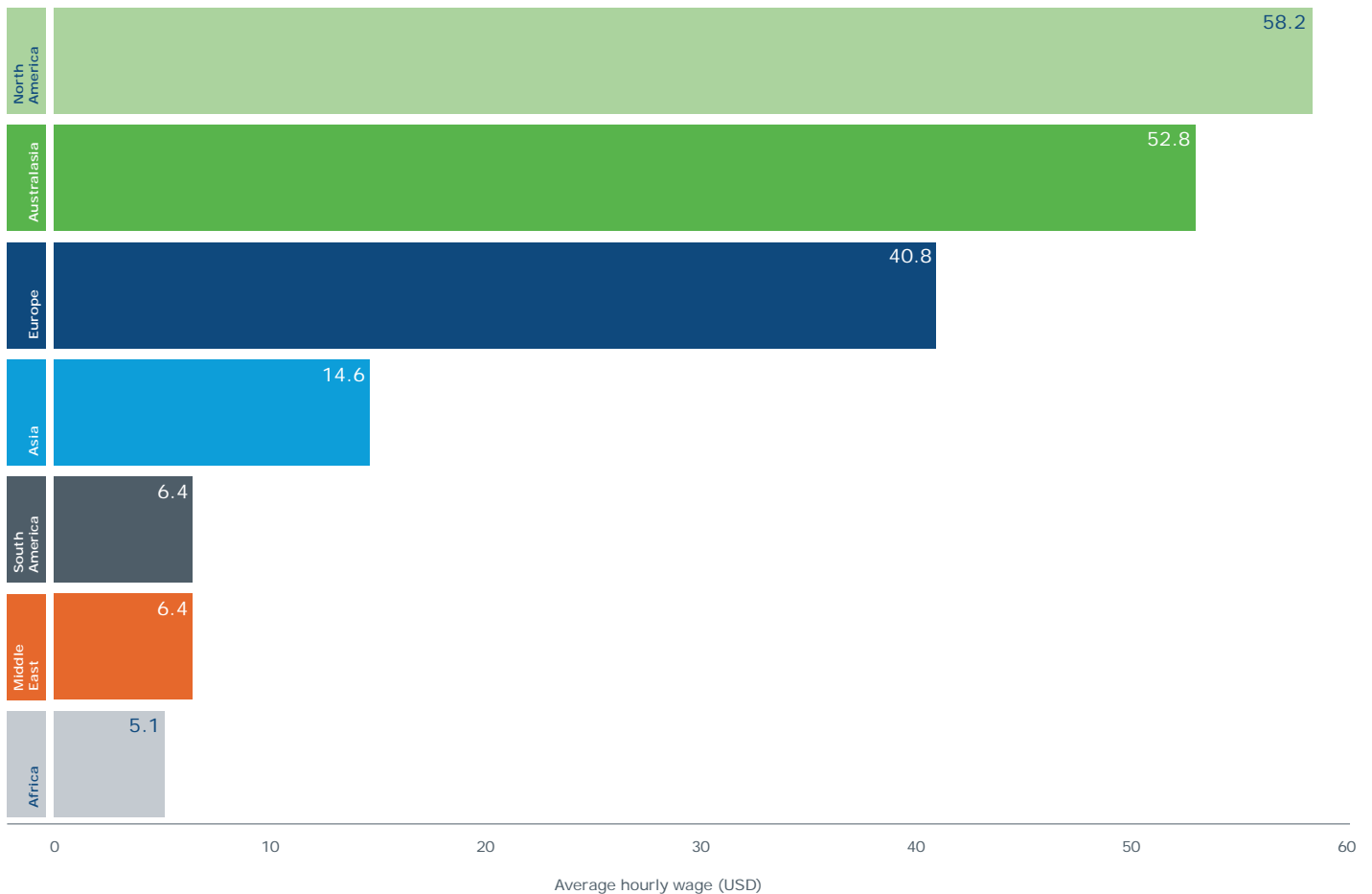
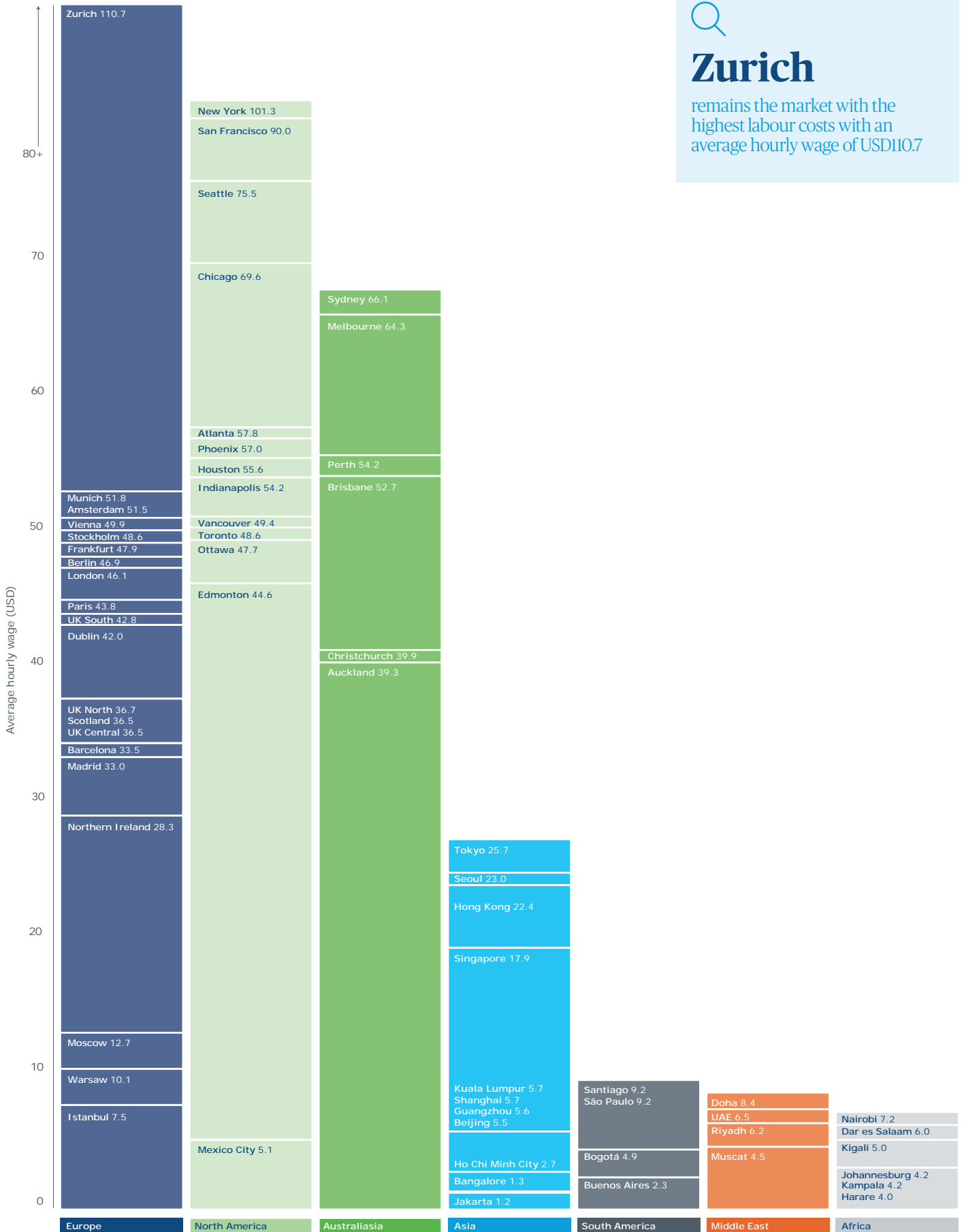


Figure 5 Average hourly wage by market



Overview

Global construction cost performance

The number of regions 'in balance' has fallen while the proportion of regions with a skills surplus remained constant. As might be expected, hot and overheating markets are experiencing skills shortages. None of these regions said their markets were in balance. For many high-cost countries skills shortages are a near perpetual problem, easing only when the market dips into recession. See figure 6.

Underlining the persistence of skills shortages is that some regions with a cold market still reported trade skills shortages, such as Johannesburg and Northern Ireland. Perth remains a cold market, but the skills situation is regarded as in balance.

Eleven regions considered lukewarm are still reporting skills shortages. This raises the question of where labour will come from as and when these markets heat up from lukewarm to hot. Some may come from other occupations such as agriculture where the operation of heavy machinery is common, others from service-based

occupations. But often in the high-labour-cost regions barriers to entry can be significant, such as a requirement for labour to have trade permits, licences or "tickets". The ease with which additional labour can be mobilised will influence cost inflation. Where it is hard to employ additional labour quickly, wages often increase through competitive bidding, ultimately ending in higher construction costs.

Preliminaries and margins

Preliminaries can vary quite widely within a region, depending on the type and location of the construction. As they take account of the setting up costs for a construction job, in regions where there is a high degree of complexity preliminaries tend to be higher. Tight construction spaces, traffic management, site delivery management, all add to costs. Typically, higher preliminaries costs occur in Australasia, Germany, the UK and the USA. See figure 7.

Some of the lowest profit margins among main contractors are in the

United Kingdom, where the average is just 4.0 percent. Australasia is only slightly higher, with New Zealand at 7.0 percent margin. In the USA and Canada, the average margin is 5.2 percent. South of the border in Mexico margins are higher at 10.0 percent. In South America margins tend to be higher, averaging 8.0 percent.

There was a wide range of main-contractor margins recorded for Europe. Overall, most regions recorded five to six percent margins. However, in overheated markets, such as Amsterdam and Sweden, margins are as high as 10.0 percent.

Asia has some with very high margins. Margins in Kuala Lumpur, Bangalore, Jakarta and Ho Chi Minh City are all 10.0 percent or above. In previous years, some of the highest margins have been in the Middle East, where 10.0 percent margins have been common, but in 2019 the average is 6.6 percent.

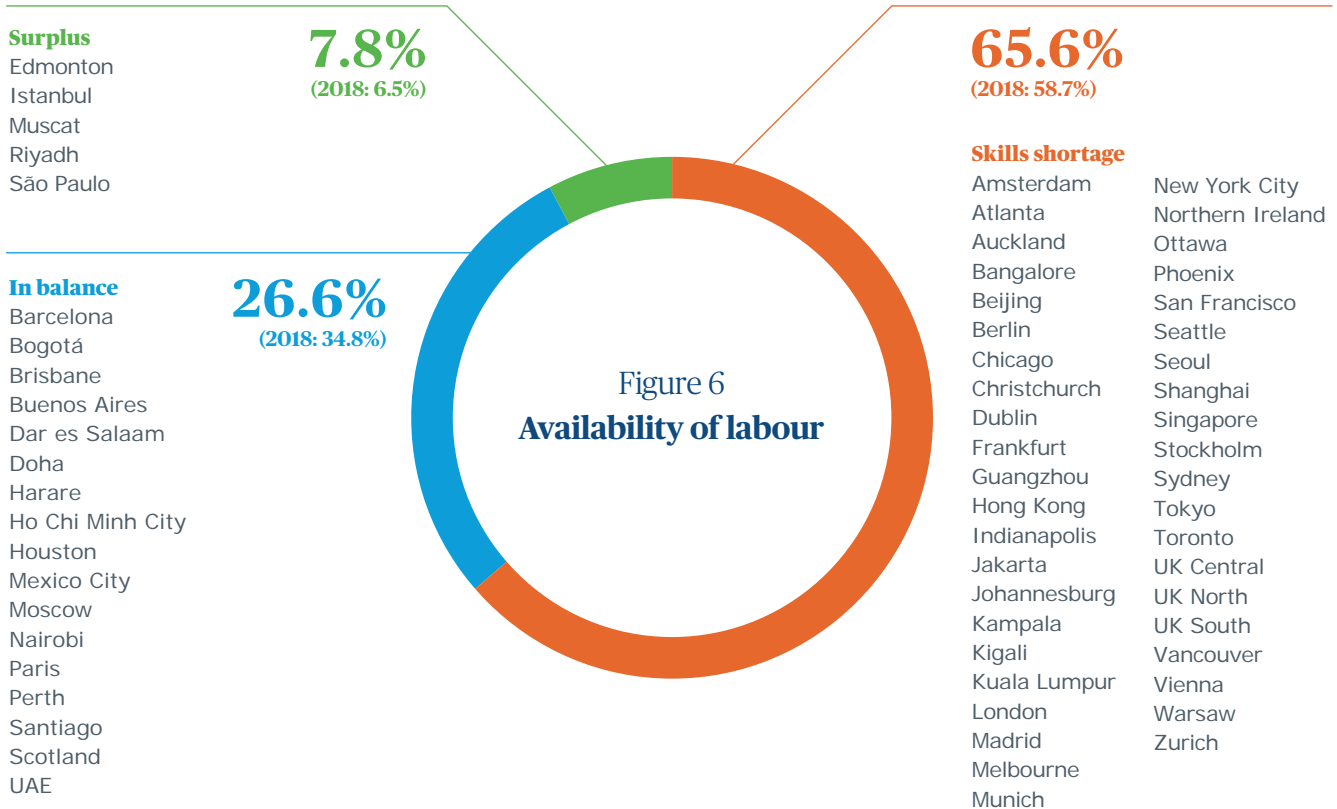
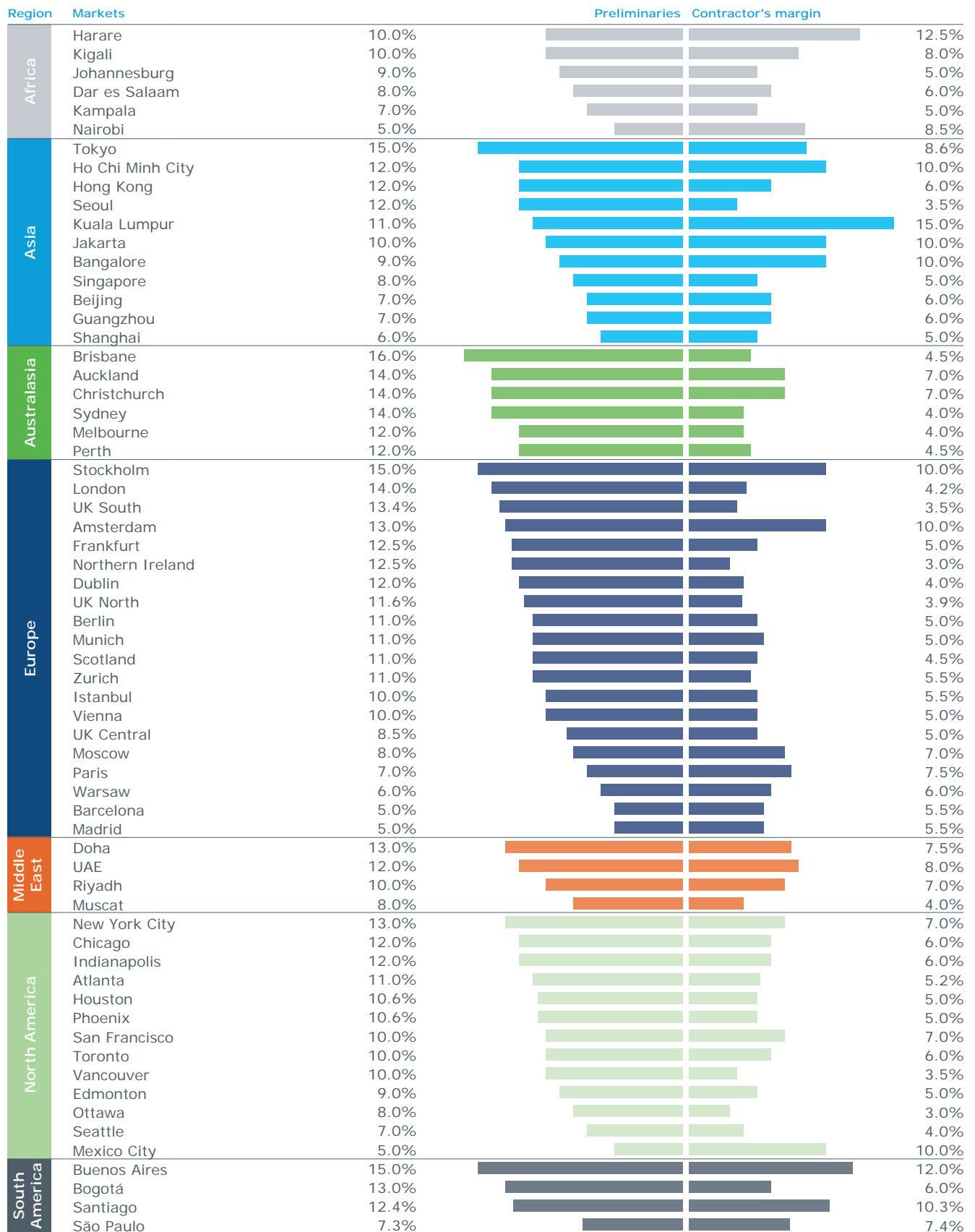


Figure 7 Preliminaries and margins



The trade wars ripple effect

Every year we ask our experts around the world to tell us about the challenges in their markets. Moving into 2019, high on the list are concerns over tariffs, which ranked in the top five issues affecting construction across our global locations. But with steel a key building material, what is the real impact import tariffs might have on construction costs around the world?

After years of liberalising trade, recently imposed tariffs on steel (25 percent) and aluminium (10 percent) imports have unsettled financial markets and sparked concerns about global trade.

The imposition of tariffs represents a challenge with real cost implications for construction. The industry needs to consider more than ever the amount of steel in various types of construction. If we know the steel design, we can evaluate the degree of impact a steel import tariff might have on construction costs around the world.

Steel is a vital component in most construction, although the steel design of buildings varies greatly depending on the type of construction. While the superstructure accounts for the greatest amount, it also includes piping, many lighting fixture enclosures, stairways, ornamental metals, etc.

Steel's proportion of a building's total cost varies by country and region. As a general guide, we estimate the proportion (as indicated by the square

metre or square foot costs in this publication) tends to range upwards from 5 percent to 25 percent, for the most steel intensive buildings.

At the lower extreme a 25 percent rise would add about one percent on the total cost. For the more steel intensive buildings the increase could top 6 percent.

But not all cost rises from import tariffs would be passed on in full. As economists say: "prices are sticky", a term when global price rises or falls are not necessarily passed on in full immediately. They are often delayed for various commercial reasons.

Meanwhile, local steel producers and fabricators, not impacted by tariffs, would also tend to mirror to some extent the price changes in imported prices.



USA



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To capture the current impact of tariff for construction, we recently undertook a cost study of a 90-story building at the Hudson Yards Development completed before tariffs were introduced. We found that if it was being built now the tariffs would increase the cost of the core and shell construction by between USD75m and USD100m.

Owners and developers can expect to spend 5 percent to 10 percent more on their overall core and shell construction for tall and supertall steel-framed buildings. Furthermore, tariffs are also creating delays at customs. This affects build programmes and turning to local supply doesn't necessary solve the problem alone. It means thinking more creatively around the full supply chain from steel mills, to fabricators and erectors.

Overall USA steel price demand is rising given the amount of current construction. While there has been some stability as of late in the price of steel from 2018, we still expect to see incremental rise across the region.



Asia

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As the largest global producer of steel, the tariff impact affects steel exports across Asia. Nevertheless, the biggest impact has been on sentiment and fear rather than export earnings, which make up only a small proportion of the total export value.

Tariff concerns are Asia wide, as regions wonder what else is coming. For example, in Hong Kong increased volumes of steel in the Asia market, due to a lack of export opportunities in the USA, may result in downward steel costs.

In Japan, the effect is mostly felt by the auto exporters having to cut margins to compete in the USA market. In the longer term over the next 12 to 24 months, this is expected to trickle through to the Japanese construction market, with steel fabricators looking at ways in which they can mitigate the cost impact associated with the tariffs, which will ultimately drive an increase in the cost of steel.

Canada is the biggest international buyer of American steel. The introduction of the USA's tariffs led Canada to announce retaliatory tariffs on steel and a variety of other USA goods. The net effect was to increase prices of steel and aluminium-based building products in the Canadian market.

For 2018, the overall impact of the tariff was an increase of approximately 3 percent to 5 percent in overall construction cost and significantly higher for steel-intensive buildings such as manufacturing or industrial facilities and warehouses.

Tariffs are likely to continue to contribute to higher construction costs across the region in the short to medium term (three to six months) and will level off until the supply chain catches up with the market demand.

Tariffs on steel imports into the USA add to the cost of building products equipment and machinery exported from the USA. These additional costs affect the global supply chains for building materials and equipment. They are especially onerous for developing countries, such as Africa, where construction is sensitive to costs of imported materials and machinery.

Faced with rising costs from existing suppliers, construction firms in African countries, for example, are forced to seek cheaper alternatives from other regions less affected by the tariffs. Changing a supplier mid-stream in a project carries risks of delays to schedules, inferior quality and higher costs.

Looking forward, there are positive movements in East and West Africa, where increasing commodity prices are driving investment decisions and the tariffs are likely to continue to contribute to higher costs across the region.

Impact of the steel tariffs around the world

According to our survey, the impact of tariffs ranked in the top five issues across our global locations.



Steel price increases since 2018:

San Francisco, USA

17%

Reinforcement bar 16mm (tonne)

30%

Structural steel beams (tonne)

UAE, Middle East

22%

Reinforcement bar 16mm (tonne)

11%

Structural steel beams (tonne)

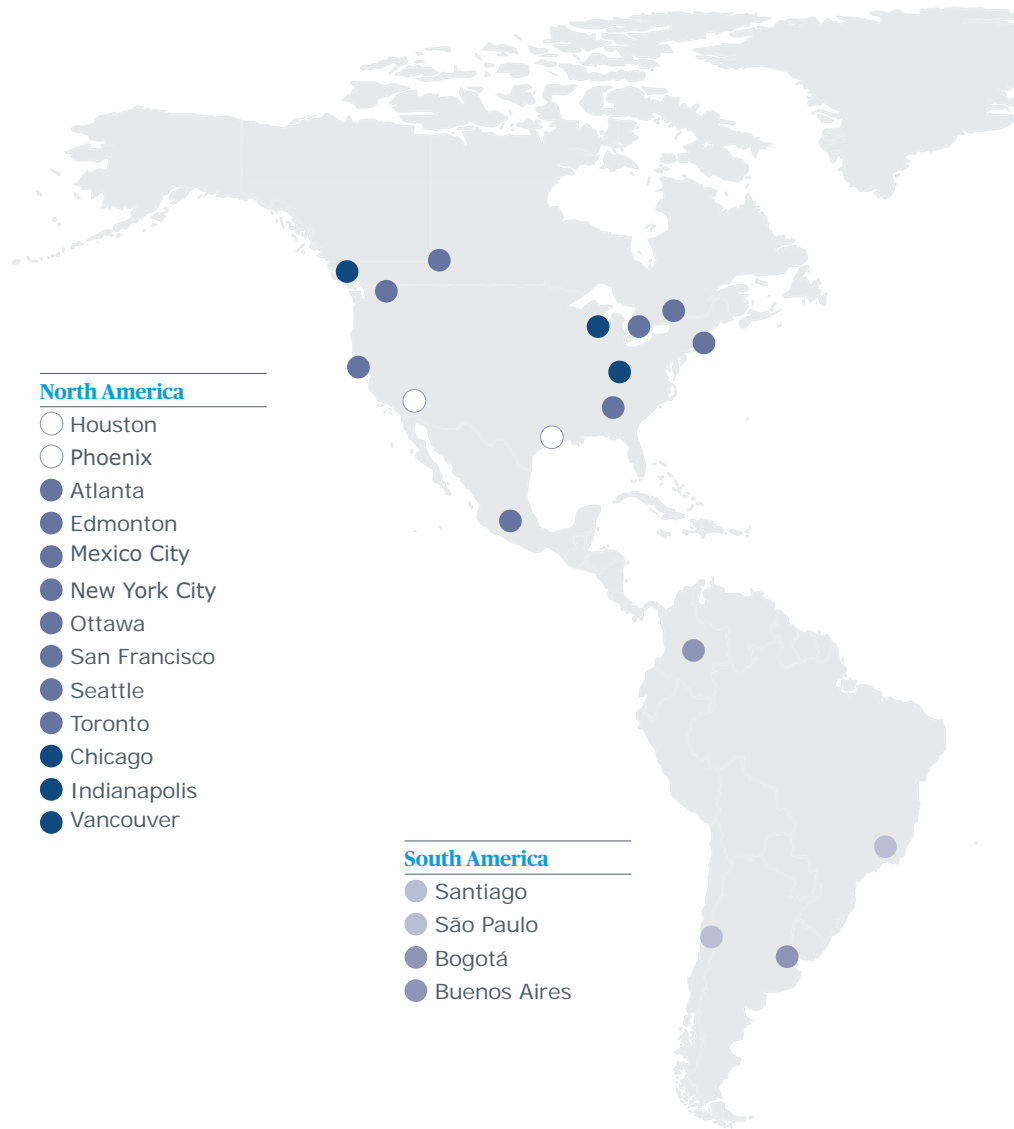
Toronto, Canada

20%

Reinforcement bar 16mm (tonne)

20%

Structural steel beams (tonne)



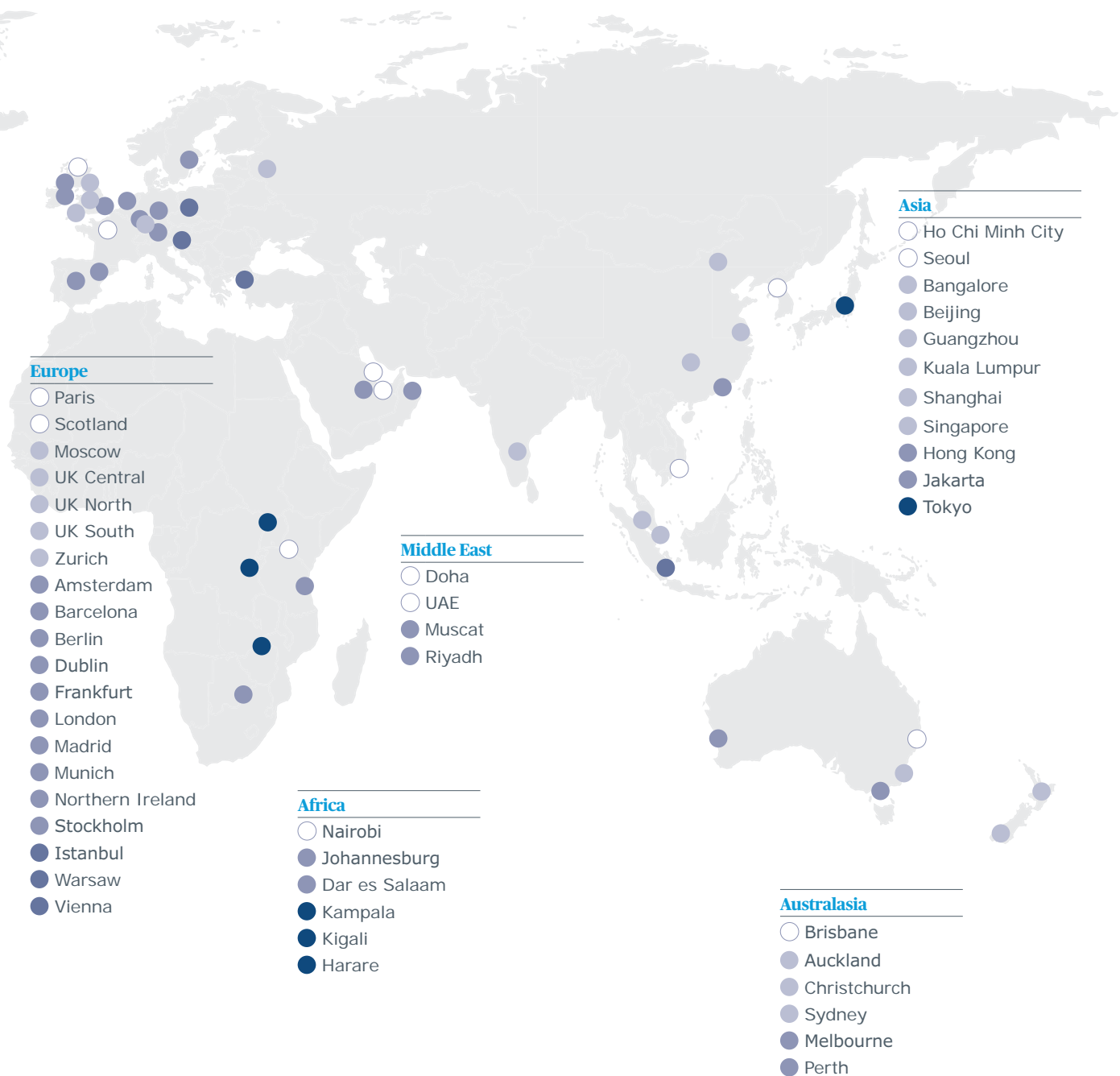
Impact scale

- Not true/no impact
- Slightly true/little impact
- Moderately true/moderate impact
- True/high impact
- Very true/very high impact



25%

Import tariff could, if passed through, add up to 25 percent on a building's steel input cost.



Around the globe

Africa

Kenya Nairobi

Construction opportunities will change on shift in policy focus

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Economic overview

Economic activity in Kenya outpaced expectations in 2018 with annual GDP growth hitting 6.3 percent. Inflation was 5.5 percent, within target range, and interest rates have been eased down to 9 percent to support expansion.

The nation's budget and policy have been directed towards President Kenyatta's Big Four – food security, affordable housing, manufacturing, and affordable healthcare for all.

Construction market and trends

The biggest growth sectors are residential and social housing, industrial manufacturing and distribution and power and utilities. But the surge in recent years of high-priced housing and commercial development has created an oversupply, suggesting a slowdown in 2019.

Meanwhile, a cap on interest rates, leading banks to ration credit, has suppressed investment.

International building costs per m ² of internal area, in 2018	KSH	USD (exchange rate: 101)
Airports (Building only)		
Domestic terminal, full service	267,000	2,644
Low-cost carrier terminal, basic service	200,000	1,980
Car parks		
Multi-storey – above ground	42,000	416
Multi-storey – below ground	45,000	446
Commercial		
Offices – Business Park	65,000	644
CBD Offices – up to 20 floors medium (A-Grade)	72,000	713
CBD Offices – high-rise prestige	95,000	941
Education		
Primary and secondary	45,000	446
University	50,000	495
Hospitals		
Day centre (including basic surgeries)	85,000	842
Regional hospital	103,000	1,020
General hospital (e.g. city teaching hospital)	125,000	1,238
Hotels		
3 Star travellers	102,000	1,010
5 Star luxury	130,000	1,287
Resort style	120,000	1,188
Industrial		
Warehouse/factory units – basic	35,000	347
Large warehouse distribution centre	50,000	495
High-tech factory/laboratory	100,000	990
Residential		
Individual detached or terrace style house – medium standard	52,000	515
Individual detached house – prestige	80,000	792
Townhouses – medium standard	60,000	594
Apartments – low-rise medium standard	55,000	545
Apartments – high-rise	65,000	644
Aged care/affordable units	35,000	347
Retail		
Large shopping centre including mall	67,500	668
Neighbourhood including supermarket	57,500	569
Prestige car showroom	72,500	718

In infrastructure, the focus on the Big Four has limited funding. Several projects are due to finish in 2019, including the 9,000 m² semi-automated air cargo handling facility for Mitchell Cotts Freight Kenya Ltd.

Two key hospitality projects in Nairobi are currently ongoing; a 235-bed Hyatt hotel fit-out in Westlands and 170-bed four-star hotel apartments under the Ascott Somerset brand in Rosslyn.

Construction cost are set to rise 3 percent in 2019, pushed up by rising land and import costs. The supply of skilled labour currently presents few problems.

Future outlook

Construction activity is likely to ease over 2019, in line with an expected slowdown in global growth.

Construction of affordable housing and low-cost health facilities should help to offset the slowdown in high-end private sector development.

	KSH	USD (exchange rate: 101)
Kenya international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	400	4
Excavate footings (m)	350	3
Concrete in slab (m ³) (1500m ³ job)	14,000	139
Reinforcement in beams (tonne)	120,000	1,188
Formwork to soffit of slab (m ²)	700	7
Blockwork in wall (m ²) (10,000 block job)	1,800	18
Structural steel beams (tonne)	240,000	2,376
Pre-cast concrete wall (m ²)	2,500	25
Curtain wall glazing incl support system (m ²) (1000m ² job)	20,000	198
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	3,250	32
Single solid core door incl frame and hardware (no) (50 door job)	39,500	391
Painting to walls primer + 2 coats (m ²)	400	4
Ceramic tiling (m ²) (1000m ² job)	2,500	25
Vinyl flooring to wet areas (m ²) (500m ² job)	2,400	24
Carpet medium tufted (m ²) (4500m ² job)	5,000	50
Lighting installation (m ²) (5000m ² + job)	1,000	10
Copper pipe 15mm to wall (m) (1000m + job)	2,600	26
Fire sprinklers (per m ²) (5000m ² job)	3,200	32
Air conditioning incl main plant (m ²) (5000m ² + job)	10,500	104
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	800	8
Group 2 Tradesman eg carpenter, bricklayer	800	8
Group 3 Tradesman eg carpet layer, tiler, plasterer	800	8
General labourer	500	5
Site foreman	1,500	15
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	11,000	109
Reinforcement bar 16mm (tonne) (120 tonne job)	86,000	851
Concrete block (400x200) per 1000 (>10,000 block job)	60,000	594
Standard brick per 1000	50,000	495
Structural steel beams (tonne) (100 tonne + job)	175,000	1,733
Glass pane 10mm tempered (m ²)	9,000	89
Softwood timber for framing 100mm X 50mm (m)	500	5
13 mm plasterboard (m ²)	1,500	15
Emulsion paint (litre)	685	7
Copper pipe 15 mm (metre) (1000m + job)	1,450	14
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	360	4
Plant costs		
Hire 50t mobile crane + operator (day)	120,000	1,188

Nairobi

Tendering:	Lukewarm
Market:	Staying the same
Cost escalation 2018:	3.0%
Cost escalation 2019:	3.0%
Contractor's margin:	8.5%
Preliminaries:	5.0%
Location factor (USD):	58.8
PPP coefficient:	75.7

Rwanda

Kigali

Growing promise draws increasing international attention

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Economic overview

Since 2000, economic growth has averaged 7.3 percent, among the fastest in Africa. Growth in the medium term should remain at or higher than historical averages, based on a strong pipeline of tourism, new mining operations, resilient agriculture, and diversified exports. Inflation remains low, and expectations are within targeted ranges.

External balances and reserve buffers continued to improve, while the financial sector remains healthy.

Construction market and trends

Rwanda understands the importance of infrastructure in the development of a competitive private sector. To this end, the government continues to invest heavily in infrastructure, including a new international airport.

International building costs per m ² of internal area, in 2018	RWF	USD (exchange rate: 882)
Airports (Building only)		
Domestic terminal, full service	3,333,195	3,779
Low-cost carrier terminal, basic service	2,432,835	2,758
Car parks		
Multi-storey – above ground	401,551	455
Multi-storey – below ground	519,369	589
Commercial		
Offices – Business Park	802,851	910
CBD Offices – up to 20 floors medium (A-Grade)	891,248	1,010
CBD Offices – high-rise prestige	1,325,380	1,503
Education		
Primary and secondary	575,736	653
University	699,312	793
Hospitals		
Day centre (including basic surgeries)	861,208	976
Regional hospital	1,028,363	1,166
General hospital (e.g. city teaching hospital)	1,518,156	1,721
Hotels		
3 Star travellers	1,208,379	1,370
5 Star luxury	1,507,396	1,709
Resort style	1,516,653	1,720
Industrial		
Warehouse/factory units – basic	343,466	389
Large warehouse distribution centre	519,272	589
High-tech factory/laboratory	1,503,417	1,705
Residential		
Individual detached or terrace style house – medium standard	494,400	561
Individual detached house – prestige	835,973	948
Townhouses – medium standard	601,314	682
Apartments – low-rise medium standard	674,514	765
Apartments – high-rise	711,685	807
Aged care/affordable units	500,363	567
Retail		
Large shopping centre including mall	1,093,778	1,240
Neighbourhood including supermarket	793,308	899
Prestige car showroom	785,842	891

Future outlook

Rwanda has introduced initiatives to make the country a centre of growth; driven by technology, foreign investment and tourism. It has streamlined the business and tax registration system to attract investment.

The government, through the ministry of trade and industry, has recently launched a Made in Rwanda policy. The policy will contribute to the country's efforts, which will reduce its trade deficit and upscale local manufacturing.

Rwanda international building costs	RWF	USD (exchange rate: 882)
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	4,168	5
Excavate footings (m)	4,168	5
Concrete in slab (m ³) (1500m ³ job)	213,575	242
Reinforcement in beams (tonne)	1,259,220	1,428
Formwork to soffit of slab (m ²)	12,732	14
Blockwork in wall (m ²) (10,000 block job)	35,494	40
Structural steel beams (tonne)	3,267,255	3,704
Pre-cast concrete wall (m ²)	124,100	141
Curtain wall glazing incl support system (m ²) (1000m ² job)	278,015	315
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	36,051	41
Single solid core door incl frame and hardware (no) (50 door job)	403,566	458
Painting to walls primer + 2 coats (m ²)	5,862	7
Ceramic tiling (m ²) (1000m ² job)	45,429	52
Vinyl flooring to wet areas (m ²) (500m ² job)	99,139	112
Carpet medium tufted (m ²) (4500m ² job)	50,070	57
Lighting installation (m ²) (5000m ² + job)	121,170	137
Copper pipe 15mm to wall (m) (1000m + job)	27,038	31
Fire sprinklers (per m ²) (5000m ² job)	64,376	73
Air conditioning incl main plant (m ²) (5000m ² + job)	100,141	114
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	5,500	6
Group 2 Tradesman eg carpenter, bricklayer	3,500	4
Group 3 Tradesman eg carpet layer, tiler, plasterer	6,000	7
General labourer	2,500	3
Site foreman	10,000	11
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	208,385	236
Reinforcement bar 16mm (tonne) (120 tonne job)	1,061,489	1,204
Concrete block (400x200) per 1000 (>10,000 block job)	1,233,453	1,398
Standard brick per 1000	75,000	85
Structural steel beams (tonne) (100 tonne + job)	2,639,881	2,993
Glass pane 10mm tempered (m ²)	103,816	118
Softwood timber for framing 100mm X 50mm (m)	6,000	7
13 mm plasterboard (m ²)	4,467	5
Emulsion paint (litre)	3,091	4
Copper pipe 15 mm (metre) (1000m + job)	19,976	23
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	10,773	12
Plant costs		
Hire 50t mobile crane + operator (day)	1,523,620	1,727

Kigali

Tendering:	Lukewarm
Market:	Warmer
Cost escalation 2018:	3.2%
Cost escalation 2019:	3.2%
Contractor's margin:	8.0%
Preliminaries:	10.0%
Location factor (USD):	65.4
PPP coefficient:	714.9

South Africa

Johannesburg

Patchy picture in an election year

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Economic overview

Economic growth in South Africa remains tepid. Annual GDP growth is hovering around 1.40 percent, which is poor given the 57 million population is growing 1.16 percent annually.

No immediate rebound followed the new president taking office early in 2018. Indeed, growth contracted in the second quarter, although VAT was raised from 14 to 15 percent in April 2018.

As South Africans prepare for national elections this year, inflation and interest rates are steady. The rand remains volatile against major currencies, unemployment is high and house prices are falling.

Construction market and trends

The three strongest sectors are mining and minerals, manufacturing and distribution, and transport (road rail and ports). Commercial and retail have slowed slightly as the market saturates

International building costs per m ² of internal area, in 2018	ZAR	USD (exchange rate: 14.3)
Airports (Building only)		
Domestic terminal, full service	32,200	2,252
Low-cost carrier terminal, basic service	22,600	1,580
Car parks		
Multi-storey – above ground	5,500	385
Multi-storey – below ground	6,600	462
Commercial		
Offices – Business Park	9,100	636
CBD Offices – up to 20 floors medium (A-Grade)	12,200	853
CBD Offices – high-rise prestige	16,900	1,182
Education		
Primary and secondary	10,000	699
University	13,300	930
Hospitals		
Day centre (including basic surgeries)	11,500	804
Regional hospital	17,500	1,224
General hospital (e.g. city teaching hospital)	21,500	1,503
Hotels		
3 Star travellers	16,500	1,154
5 Star luxury	24,800	1,734
Resort style	23,800	1,664
Industrial		
Warehouse/factory units – basic	5,100	357
Large warehouse distribution centre	5,500	385
High-tech factory/laboratory	13,000	909
Residential		
Individual detached or terrace style house – medium standard	7,700	538
Individual detached house – prestige	14,500	1,014
Townhouses – medium standard	8,600	601
Apartments – low-rise medium standard	9,100	636
Apartments – high-rise	13,300	930
Aged care/affordable units	8,300	580
Retail		
Large shopping centre including mall	14,500	1,014
Neighbourhood including supermarket	10,400	727
Prestige car showroom	11,500	804

and falling house prices are denting residential construction.

Mining and metals remain buoyant, driven by improving commodity prices and exports. Mine expansions at Khwezela coal are underway and a new mine is under construction at Ivanplats to mine platinum, gold, copper and nickel.

Among the mixed-use developments in the pipeline, the multi-year USD100m Jewel City development project is starting, which includes six city blocks of commercial, residential, retail and parking in Johannesburg.

Among the major schemes to look forward to is the expansion of the manganese export terminal at the Port of Ngqura.

Future outlook

The Repo rate was increased to 6.75 percent in November 2018 as inflationary factors threatened to increase. While 2019 should see growth, a slowing global economy, a weaker exchange rate, higher wages and global oil prices all pose notable risks.

	ZAR	USD (exchange rate: 14.3)
South Africa international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	90	6
Excavate footings (m)	160	11
Concrete in slab (m ³) (1500m ³ job)	1,500	105
Reinforcement in beams (tonne)	12,800	895
Formwork to soffit of slab (m ²)	310	22
Blockwork in wall (m ²) (10,000 block job)	420	29
Structural steel beams (tonne)	37,300	2,608
Pre-cast concrete wall (m ²)	1,000	70
Curtain wall glazing incl support system (m ²) (1000m ² job)	4,100	287
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	420	29
Single solid core door incl frame and hardware (no) (50 door job)	2,600	182
Painting to walls primer + 2 coats (m ²)	50	3
Ceramic tiling (m ²) (1000m ² job)	550	38
Vinyl flooring to wet areas (m ²) (500m ² job)	440	31
Carpet medium tufted (m ²) (4500m ² job)	360	25
Lighting installation (m ²) (5000m ² + job)	840	59
Copper pipe 15mm to wall (m) (1000m + job)	210	15
Fire sprinklers (per m ²) (5000m ² job)	420	29
Air conditioning incl main plant (m ²) (5000m ² + job)	1,600	112
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	80	6
Group 2 Tradesman eg carpenter, bricklayer	60	4
Group 3 Tradesman eg carpet layer, tiler, plasterer	60	4
General labourer	40	3
Site foreman	180	13
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	1,400	98
Reinforcement bar 16mm (tonne) (120 tonne job)	12,000	839
Concrete block (400x200) per 1000 (>10,000 block job)	4,800	336
Standard brick per 1000	1,400	98
Structural steel beams (tonne) (100 tonne +job)	32,700	2,287
Glass pane 10mm tempered (m ²)	2,500	175
Softwood timber for framing 100mm X 50mm (m)	70	5
13 mm plasterboard (m ²)	130	9
Emulsion paint (litre)	120	8
Copper pipe 15 mm (metre) (1000m + job)	80	6
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	30	2
Plant costs		
Hire 50t mobile crane + operator (day)	11,100	776

Johannesburg

Tendering:	Cold
Market:	Staying the same
Cost escalation 2018:	4.7%
Cost escalation 2019:	6.0%
Contractor's margin:	5.0%
Preliminaries:	9.0%
Location factor (USD):	47.9
PPP coefficient:	9.5

Tanzania

Dar es Salaam

Strong growth and infrastructure spending generate prospects

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Economic overview

GDP growth in 2018 was 6.6 percent, close to the 6.8 percent average since 2002. General inflation at 3.0 percent is a boom, as until recently high inflation undermined the effect of its strong growth.

Minerals, metals and agricultural produce are the main exports, with tourism generating most foreign exchange.

Construction market and trends

Dar es Salaam is seeing strong growth, with several residential and commercial tower projects under construction or consideration.

Nationally the demand for affordable homes is put at three million, and the country has committed to build 200,000 houses annually.

International building costs per m ² of internal area, in 2018	TZS	USD (exchange rate: 2,285)
Airports (Building only)		
Domestic terminal, full service	8,824,680	3,862
Low-cost carrier terminal, basic service	6,252,722	2,736
Car parks		
Multi-storey – above ground	973,044	426
Multi-storey – below ground	1,118,644	490
Commercial		
Offices – Business Park	1,746,000	764
CBD Offices – up to 20 floors medium (A-Grade)	1,895,248	829
CBD Offices – high-rise prestige	2,730,709	1,195
Education		
Primary and secondary	1,211,188	530
University	1,330,156	582
Hospitals		
Day centre (including basic surgeries)	2,399,929	1,050
Regional hospital	2,718,786	1,190
General hospital (e.g. city teaching hospital)	4,006,772	1,754
Hotels		
3 Star travellers	2,536,891	1,110
5 Star luxury	3,187,764	1,395
Resort style	3,127,873	1,369
Industrial		
Warehouse/factory units – basic	972,146	425
Large warehouse distribution centre	1,378,541	603
High-tech factory/laboratory	3,121,683	1,366
Residential		
Individual detached or terrace style house – medium standard	1,043,464	457
Individual detached house – prestige	1,917,184	839
Townhouses – medium standard	1,379,949	604
Apartments – low-rise medium standard	1,453,204	636
Apartments – high-rise	1,503,762	658
Aged care/affordable units	1,150,343	503
Retail		
Large shopping centre including mall	1,813,362	794
Neighbourhood including supermarket	1,392,467	609
Prestige car showroom	2,102,723	920

Construction starts this year on a new USD750m road connecting Malindi in Kenya to Bagamayo in Tanzania and the Tanzania Burundi road connections are also being upgraded. To boost tourism, Mwanza airport on the eastern shores of Lake Victoria is being expanded to accommodate Boeing 787 planes.

Work is also starting on a railway from Dar es Salaam to Morogoro in Uganda with long-term plans to connect the electric rail to Rwanda and the Democratic Republic of Congo.

Future outlook

Strong growth should continue based on residential and commercial real estate projects in Dar es Salaam and a big infrastructure programme based on road, rail and power.

Foreign investors are showing keen interest and Dar es Salaam is one of China's Belt and Road destinations. Its fast-growing economy and population will make Tanzania a key player in East African initiatives to increase trade across the region.

	TZS	USD (exchange rate: 2,285)
Tanzania international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	9,143	4
Excavate footings (m)	6,950	3
Concrete in slab (m ³) (1500m ³ job)	419,545	184
Reinforcement in beams (tonne)	2,975,000	1,302
Formwork to soffit of slab (m ²)	21,620	9
Blockwork in wall (m ²) (10,000 block job)	48,035	21
Structural steel beams (tonne)	8,130,000	3,558
Pre-cast concrete wall (m ²)	201,500	88
Curtain wall glazing incl support system (m ²) (1000m ² job)	414,200	181
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	117,200	51
Single solid core door incl frame and hardware (no) (50 door job)	785,800	344
Painting to walls primer + 2 coats (m ²)	11,748	5
Ceramic tiling (m ²) (1000m ² job)	91,300	40
Vinyl flooring to wet areas (m ²) (500m ² job)	107,200	47
Carpet medium tufted (m ²) (4500m ² job)	107,200	47
Lighting installation (m ²) (5000m ² + job)	36,501	16
Copper pipe 15mm to wall (m) (1000m + job)	38,160	17
Fire sprinklers (per m ²) (5000m ² job)	87,896	39
Air conditioning incl main plant (m ²) (5000m ² + job)	272,800	119
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	15,000	7
Group 2 Tradesman eg carpenter, bricklayer	15,000	7
Group 3 Tradesman eg carpet layer, tiler, plasterer	15,000	7
General labourer	10,000	4
Site foreman	20,000	9
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	400,000	175
Reinforcement bar 16mm (tonne) (120 tonne job)	2,250,000	985
Concrete block (400x200) per 1000 (>10,000 block job)	1,575,751	690
Standard brick per 1000	565,000	247
Structural steel beams (tonne) (100 tonne + job)	4,171,852	1,826
Glass pane 10mm tempered (m ²)	249,981	109
Softwood timber for framing 100mm X 50mm (m)	19,764	9
13 mm plasterboard (m ²)	7,486	3
Emulsion paint (litre)	8,800	4
Copper pipe 15 mm (metre) (1000m + job)	17,368	8
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	3,593	2
Plant costs		
Hire 50t mobile crane + operator (day)	2,036,260	891

Dar es Salaam

Tendering:	Lukewarm
Market:	Warmer
Cost escalation 2018:	4.0%
Cost escalation 2019:	4.0%
Contractor's margin:	6.0%
Preliminaries:	8.0%
Location factor (USD):	57.0
PPP coefficient:	1595.1

Uganda

Kampala

Public infrastructure investment paves way for construction growth

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Economic overview

Set against 3.3 percent annual population growth, GDP growth increased by 6.8 percent as of Q3 2018.

Five years of exchange rate falls are adding to local cost pressures, not helped by construction skills shortages. Nevertheless, annual average general inflation recorded 3.8 percent in 2018, with construction costs also rising by 3.0 percent.

Construction market and trends

Strong growth sectors currently include commercial offices, large mixed-use developments and private housing.

The largest projects under construction in Uganda are the Hoima International Airport, expansion of Entebbe International Airport, Parliament of Uganda Chambers and NSSF Pension Towers.

International building costs per m ² of internal area, in 2018	UGX	USD (exchange rate: 3,826)
Airports (Building only)		
Domestic terminal, full service	14,136,229	3,695
Low-cost carrier terminal, basic service	9,600,723	2,509
Car parks		
Multi-storey – above ground	1,586,576	415
Multi-storey – below ground	2,059,801	538
Commercial		
Offices – Business Park	2,814,218	736
CBD Offices – up to 20 floors medium (A-Grade)	3,579,917	936
CBD Offices – high-rise prestige	5,116,298	1,337
Education		
Primary and secondary	2,229,990	583
University	3,090,784	808
Hospitals		
Day centre (including basic surgeries)	3,529,440	922
Regional hospital	3,969,936	1,038
General hospital (e.g. city teaching hospital)	6,224,066	1,627
Hotels		
3 Star travellers	4,843,778	1,266
5 Star luxury	5,910,930	1,545
Resort style	5,581,816	1,459
Industrial		
Warehouse/factory units – basic	1,443,600	377
Large warehouse distribution centre	1,963,794	513
High-tech factory/laboratory	5,824,005	1,522
Residential		
Individual detached or terrace style house – medium standard	1,985,645	519
Individual detached house – prestige	3,258,664	852
Townhouses – medium standard	2,242,818	586
Apartments – low-rise medium standard	2,521,271	659
Apartments – high-rise	2,926,434	765
Aged care/affordable units	2,052,966	537
Retail		
Large shopping centre including mall	3,744,000	979
Neighbourhood including supermarket	3,208,563	839
Prestige car showroom	3,080,492	805

Uganda also expects to conclude the financial deal for the 1,455km East Africa Crude Oil pipeline going through Tanzania in Q3 2019, opening the way for its construction.

and national elections are likely to affect the construction industry, bringing a risk of economic uncertainty and increased costs.

Future outlook

With the increasing investment in infrastructure and the expected benefits from the country's recent oil sector, Uganda's economy is likely to grow. The upcoming 2021 Presidential

	UGX	USD (exchange rate: 3,826)
Uganda international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	15,704	4
Excavate footings (m)	12,066	3
Concrete in slab (m ³) (1500m ³ job)	757,883	198
Reinforcement in beams (tonne)	4,940,000	1,291
Formwork to soffit of slab (m ²)	50,480	13
Blockwork in wall (m ²) (10,000 block job)	92,441	24
Structural steel beams (tonne)	12,374,000	3,234
Pre-cast concrete wall (m ²)	473,688	124
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,120,585	293
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	214,500	56
Single solid core door incl frame and hardware (no) (50 door job)	1,570,899	411
Painting to walls primer + 2 coats (m ²)	15,704	4
Ceramic tiling (m ²) (1000m ² job)	121,242	32
Vinyl flooring to wet areas (m ²) (500m ² job)	168,853	44
Carpet medium tufted (m ²) (4500m ² job)	195,000	51
Lighting installation (m ²) (5000m ² + job)	150,092	39
Copper pipe 15mm to wall (m) (1000m + job)	106,982	28
Fire sprinklers (per m ²) (5000m ² job)	49,696	13
Air conditioning incl main plant (m ²) (5000m ² + job)	392,480	103
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	20,000	5
Group 2 Tradesman eg carpenter, bricklayer	12,000	3
Group 3 Tradesman eg carpet layer, tiler, plasterer	25,000	7
General labourer	8,000	2
Site foreman	35,000	9
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	780,000	204
Reinforcement bar 16mm (tonne) (120 tonne job)	4,560,000	1,192
Concrete block (400x200) per 1000 (>10,000 block job)	4,835,478	1,264
Standard brick per 1000	300,000	78
Structural steel beams (tonne) (100 tonne + job)	8,778,000	2,294
Glass pane 10mm tempered (m ²)	396,025	104
Softwood timber for framing 100mm X 50mm (m)	11,352	3
13 mm plasterboard (m ²)	22,514	6
Emulsion paint (litre)	12,890	3
Copper pipe 15 mm (metre) (1000m + job)	76,792	20
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	42,590	11
Plant costs		
Hire 50t mobile crane + operator (day)	6,200,000	1,620

	Kampala
Tendering:	Lukewarm
Market:	Warmer
Cost escalation 2018:	3.0%
Cost escalation 2019:	3.0%
Contractor's margin:	5.0%
Preliminaries:	7.0%
Location factor (USD):	50.6
PPP coefficient:	2619.8

Zimbabwe

Harare

Currency is the key to construction's future

Economic overview

Strong fiscal consolidation measures are expected in order to curtail budget deficits. Notwithstanding this, the economy is expected to grow at circa 4 percent in 2019 and 2020, driven mainly by the agricultural and mining sectors.

Overall consumer and business confidence is expected to grow in 2019. The RTGS is Zimbabwe's official currency and it started the year at parity to the US dollar. The shortage of foreign currency, however, has seen an evaluation of the local RTGS in Q1 of 2019. These factors all impact construction costs, in particular the supply of construction materials.

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International building costs per m² of internal area, in 2018

USD

	USD
Airports (Building only)	
Domestic terminal, full service	4,200
Low-cost carrier terminal, basic service	3,000
Car parks	
Multi-storey – above ground	700
Multi-storey – below ground	900
Commercial	
Offices – Business Park	1,300
CBD Offices – up to 20 floors medium (A-Grade)	1,600
CBD Offices – high-rise prestige	2,200
Education	
Primary and secondary	1,300
University	1,700
Hospitals	
Day centre (including basic surgeries)	1,500
Regional hospital	2,300
General hospital (e.g. city teaching hospital)	2,800
Hotels	
3 Star travellers	1,900
5 Star luxury	3,300
Resort style	3,100
Industrial	
Warehouse/factory units – basic	700
Large warehouse distribution centre	700
High-tech factory/laboratory	1,700
Residential	
Individual detached or terrace style house – medium standard	1,000
Individual detached house – prestige	1,400
Townhouses – medium standard	950
Apartments – low-rise medium standard	800
Apartments – high-rise	1,200
Aged care/affordable units	1,100
Retail	
Large shopping centre including mall	1,900
Neighbourhood including supermarket	1,400
Prestige car showroom	1,500

Construction market and trends

The construction market is being driven by the need to secure foreign currency. Sectors such as mining and metals, and leisure and hospitality, are being prioritised by investors. In addition, a shortage of foreign currency has resulted in increased lead times of imported materials.

Victoria Falls is the leading investment destination in the tourism sector and new investments are planned in the

area. In the mining and metals sector, the largest project is the US400m first construction stage of the Russian-Zimbabwean joint venture Darwendale platinum project.

Infrastructure activity has risen gently with a fast-growing urban population presenting the need to expand and upgrade ageing utilities. Refurbishment of power stations may be restrained in the short term.

Future outlook

Currency issues will continue to dominate businesses and construction activity in Zimbabwe for the medium term. Projects will be geared to those raising foreign currency and this will impact negatively on other market sectors.

A gradual rise in investment will continue in new projects mostly related to leisure and hospitality, and mining and metals.

Zimbabwe international building costs	USD
Composite trade rates	
Excavate basement (m ³) (1800m ³ job)	7
Excavate footings (m)	13
Concrete in slab (m ³) (1500m ³ job)	220
Reinforcement in beams (tonne)	1,275
Formwork to soffit of slab (m ²)	35
Blockwork in wall (m ²) (10,000 block job)	55
Structural steel beams (tonne)	2,820
Pre-cast concrete wall (m ²)	205
Curtain wall glazing incl support system (m ²) (1000m ² job)	590
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	147
Single solid core door incl frame and hardware (no) (50 door job)	405
Painting to walls primer + 2 coats (m ²)	8
Ceramic tiling (m ²) (1000m ² job)	35
Vinyl flooring to wet areas (m ²) (500m ² job)	29
Carpet medium tufted (m ²) (4500m ² job)	46
Lighting installation (m ²) (5000m ² + job)	120
Copper pipe 15mm to wall (m) (1000m + job)	7
Fire sprinklers (per m ²) (5000m ² job)	65
Air conditioning incl main plant (m ²) (5000m ² + job)	110
Labour costs, per hour	
Group 1 Tradesman eg plumber, electrician	4
Group 2 Tradesman eg carpenter, bricklayer	4
Group 3 Tradesman eg carpet layer, tiler, plasterer	4
General labourer	3
Site foreman	12
Material costs	
Concrete 30 MPa (m ³) (1500m ³ job)	185
Reinforcement bar 16mm (tonne) (120 tonne job)	870
Concrete block (400x200) per 1000 (>10,000 block job)	1,800
Standard brick per 1000	146
Structural steel beams (tonne) (100 tonne + job)	2,200
Glass pane 10mm tempered (m ²)	64
Softwood timber for framing 100mm X 50mm (m)	3.50
13 mm plasterboard (m ²)	10
Emulsion paint (litre)	4.50
Copper pipe 15 mm (metre) (1000m + job)	2.52
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	0.33
Plant costs	
Hire 50t mobile crane + operator (day)	120

	Harare
Tendering:	Lukewarm
Market:	Cooler
Cost escalation 2018:	3.0%*
Cost escalation 2019:	3.0%*
Contractor's margin:	12.5%
Preliminaries:	10.0%
Location factor (USD):	43.4
PPP coefficient:	0.6

Cost escalation is based on USD contracts. Cost escalation based on local currency is at an annualised rate of 150 percent.

China

Beijing, Guangzhou, Shanghai

Growth slows as trade tensions take their toll

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Economic overview

Annual growth eased to 6.6 percent in 2018, the slowest since 1990, and is expected to ease further this year. Unemployment is at 3.8 percent and inflation under control at 2.2 percent.

Restructuring continues to encourage a shift to value-added services, which are now growing faster than industry and manufacturing.

USA trade tariffs on Chinese exports is a concern. Chinese products account for 21 percent of USA imports, and US products 8 percent of Chinese imports, putting China at a disadvantage in a trade war.

International building costs per m ² of internal area, in 2018	Beijing RMB	Guangzhou RMB	Shanghai RMB	Shanghai USD (exchange rate: 6.85)
Airports (Building only)				
Domestic terminal, full service	13,000	13,000	11,500	1,679
Low-cost carrier terminal, basic service	9,000	9,000	9,200	1,343
Car parks				
Multi-storey – above ground	2,400	2,400	2,550	372
Multi-storey – below ground	4,500	4,250	4,750	693
Commercial				
Offices – Business Park	4,450	4,200	4,550	664
CBD Offices – up to 20 floors medium (A-Grade)	6,900	6,500	7,200	1,051
CBD Offices – high-rise prestige	8,300	8,100	8,500	1,241
Education				
Primary and secondary	4,200	3,800	3,700	540
University	6,200	5,600	5,600	818
Hospitals				
Day centre (including basic surgeries)	4,600	4,600	4,550	664
Regional hospital	5,500	5,500	5,550	810
General hospital (e.g. city teaching hospital)	6,100	5,900	6,350	927
Hotels				
3 Star travellers	5,800	5,650	6,000	876
5 Star luxury	13,000	13,000	11,000	1,606
Resort style	9,000	7,000	7,000	1,022
Industrial				
Warehouse/factory units – basic	2,350	2,300	2,450	358
Large warehouse distribution centre	2,700	2,700	3,100	453
High-tech factory/laboratory	6,000	5,900	6,100	891
Residential				
Individual detached or terrace style house – medium standard	4,250	4,100	4,350	635
Individual detached house – prestige	4,850	4,550	4,950	723
Townhouses – medium standard	4,050	3,850	4,150	606
Apartments – low-rise medium standard	3,050	2,900	3,150	460
Apartments – high-rise	4,050	3,750	4,150	606
Aged care/affordable units	3,000	3,000	2,650	387
Retail				
Large shopping centre including mall	5,750	5,700	5,600	818
Neighbourhood including supermarket	3,650	3,600	3,700	540
Prestige car showroom	4,200	4,200	4,000	584

Construction market and trends

Residential construction is cooling in Beijing and Shanghai, partly down to government measures to dampen the market, but remains hot in Guangzhou where average house prices grew 9.3 percent over the year.

Overall costs are slightly higher in Shanghai than Beijing, with Guangzhou lowest of the three cities.

Beijing's Daxing International Airport is due to open in 2019. One of the world's largest airports, its eight runways will service 100 million passengers annually.

Overseas companies are announcing large projects in China. In Shanghai, Tesla is building a USD2bn car factory and Ikea plans its largest-ever retail and commercial project.

Future outlook

The Asian region looks to be facing weaker growth in 2019, with China's growth slowing to around 6.3 percent amid the trade wars. This is likely to hit other Asian economies such as Japan and South Korea.

The construction upside is that trade tensions will prompt China to accelerate its Belt and Road projects and look more to its home-based engineering, mining and transportation sectors.

China international building costs	Beijing RMB	Guangzhou RMB	Shanghai RMB	Shanghai USD (exchange rate: 6.85)
Composite trade rates				
Excavate basement (m ³) (1800m ³ job)	40	36	36	5
Excavate footings (m)	60	56	56	8
Concrete in slab (m ³) (1500m ³ job)	560	710	790	115
Reinforcement in beams (tonne)	6,300	6,800	6,250	912
Formwork to soffit of slab (m ²)	90	90	90	13
Blockwork in wall (m ²) (10,000 block job)	190	220	250	36
Structural steel beams (tonne)	10,000	10,000	9,050	1,321
Pre-cast concrete wall (m ²)	400	420	310	45
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,500	1,650	1,900	277
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	220	250	260	38
Single solid core door incl frame and hardware (no) (50 door job)	3,500	3,000	3,000	438
Painting to walls primer + 2 coats (m ²)	50	52	52	8
Ceramic tiling (m ²) (1000m ² job)	280	280	310	45
Vinyl flooring to wet areas (m ²) (500m ² job)	385	385	310	45
Carpet medium tufted (m ²) (4500m ² job)	350	350	350	51
Lighting installation (m ²) (5000m ² + job)	320	320	350	51
Copper pipe 15mm to wall (m) (1000m + job)	64	64	68	10
Fire sprinklers (per m ²) (5000m ² job)	200	200	200	29
Air conditioning incl main plant (m ²) (5000m ² + job)	500	500	550	80
Labour costs, per hour				
Group 1 Tradesman eg plumber, electrician	42	40	45	7
Group 2 Tradesman eg carpenter, bricklayer	43	43	42	6
Group 3 Tradesman eg carpet layer, tiler, plasterer	40	42	42	6
General labourer	26	29	28	4
Site foreman	53	55	60	9
Material costs				
Concrete 30 MPa (m ³) (1500m ³ job)	460	580	580	89
Reinforcement bar 16mm (tonne) (120 tonne job)	4,400	4,350	4,200	613
Concrete block (400x200) per 1000 (>10,000 block job)	4,200	4,550	4,550	664
Standard brick per 1000	650	520	580	85
Structural steel beams (tonne) (100 tonne + job)	4,800	4,550	4,750	693
Glass pane 10mm tempered (m ²)	120	120	220	32
Softwood timber for framing 100mm X 50mm (m)	28	28	29	4
13 mm plasterboard (m ²)	22	16	18	3
Emulsion paint (litre)	33	34	34	5
Copper pipe 15 mm (metre) (1000m + job)	38	30	38	6
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	9	9	10	1
Plant costs				
Hire 50t mobile crane + operator (day)	2,700	3,000	2,450	358

	Beijing	Guangzhou	Shanghai
Tendering:	Lukewarm	Lukewarm	Lukewarm
Market:	Staying the same	Staying the same	Warmer
Cost escalation 2018:	3.0%	5.0%	5.0%
Cost escalation 2019:	2.0%	5.0%	5.0%
Contractor's margin:	6.0%	6.0%	5.0%
Preliminaries:	7.0%	7.0%	6.0%
Location factor (USD):	29.1	30.2	31.1
PPP coefficient:	2.4	2.5	2.6

Around the globe

Asia

China

Hong Kong

Much promise but nervousness over trade tension

Economic overview

Steady growth in Hong Kong continues, with GDP annual growth at 2.9 percent and unemployment at 2.8 percent. Financial services and real estate remain mainstays of the economy. The increased economic activity expected by the 'Great Bay Area' initiative is starting to provide clarity on how Hong Kong will operate as an integrated economy.

Rising tensions in international trade relations has led to fears of a slowdown and very high commercial rents and house prices undermine Hong Kong's competitive advantage regionally.

Construction market and trends

The Hong Kong International Airport Three Runway system (3RS) is the province's largest ongoing project, running through to 2023. Next to the airport, a new SkyCity Aerotropolis

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International building costs per m ² of internal area, in 2018	HKD	USD (exchange rate: 7.81)
Airports (Building only)		
Domestic terminal, full service	50,000	6,402
Low-cost carrier terminal, basic service	32,000	4,097
Car parks		
Multi-storey – above ground	15,000	1,921
Multi-storey – below ground	23,300	2,983
Commercial		
Offices – Business Park	22,150	2,836
CBD Offices – up to 20 floors medium (A-Grade)	26,150	3,348
CBD Offices – high-rise prestige	31,000	3,969
Education		
Primary and secondary	23,000	2,945
University	30,000	3,841
Hospitals		
Day centre (including basic surgeries)	21,550	2,759
Regional hospital	34,050	4,360
General hospital (e.g. city teaching hospital)	38,600	4,942
Hotels		
3 Star travellers	31,750	4,065
5 Star luxury	40,000	5,122
Resort style	43,000	5,506
Industrial		
Warehouse/factory units – basic	17,050	2,183
Large warehouse distribution centre	18,400	2,356
High-tech factory/laboratory	30,650	3,924
Residential		
Individual detached or terrace style house – medium standard	34,005	4,354
Individual detached house – prestige	65,000	8,323
Townhouses – medium standard	30,200	3,867
Apartments – low-rise medium standard	25,000	3,201
Apartments – high-rise	27,400	3,508
Aged care/affordable units	17,050	2,183
Retail		
Large shopping centre including mall	37,280	4,773
Neighbourhood including supermarket	27,220	3,485
Prestige car showroom	34,050	4,360

has started, delivering offices, homes, shopping and hospitality facilities over the next five to ten years.

The government has committed to increasing public house building. There is a shortage of low-end affordable and public housing, while prices are falling in the oversupplied high-end housing market.

Meanwhile, government commitments to improve healthcare facilities in the Hospital Authority's 2020 plan includes over USD38bn of investment.

Future outlook

The threat of tariffs and rising trade tension is undermining confidence in projects in Hong Kong, which is a major regional trading port. House prices and business rents may fall during 2019, having overheated. This adds to investors' concerns.

The recent tariff truce should yield benefits in 2019, especially if there is a successful resolution.

Meanwhile, smaller contractors seeking credit are finding it more difficult, which will hold back projects. Tier 1 contractors and Chinese contractors remain financially secure and the government's aggressive investment targets will mean larger projects proceed.

	HKD	USD (exchange rate: 7.81)
China (Hong Kong) international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	240	31
Excavate footings (m)	220	28
Concrete in slab (m ³) (1500m ³ job)	1,350	173
Reinforcement in beams (tonne)	16,500	2,113
Formwork to soffit of slab (m ²)	500	64
Blockwork in wall (m ²) (10,000 block job)	450	58
Structural steel beams (tonne)	42,000	5,378
Pre-cast concrete wall (m ²)	1,500	192
Curtain wall glazing incl support system (m ²) (1000m ² job)	6,400	819
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	595	76
Single solid core door incl frame and hardware (no) (50 door job)	7,500	960
Painting to walls primer + 2 coats (m ²)	195	25
Ceramic tiling (m ²) (1000m ² job)	780	100
Vinyl flooring to wet areas (m ²) (500m ² job)	375	48
Carpet medium tufted (m ²) (4500m ² job)	605	77
Lighting installation (m ²) (5000m ² + job)	915	117
Copper pipe 15mm to wall (m) (1000m + job)	265	34
Fire sprinklers (per m ²) (5000m ² job)	655	84
Air conditioning incl main plant (m ²) (5000m ² + job)	3,200	410
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	200	26
Group 2 Tradesman eg carpenter, bricklayer	220	28
Group 3 Tradesman eg carpet layer, tiler, plasterer	160	20
General labourer	120	15
Site foreman	200	26
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	800	102
Reinforcement bar 16mm (tonne) (120 tonne job)	8,200	1,050
Concrete block (400x200) per 1000 (>10,000 block job)	4,100	525
Standard brick per 1000	2,350	301
Structural steel beams (tonne) (100 tonne + job)	16,500	2,113
Glass pane 10mm tempered (m ²)	2,400	307
Softwood timber for framing 100mm X 50mm (m)	90	12
13 mm plasterboard (m ²)	110	14
Emulsion paint (litre)	70	9
Copper pipe 15 mm (metre) (1000m + job)	40	5
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	20	3
Plant costs		
Hire 50t mobile crane + operator (day)	8,000	1,024

Hong Kong

Tendering:	Warm
Market:	Staying the same
Cost escalation 2018:	2.5%
Cost escalation 2019:	4.0%
Contractor's margin:	6.0%
Preliminaries:	12.0%
Location factor (USD):	96.6
PPP coefficient:	9.8

India

Bangalore

Solid growth set to continue

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Economic overview

India's economy remains on a positive path, despite a slight dip due to reforms, rising oil prices and a weakening exchange rate. With annual GDP growth at 7.2 percent, India is among the fastest-growing world economies.

We expect caution and stability in the economy as the country heads into general elections this year.

Construction market and trends

The construction sector looks buoyant with solid public and private investment in infrastructure and cost-reducing recent tax reforms.

We estimate the Goods and Services Tax (GST) and the Real Estate Development and Regulation Act (RERA) should cut direct costs of construction by between 2 and 4 percent, through greater transparency, streamlining and less duplication of tax.

	INR	USD (exchange rate: 72.42)
International building costs per m² of internal area, in 2018		
Airports (Building only)		
Domestic terminal, full service	99,000	1,367
Low-cost carrier terminal, basic service	80,000	1,105
Car parks		
Multi-storey – above ground	17,000	235
Multi-storey – below ground	21,500	297
Commercial		
Offices – Business Park	42,502	587
CBD Offices – up to 20 floors medium (A-Grade)	44,654	617
CBD Offices – high-rise prestige	49,496	683
Education		
Primary and secondary	30,500	421
University	49,000	677
Hospitals		
Day centre (including basic surgeries)	43,000	594
Regional hospital	50,000	690
General hospital (e.g. city teaching hospital)	63,000	870
Hotels		
3 Star travellers	47,500	656
5 Star luxury	105,000	1,450
Resort style	82,500	1,139
Industrial		
Warehouse/factory units – basic	30,000	414
Large warehouse distribution centre	35,000	483
High-tech factory/laboratory	47,000	649
Residential		
Individual detached or terrace style house medium standard	28,525	394
Individual detached house prestige	35,508	490
Townhouses medium standard	28,514	394
Apartments low-rise medium standard	31,000	428
Apartments high-rise	41,964	579
Aged care/affordable units	24,210	334
Retail		
Large shopping centre including mall	33,000	456
Neighbourhood including supermarket	30,500	421
Prestige car showroom	30,000	414

The infrastructure sector continues to thrive, with public investment in roads, rail, ports and aviation. Airport expansion is proving to be big business. At Bangalore, for example, there is work designed to increase passenger capacity from 20 million to 65 million.

India aims to be the first country to open a Hyperloop with construction planned to start this year on a link between Pune and Mumbai. The super-fast, ground transport system

could cut travel time from three hours to 30 minutes.

There is also strong growth in the warehousing sector, driven by demand for third-party logistics, retail, fast-moving consumer goods, auto and chemical and pharmaceuticals industries.

Future outlook

Further solid construction growth is expected with infrastructure the big driver and costs contained. The future

demand for roads, high-speed rail and airport expansion looks promising. Meanwhile, housing is expected to remain stable, with some social housing projects gaining traction.

The construction sector will remain competitive. Costs are estimated to rise just 2 to 3 percent in 2019, despite some skills shortages. The government is also expected to lower taxes on some materials.

	INR	USD (exchange rate: 72.42)
India international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	837	12
Excavate footings (m)	963	13
Concrete in slab (m ³) (1500m ³ job)	7,250	100
Reinforcement in beams (tonne)	66,539	919
Formwork to soffit of slab (m ²)	750	10
Blockwork in wall (m ²) (10,000 block job)	1,325	18
Structural steel beams (tonne)	111,072	1534
Pre-cast concrete wall (m ²)	9,440	130
Curtain wall glazing incl support system (m ²) (1000m ² job)	12,000	166
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	952	13
Single solid core door incl frame and hardware (no) (50 door job)	57,119	789
Painting to walls primer + 2 coats (m ²)	255	4
Ceramic tiling (m ²) (1000m ² job)	1,146	16
Vinyl flooring to wet areas (m ²) (500m ² job)	1,602	22
Carpet medium tufted (m ²) (4500m ² job)	2,306	32
Lighting installation (m ²) (5000m ² + job)	3,380	47
Copper pipe 15mm to wall (m) (1000m + job)	533	7
Fire sprinklers (per m ²) (5000m ² job)	1,076	15
Air conditioning incl main plant (m ²) (5000m ² + job)	5,158	71
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	113	2
Group 2 Tradesman eg carpenter, bricklayer	94	1
Group 3 Tradesman eg carpet layer, tiler, plasterer	100	1
General labourer	63	1
Site foreman	138	2
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	4,500	62
Reinforcement bar 16mm (tonne) (120 tonne job)	43,800	605
Concrete block (400x200) per 1000 (>10,000 block job)	45,000	621
Standard brick per 1000	5,500	76
Structural steel beams (tonne) (100 tonne + job)	45,000	621
Glass pane 10mm tempered (m ²)	1,668	23
Softwood timber for framing 100mm X 50mm (m)	141	2
13 mm plasterboard (m ²)	139	2
Emulsion paint (litre)	230	3
Copper pipe 15 mm (metre) (1000m + job)	461	6
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	70	1
Plant costs		
Hire 50t mobile crane + operator (day)	30,000	414

Bangalore

Tendering:	Warm
Market:	Staying the same
Cost escalation 2018:	1.0%
Cost escalation 2019:	3.0%
Contractor's margin:	10.0%
Preliminaries:	9.0%
Location factor (USD):	18.5
PPP coefficient:	17.5

Indonesia

Jakarta

Rising costs cloud an otherwise bright outlook

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Economic overview

Indonesia's GDP grew 5.2 percent in 2018, a rate broadly sustained for five years. Its population of 262 million is expanding 1 percent annually, adding 3 million people. Unemployment at 5.2 percent is stable.

Mineral fuels and oils provide the largest export and commodity earnings, which are rising following a 10 percent fall last year in the

exchange rate. Central Bank interest rates rose to 5.75 percent.

House prices are up and demand has dipped due to investor pessimism, rising prices and financing costs.

Construction market and trends

Infrastructure is the best performing construction sector, supported by government funding, population growth and more vehicles on the roads.

	IDR	USD (exchange rate: 14,872)
International building costs per m² of internal area, in 2018		
Airports (Building only)		
Domestic terminal, full service	25,000,000	1,681
Low-cost carrier terminal, basic service	19,500,000	1,311
Car parks		
Multi-storey – above ground	5,500,000	370
Multi-storey – below ground	7,000,000	471
Commercial		
Offices – Business Park	9,000,000	605
CBD Offices – up to 20 floors medium (A-Grade)	11,500,000	773
CBD Offices – high-rise prestige	15,000,000	1,009
Education		
Primary and secondary	8,500,000	572
University	11,500,000	773
Hospitals		
Day centre (including basic surgeries)	16,000,000	1,076
Regional hospital	18,500,000	1,244
General hospital (e.g. city teaching hospital)	21,000,000	1,412
Hotels		
3 Star travellers	12,500,000	841
5 Star luxury	21,000,000	1,412
Resort style	26,000,000	1,748
Industrial		
Warehouse/factory units – basic	7,500,000	504
Large warehouse distribution centre	11,000,000	740
High-tech factory/laboratory	15,000,000	1,009
Residential		
Individual detached or terrace style house – medium standard	10,500,000	706
Individual detached house – prestige	13,000,000	874
Townhouses – medium standard	8,000,000	538
Apartments – low-rise medium standard	9,000,000	605
Apartments – high-rise	13,000,000	874
Aged care/affordable units	9,000,000	605
Retail		
Large shopping centre including mall	10,000,000	672
Neighbourhood including supermarket	8,000,000	538
Prestige car showroom	16,000,000	1,076

Up to USD60bn of projects have been offered to Chinese investors as part of the Belt and Road programme, including USD35bn of hydropower plants. The USD6bn Jakarta Bandung high-speed rail is moving closer to construction. The Jakarta MRT has commenced operations and the LRT network will commence in April 2019.

Currently, there are several nationwide toll-road construction projects ongoing including the 920km Trans-Java road

due to be completed, in stages, by 2020.

Logistics and low-cost apartment buildings are the next best performing sectors. The Jakarta administration plans to build 14,000 apartments over the next five years.

Future outlook

The outlook is positive despite headwinds forming in the global economy. More homes and

infrastructure are greatly needed. However, construction costs are increasing quite strongly and expected to rise by 7.5 percent in 2019 and the weaker exchange rate adds cost pressure to imported materials and machinery. Skilled labour is a concern along with problems acquiring land and project delays.

(Data kindly supplied by Reynold Partnership PT, Indonesia).

	IDR	USD (exchange rate: 14,872)
Indonesia international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	50,000	3
Excavate footings (m)	85,000	6
Concrete in slab (m ³) (1500m ³ job)	1,150,000	77
Reinforcement in beams (tonne)	12,500,000	841
Formwork to soffit of slab (m ²)	210,000	14
Blockwork in wall (m ²) (10,000 block job)	235,000	16
Structural steel beams (tonne)	23,000,000	1547
Pre-cast concrete wall (m ²)	1,000,000	67
Curtain wall glazing incl support system (m ²) (1000m ² job)	2,200,000	148
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	500,000	34
Single solid core door incl frame and hardware (no) (50 door job)	6,300,000	424
Painting to walls primer + 2 coats (m ²)	35,000	2
Ceramic tiling (m ²) (1000m ² job)	275,000	18
Vinyl flooring to wet areas (m ²) (500m ² job)	315,000	21
Carpet medium tufted (m ²) (4500m ² job)	525,000	35
Lighting installation (m ²) (5000m ² + job)	400,000	27
Copper pipe 15mm to wall (m) (1000m + job)	130,000	9
Fire sprinklers (per m ²) (5000m ² job)	300,000	20
Air conditioning incl main plant (m ²) (5000m ² + job)	850,000	57
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	18,750	1
Group 2 Tradesman eg carpenter, bricklayer	18,750	1
Group 3 Tradesman eg carpet layer, tiler, plasterer	18,750	1
General labourer	12,500	1
Site foreman	25,000	2
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	800,000	54
Reinforcement bar 16mm (tonne) (120 tonne job)	9,000,000	605
Concrete block (400x200) per 1000 (>10,000 block job)	10,500,000	706
Standard brick per 1000	700,000	47
Structural steel beams (tonne) (100 tonne + job)	10,500,000	706
Glass pane 10mm tempered (m ²)	475,000	32
Softwood timber for framing 100mm X 50mm (m)	60,000	4
13 mm plasterboard (m ²)	90,000	6
Emulsion paint (litre)	80,000	5
Copper pipe 15 mm (metre) (1000m + job)	100,000	7
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	25,000	2
Plant costs		
Hire 50t mobile crane + operator (day)	10,000,000	672

Jakarta

Tendering:	Lukewarm
Market:	Staying the same
Cost escalation 2018:	5.0%
Cost escalation 2019:	7.5%
Contractor's margin:	10.0%
Preliminaries:	10.0%
Location factor (USD):	28.0
PPP coefficient:	5521.5

Japan Tokyo

Workloads surge ahead of Olympics and Rugby World Cup

Economic overview

Despite a temporary slowdown in the second half of 2018, Japan's annual growth in both 2018 and 2019 is expected to be around 1 percent.

Construction activity remains very strong with labour shortages a problem. Unemployment dropped to 2.4 percent.

Inflation at around 1 percent is well under control. House prices contracted slightly during 2018, while consumer spending has grown steadily since 2016.

Construction market and trends

Japan has a hot construction market that grew about 10 percent in both 2017 and 2018. Ongoing developments ahead of the 2019 Rugby World Cup and 2020 Olympics have created

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International building costs per m ² of internal area, in 2018	JPY	USD (exchange rate: 112)
Airports (Building only)		
Domestic terminal, full service	419,000	3,741
Low-cost carrier terminal, basic service	342,000	3,054
Car parks		
Multi-storey – above ground	225,000	2,009
Multi-storey – below ground	500,000	4,464
Commercial		
Offices – Business Park	262,000	2,339
CBD Offices – up to 20 floors medium (A-Grade)	287,000	2,563
CBD Offices – high-rise prestige	344,000	3,071
Education		
Primary and secondary	237,000	2,116
University	199,000	1,777
Hospitals		
Day centre (including basic surgeries)	184,000	1,643
Regional hospital	184,000	1,643
General hospital (e.g. city teaching hospital)	312,000	2,786
Hotels		
3 Star travellers	425,000	3,795
5 Star luxury	595,000	5,313
Resort style	331,000	2,955
Industrial		
Warehouse/factory units – basic	157,000	1,402
Large warehouse distribution centre	233,000	2,080
High-tech factory/laboratory	511,000	4,563
Residential		
Individual detached or terrace style house – medium standard	230,000	2,054
Individual detached house – prestige	269,000	2,402
Townhouses – medium standard	211,000	1,884
Apartments – low-rise medium standard	207,000	1,848
Apartments – high-rise	321,000	2,866
Aged care/affordable units	187,000	1,670
Retail		
Large shopping centre including mall	341,000	3,045
Neighbourhood including supermarket	414,000	3,696
Prestige car showroom	545,000	4,866

shortages in labour and materials, causing prices to surge.

After sports and leisure, the strongest growth is in data centres and commercial offices as international clients move into new offices or expand their current portfolio.

Tokyo has big plans to modernise districts now becoming rundown. By 2022 Toranomon-Azabudai, an ageing business district, should be

refreshed with new tower blocks and a new subway station. Other redevelopments are taking place around Tokyo's Shibuya and Shinjuku stations.

Future outlook

Japan remains extremely promising for construction. The Olympics will boost infrastructure, potentially unlocking new growth in Japan's real estate market.

There are huge opportunities for urban renewal in Tokyo and other key regional centres. There is talk of relaxing migration constraints to meet labour shortages and boost demand currently holding construction back.

	JPY	USD (exchange rate: 112)
Japan international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	970	9
Excavate footings (m)	1,220	11
Concrete in slab (m ³) (1500m ³ job)	15,700	140
Reinforcement in beams (tonne)	111,000	991
Formwork to soffit of slab (m ²)	5,700	51
Blockwork in wall (m ²) (10,000 block job)	11,300	101
Structural steel beams (tonne)	136,000	1,214
Pre-cast concrete wall (m ²)	18,600	166
Curtain wall glazing incl support system (m ²) (1000m ² job)	114,100	1,019
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	1,820	16
Single solid core door incl frame and hardware (no) (50 door job)	82,000	732
Painting to walls primer + 2 coats (m ²)	910	8
Ceramic tiling (m ²) (1000m ² job)	6,600	59
Vinyl flooring to wet areas (m ²) (500m ² job)	3,800	34
Carpet medium tufted (m ²) (4500m ² job)	4,400	39
Lighting installation (m ²) (5000m ² + job)	9,718	87
Copper pipe 15mm to wall (m) (1000m + job)	2,570	23
Fire sprinklers (per m ²) (5000m ² job)	4626	41
Air conditioning incl main plant (m ²) (5000m ² + job)	25,000	223
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	2,600	23
Group 2 Tradesman eg carpenter, bricklayer	3,100	28
Group 3 Tradesman eg carpet layer, tiler, plasterer	3,300	29
General labourer	2,500	22
Site foreman	5,500	49
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	15,000	134
Reinforcement bar 16mm (tonne) (120 tonne job)	72,000	643
Concrete block (400x200) per 1000 (>10,000 block job)	122,000	1,089
Standard brick per 1000	108,000	964
Structural steel beams (tonne) (100 tonne + job)	89,000	795
Glass pane 10mm tempered (m ²)	8,900	79
Softwood timber for framing 100mm X 50mm (m)	1,400	13
13 mm plasterboard (m ²)	500	4
Emulsion paint (litre)	320	3
Copper pipe 15 mm (metre) (1000m + job)	740	7
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	210	2
Plant costs		
Hire 50t mobile crane + operator (day)	140,000	1,250

Tokyo

Tendering:	Hot
Market:	Staying the same
Cost escalation 2018:	2.8%
Cost escalation 2019:	4.0%
Contractor's margin:	8.6%
Preliminaries:	15.0%
Location factor (USD):	72.0
PPP coefficient:	109.2

Malaysia

Kuala Lumpur

Strong potential clouded by project delays and cancellations

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Economic overview

The economy continues to grow solidly. Growth in 2018 was 4.9 percent, maintaining a steady course based on exports of manufactured electronics, oil and petroleum and machinery, which picked up late in 2018.

House prices remain high, but are growing more slowly after the government introduced policies to restrain price growth.

Construction market and trends

Government spending on transport infrastructure is the major driver of construction. LRT 3 is currently under construction. But the MRT 2 and the Klang Valley double-tracking project are set to be retendered following controversy over costs.

International building costs per m ² of internal area, in 2018	MYR	USD (exchange rate: 4.13)
Airports (Building only)		
Domestic terminal, full service	7,375	1,786
Low-cost carrier terminal, basic service	5,165	1,251
Car parks		
Multi-storey – above ground	1,200	291
Multi-storey – below ground	2,000	484
Commercial		
Offices – Business Park	3,600	872
CBD Offices – up to 20 floors medium (A-Grade)	4,750	1,150
CBD Offices – high-rise prestige	6,300	1,525
Education		
Primary and secondary	2,250	545
University	5,350	1,295
Hospitals		
Day centre (including basic surgeries)	3,500	847
Regional hospital	4,500	1,090
General hospital (e.g. city teaching hospital)	5,000	1,211
Hotels		
3 Star travellers	5,700	1,380
5 Star luxury	6,950	1,683
Resort style	10,850	2,627
Industrial		
Warehouse/factory units – basic	2,200	533
Large warehouse distribution centre	2,850	690
High-tech factory/laboratory	4,842	1,172
Residential		
Individual detached or terrace style house – medium standard	2,700	654
Individual detached house – prestige	3,500	847
Townhouses – medium standard	1,800	436
Apartments – low-rise medium standard	2,200	533
Apartments – high-rise	3,050	738
Aged care/affordable units	2,500	605
Retail		
Large shopping centre including mall	5,150	1,247
Neighbourhood including supermarket	4,000	969
Prestige car showroom	5,800	1,404

Malaysia is popular for medical tourism and in Penang there is a new 600 bed hospital together with medical suites and a medical tourism hotel underway.

The establishment of free trade zones in Penang and Johore Bahru is attracting inward investment in new plants and factories, particularly in the e-commerce and electronics sectors.

Future outlook

Strong growth is expected to continue in 2019, but the outlook for construction is patchy.

The new government was voted in on a platform of cleaner and smarter industries, so there will be tensions over controversial cancellations and delays to transport infrastructure projects meant to ease traffic congestion and speed commuting.

However, the market is ripe for further expansion of transport, logistics and high-tech manufacturing, if investment can be attracted, especially to the free trade zones. Within the region labour rates and construction costs make Malaysia attractive.

Malaysia international building costs	MYR	USD (exchange rate: 4.13)
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	22	5
Excavate footings (m)	30	7
Concrete in slab (m ³) (1500m ³ job)	350	85
Reinforcement in beams (tonne)	3,800	920
Formwork to soffit of slab (m ²)	45	11
Blockwork in wall (m ²) (10,000 block job)	58	14
Structural steel beams (tonne)	10,500	2,542
Pre-cast concrete wall (m ²)	250	61
Curtain wall glazing incl support system (m ²) (1000m ² job)	2,250	545
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	150	36
Single solid core door incl frame and hardware (no) (50 door job)	3,000	726
Painting to walls primer + 2 coats (m ²)	10	2
Ceramic tiling (m ²) (1000m ² job)	130	32
Vinyl flooring to wet areas (m ²) (500m ² job)	235	57
Carpet medium tufted (m ²) (4500m ² job)	135	33
Lighting installation (m ²) (5000m ² + job)	175	42
Copper pipe 15mm to wall (m) (1000m + job)	35	8
Fire sprinklers (per m ²) (5000m ² job)	135	33
Air conditioning incl main plant (m ²) (5000m ² + job)	325	79
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	32	8
Group 2 Tradesman eg carpenter, bricklayer	25	6
Group 3 Tradesman eg carpet layer, tiler, plasterer	25	6
General labourer	12	3
Site foreman	45	11
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	220	53
Reinforcement bar 16mm (tonne) (120 tonne job)	3,300	799
Concrete block (400x200) per 1000 (>10,000 block job)	2,815	682
Standard brick per 1000	425	103
Structural steel beams (tonne) (100 tonne + job)	9,500	2,300
Glass pane 10mm tempered (m ²)	285	69
Softwood timber for framing 100mm X 50mm (m)	17	4
13 mm plasterboard (m ²)	30	7
Emulsion paint (litre)	15	4
Copper pipe 15 mm (metre) (1000m + job)	31	8
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	20	5
Plant costs		
Hire 50t mobile crane + operator (day)	2,500	605

Kuala Lumpur

Tendering:	Lukewarm
Market:	Cooler
Cost escalation 2018:	0.0%
Cost escalation 2019:	0.0%
Contractor's margin:	15.0%
Preliminaries:	11.0%
Location factor (USD):	40.0
PPP coefficient:	2.0

Singapore

Singapore

Infrastructure and high-tech boost a subdued construction sector

Economic overview

Having grown 3.3 percent in 2018, Singapore's GDP is forecast to ease between 2 to 3 percent in both 2019 and 2020.

Interest rates are expected to hold between 1 and 2 percent up to 2020, with exchange rates forecast to remain strong. House prices are broadly stable.

Construction market and trends

Construction in Singapore is lukewarm with public spending on infrastructure and social housing compensating for a lacklustre private sector.

The expansion of Changi Airport grabs attention with refurbishment of existing terminals and designers appointed last year for the massive Terminal 5 project planned for completion by 2030.

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International building costs per m ² of internal area, in 2018	SGD	USD (exchange rate: 1.37)
Airports (Building only)		
Domestic terminal, full service	5,410	3,949
Low-cost carrier terminal, basic service	4,162	3,038
Car parks		
Multi-storey – above ground	1,280	934
Multi-storey – below ground	1,810	1,321
Commercial		
Offices – Business Park	2,111	1,541
CBD Offices – up to 20 floors medium (A-Grade)	2,610	1,905
CBD Offices – high-rise prestige	3,028	2,210
Education		
Primary and secondary	1,561	1,139
University	2,882	2,104
Hospitals		
Day centre (including basic surgeries)	1,944	1,419
Regional hospital	3,152	2,301
General hospital (e.g. city teaching hospital)	4,098	2,991
Hotels		
3 Star travellers	3,447	2,516
5 Star luxury	4,529	3,306
Resort style	5,412	3,950
Industrial		
Warehouse/factory units – basic	2,243	1,637
Large warehouse distribution centre	2,549	1,861
High-tech factory/laboratory	3,204	2,339
Residential		
Individual detached or terrace style house – medium standard	4,162	3,038
Individual detached house – prestige	4,812	3,513
Townhouses – medium standard	2,837	2,071
Apartments – low-rise medium standard	2,083	1,520
Apartments – high-rise	2,683	1,958
Aged care/affordable units	1,602	1,170
Retail		
Large shopping centre including mall	3,344	2,441
Neighbourhood including supermarket	2,192	1,600
Prestige car showroom	3,517	2,567

Investment in light rail is maintaining momentum in construction with MRT line expansions planned, such as the Cross Island Line, with work due to start in 2020.

The data centre sector has surged since early 2018 as Singapore reaped benefits from being the regional hub of Asia Pacific computing.

The large number of contractors chasing too few projects is keeping

the sector price competitive. In 2018, construction costs were relatively stable increasing by 1 percent. Trade skills shortages are a perennial problem with many school leavers opting for university and professional occupations.

Future outlook

As a major trading port, Singapore is hostage to the winds of change caused by trade tariffs, so in 2019 any global slowdown could slow growth.

Nevertheless, focusing on high-tech industries, high-value-added manufacturing and services Singapore should comfortably weather any global slowdown as it did during the Global Financial Crisis.

In 2019, construction costs should remain subdued at 2 percent per annum until private sector activity expands to mop up spare capacity.

	SGD	USD (exchange rate: 1.37)
Singapore International building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	80	58
Excavate footings (m)	27	19
Concrete in slab (m ³) (1500m ³ job)	168	122
Reinforcement in beams (tonne)	1,611	1,176
Formwork to soffit of slab (m ²)	39	29
Blockwork in wall (m ²) (10,000 block job)	69	50
Structural steel beams (tonne)	4,262	3,111
Pre-cast concrete wall (m ²)	150	110
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,448	1,057
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	27	19
Single solid core door incl frame and hardware (no) (50 door job)	896	654
Painting to walls primer + 2 coats (m ²)	10	7
Ceramic tiling (m ²) (1000m ² job)	92	67
Vinyl flooring to wet areas (m ²) (500m ² job)	85	62
Carpet medium tufted (m ²) (4500m ² job)	67	49
Lighting installation (m ²) (5000m ² + job)	217	159
Copper pipe 15mm to wall (m) (1000m + job)	29	21
Fire sprinklers (per m ²) (5000m ² job)	87	63
Air conditioning incl main plant (m ²) (5000m ² + job)	283	206
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	30	22
Group 2 Tradesman eg carpenter, bricklayer	21	15
Group 3 Tradesman eg carpet layer, tiler, plasterer	29	21
General labourer	18	13
Site foreman	29	21
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	115	84
Reinforcement bar 16mm (tonne) (120 tonne job)	1,248	911
Concrete block (400x200) per 1000 (>10,000 block job)	743	542
Standard brick per 1000	371	271
Structural steel beams (tonne) (100 tonne + job)	2,287	1,669
Glass pane 10mm tempered (m ²)	127	93
Softwood timber for framing 100mm X 50mm (m)	13	9
13 mm plasterboard (m ²)	8	6
Emulsion paint (litre)	19	14
Copper pipe 15 mm (metre) (1000m + job)	14	10
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	2	2
Plant costs		
Hire 50t mobile crane + operator (day)	2,122	1,549

	Singapore
Tendering:	Lukewarm
Market:	Staying the same
Cost escalation 2018:	1.0%
Cost escalation 2019:	2.0%
Contractor's margin:	5.0%
Preliminaries:	8.0%
Location factor (USD):	63.7
PPP coefficient:	1.2

South Korea

Seoul

Construction comes off the boil

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Economic overview

Korea's GDP growth rate slowed in 2018 to 2.7 percent from 3.1 percent in 2017, with tensions high between its two main trading partners, the USA and China. The main exports are electronics, machinery, shipbuilding and vehicles.

Inflation was below 2 percent and unemployment below 4 percent. The average age of Koreans is rising

and the proportion of working age shrinking, which could weaken growth.

Construction market and trends

Construction activity fell by 8.6 percent in value terms in 2018. The government is cutting infrastructure spending suggesting demand had been overestimated, so investment will focus on finishing existing projects rather than new starts.

International building costs per m ² of internal area, in 2018	KRW	USD (exchange rate: 1,118)
Airports (Building only)		
Domestic terminal, full service	3,585,320	3,207
Low-cost carrier terminal, basic service	2,509,050	2,244
Car parks		
Multi-storey – above ground	772,720	691
Multi-storey – below ground	1,125,290	1,007
Commercial		
Offices – Business Park	1,546,780	1,384
CBD Offices – up to 20 floors medium (A-Grade)	1,898,020	1,698
CBD Offices – high-rise prestige	2,389,760	2,138
Education		
Primary and secondary	1,404,960	1,257
University	1,912,610	1,711
Hospitals		
Day centre (including basic surgeries)	1,546,780	1,384
Regional hospital	2,249,270	2,012
General hospital (e.g. city teaching hospital)	2,389,760	2,138
Hotels		
3 Star travellers	2,069,000	1,851
5 Star luxury	4,415,210	3,949
Resort style	2,828,440	2,530
Industrial		
Warehouse/factory units – basic	1,240,600	1,110
Large warehouse distribution centre	964,920	863
High-tech factory/laboratory	3,583,980	3,206
Residential		
Individual detached or terrace style house – medium standard	1,586,240	1,419
Individual detached house – prestige	2,345,530	2,098
Townhouses – medium standard	1,876,430	1,678
Apartments – low-rise medium standard	1,517,260	1,357
Apartments – high-rise	1,931,070	1,727
Aged care/affordable units	1,655,210	1,481
Retail		
Large shopping centre including mall	2,342,050	2,095
Neighbourhood including supermarket	1,309,530	1,171
Prestige car showroom	2,577,970	2,306

Despite the slowdown several projects are underway. Danganlee Power station in Seoul is being rebuilt underground after 87 years of operation, with the remaining above-ground buildings repurposed as a cultural centre and open spaces.

Hotel construction is buoyant in Seoul with more than 100 projects under consideration or construction.

House building has slowed outside of Seoul, with regional builders finding it tough to sell the apartments recently completed.

Seoul's Incheon airport phase 3 expansion is under consideration and may include a low-cost carrier component. Meanwhile, further work is underway to extend Seoul's 327km metro railway by 89km by 2025.

Future outlook

Construction, a significant part of the economy, is likely to decline further in 2019, as public and private investment drops.

Export sectors and high-tech industries should remain relatively unscathed, so construction supporting these should perform better.

	KRW	USD (exchange rate: 1,118)
South Korea international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	7,680	7
Excavate footings (m)	7,680	7
Concrete in slab (m ³) (1500m ³ job)	155,590	139
Reinforcement in beams (tonne)	1,442,300	1,290
Formwork to soffit of slab (m ²)	35,720	32
Blockwork in wall (m ²) (10,000 block job)	47,250	42
Structural steel beams (tonne)	2,314,910	2,071
Pre-cast concrete wall (m ²)	305,410	273
Curtain wall glazing incl support system (m ²) (1000m ² job)	366,510	328
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	55,080	49
Single solid core door incl frame and hardware (no) (50 door job)	306,570	274
Painting to walls primer + 2 coats (m ²)	5,530	5
Ceramic tiling (m ²) (1000m ² job)	53,580	48
Vinyl flooring to wet areas (m ²) (500m ² job)	42,750	38
Carpet medium tufted (m ²) (4500m ² job)	61,070	55
Lighting installation (m ²) (5000m ² + job)	49,850	45
Copper pipe 15mm to wall (m) (1000m + job)	13,350	12
Fire sprinklers (per m ²) (5000m ² job)	27,500	25
Air conditioning incl main plant (m ²) (5000m ² + job)	246,640	221
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	28,400	25
Group 2 Tradesman eg carpenter, bricklayer	28,400	25
Group 3 Tradesman eg carpet layer, tiler, plasterer	28,400	25
General labourer	17,800	16
Site foreman	37,800	34
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	85,620	77
Reinforcement bar 16mm (tonne) (120 tonne job)	770,000	689
Concrete block (400x200) per 1000 (>10,000 block job)	690,000	617
Standard brick per 1000	79,700	71
Structural steel beams (tonne) (100 tonne + job)	1,260,000	1,127
Glass pane 10mm tempered (m ²)	23,460	21
Softwood timber for framing 100mm X 50mm (m)	6,930	6
13 mm plasterboard (m ²)	3,990	4
Emulsion paint (litre)	5,880	5
Copper pipe 15 mm (metre) (1000m + job)	7,330	7
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	2,480	2
Plant costs		
Hire 50t mobile crane + operator (day)	1,094,920	979

Seoul

Tendering:	Lukewarm
Market:	Cooler
Cost escalation 2018:	5.0%
Cost escalation 2019:	2.0%
Contractor's margin:	3.5%
Preliminaries:	12.0%
Location factor (USD):	54.5
PPP coefficient:	751.2

Vietnam

Ho Chi Minh City

Young, vibrant and abounding with optimism

Economic overview

Vietnam's GDP growth, at or about 6 percent for a decade, grew faster in 2018, driven by exports of electronic equipment, clothing and footwear and services.

Its vibrancy is partly down to its population of 95 million growing 1 percent annually and its youthfulness, with half its people under 30.

The government encourages inbound foreign investment with incentives and steps to improve transparency.

Construction market and trends

The current leading construction sectors in Ho Chi Minh City are major mixed-use development, transport infrastructure and airports.

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	VND	USD (exchange rate: 23,358)
International building costs per m² of internal area, in 2018		
Airports (Building only)		
Domestic terminal, full service	–	–
Low-cost carrier terminal, basic service	–	–
Car parks		
Multi-storey – above ground	10,567,800	452
Multi-storey – below ground	18,787,200	804
Commercial		
Offices – Business Park	18,787,200	804
CBD Offices – up to 20 floors medium (A-Grade)	25,832,400	1,106
CBD Offices – high-rise prestige	30,529,200	1,307
Education		
Primary and secondary	12,211,680	523
University	16,438,800	704
Hospitals		
Day centre (including basic surgeries)	–	–
Regional hospital	–	–
General hospital (e.g. city teaching hospital)	–	–
Hotels		
3 Star travellers	30,529,200	1,307
5 Star luxury	48,300,000	2,068
Resort style	–	–
Industrial		
Warehouse/factory units – basic	8,219,400	352
Large warehouse distribution centre	9,628,440	412
High-tech factory/laboratory	14,442,660	618
Residential		
Individual detached or terrace style house – medium standard	10,098,120	432
Individual detached house – prestige	11,272,320	483
Townhouses – medium standard	14,420,000	617
Apartments – low-rise medium standard	17,378,160	744
Apartments – high-rise	18,787,200	804
Aged care/affordable units	10,300,000	441
Retail		
Large shopping centre including mall	23,874,000	1,022
Neighbourhood including supermarket	17,510,000	750
Prestige car showroom	25,832,400	1,106

Ho Chi Minh City expects several major schemes in the next few years, including the USD1bn first phase of Eco Smart City in the Thu Thiem area, being developed by South Korean Lotte Group.

Within Thu Thiem, the new Empire City site preparations are underway for an 86-storey waterfront building with a five-star hotel, shopping mall, offices and high-end apartments.

Beside the new Long Thanh International airport with the first phase planned to be completed in 2025, the government has revived plans to build a USD58bn high-speed rail linking Hanoi and Ho Chi Minh City by 2030 to fulfil the country's transportation needs.

Future outlook

The market in Vietnam is warm rather than hot, but optimism abounds, particularly in Ho Chi Minh City. The southern business centre is very busy with hotels, apartments, and offices under construction plus road and rail improvements to service the massive population growth.

Construction costs in Vietnam, among the lowest in Asia, are forecast to rise by 3 percent in 2019.

Vietnam international building costs	VND	USD (exchange rate: 23,358)
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	92,700	4
Excavate footings (m)	92,700	4
Concrete in slab (m ³) (1500m ³ job)	2,575,000	110
Reinforcement in beams (tonne)	23,690,000	1,014
Formwork to soffit of slab (m ²)	226,600	10
Blockwork in wall (m ²) (10,000 block job)	618,000	26
Structural steel beams (tonne)	51,500,000	2,205
Pre-cast concrete wall (m ²)	4,532,000	194
Curtain wall glazing incl support system (m ²) (1000m ² job)	7,045,200	302
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	770,814	33
Single solid core door incl frame and hardware (no) (50 door job)	11,742,000	503
Painting to walls primer + 2 coats (m ²)	123,600	5
Ceramic tiling (m ²) (1000m ² job)	875,500	37
Vinyl flooring to wet areas (m ²) (500m ² job)	1,643,880	70
Carpet medium tufted (m ²) (4500m ² job)	1,878,720	80
Lighting installation (m ²) (5000m ² + job)	575,000	25
Copper pipe 15mm to wall (m) (1000m + job)	185,400	8
Fire sprinklers (per m ²) (5000m ² job)	824,000	35
Air conditioning incl main plant (m ²) (5000m ² + job)	2,060,000	88
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	84,800	4
Group 2 Tradesman eg carpenter, bricklayer	63,600	3
Group 3 Tradesman eg carpet layer, tiler, plasterer	63,600	3
General labourer	42,400	2
Site foreman	106,000	5
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	1,313,000	56
Reinforcement bar 16mm (tonne) (120 tonne job)	15,200,000	651
Concrete block (400x200) per 1000 (>10,000 block job)	10,100,000	432
Standard brick per 1000	1,500,000	64
Structural steel beams (tonne) (100 tonne + job)	30,000,000	1,284
Glass pane 10mm tempered (m ²)	4,500,000	193
Softwood timber for framing 100mm X 50mm (m)	153,646	7
13 mm plasterboard (m ²)	91,910	4
Emulsion paint (litre)	211,182	9
Copper pipe 15 mm (metre) (1000m + job)	111,100	5
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	40,400	2
Plant costs		
Hire 50t mobile crane + operator (day)	20,600,000	882

Ho Chi Minh City

Tendering:	Warm
Market:	Staying the same
Cost escalation 2018:	3.0%
Cost escalation 2019:	3.0%
Contractor's margin:	10.0%
Preliminaries:	12.0%
Location factor (USD):	43.4
PPP coefficient:	13575.9

Australia

Brisbane, Melbourne, Perth and Sydney

A boost from public infrastructure investment

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Economic overview

Strong mining and energy exports and hefty investment in public infrastructure has bolstered the Australian economy. Annual GDP growth reached 2.3 percent for 2018, comfortably above the average for advanced nations.

Short-term visitor numbers hit 10 million, lifting tourism and education and raising demand for hotels. However, falling prices,

tighter credit conditions, curbs on foreign investors, and oversupply dampened the energetic apartment building sector.

Construction market and trends

An already busy construction sector in Sydney and Melbourne, 2018 was boosted by a pledge of around USD36bn of public funding for road and rail projects. Work on the second Sydney Airport finally started, with USD3.9bn to deliver the project through

International building costs per m ² of internal area, in 2018	Brisbane AUD	Melbourne AUD	Perth AUD	Sydney AUD	Sydney USD (exchange rate: 1.38)
Airports (Building only)					
Domestic terminal, full service	5,350	5,500	4,845	5,700	4,130
Low-cost carrier terminal, basic service	4,285	4,250	3,839	4,550	3,297
Car parks					
Multi-storey – above ground	935	950	820	980	710
Multi-storey – below ground	1,750	1,800	1,716	1,850	1,341
Commercial					
Offices – Business Park	1,658	1,850	1,585	1,900	1,377
CBD Offices – up to 20 floors medium (A-Grade)	3,200	3,250	3,059	3,550	2,572
CBD Offices – high-rise prestige	4,275	4,400	4,458	5,850	4,239
Education					
Primary and secondary	1,951	2,450	1,786	3,500	2,536
University	3,752	3,650	3,099	4,150	3,007
Hospitals					
Day centre (including basic surgeries)	3,250	3,250	2,933	3,250	2,355
Regional hospital	3,789	4,200	3,472	4,100	2,971
General hospital (e.g. city teaching hospital)	5,820	6,250	5,731	6,100	4,420
Hotels					
3 Star travellers	2,700	2,700	2,325	3,000	2,174
5 Star luxury	4,590	5,500	4,146	5,900	4,275
Resort style	3,800	3,850	3,557	4,100	2,971
Industrial					
Warehouse/factory units – basic	855	830	770	880	638
Large warehouse distribution centre	1,122	1,100	951	1,150	833
High-tech factory/laboratory	3,800	4,200	3,960	4,200	3,043
Residential					
Individual detached or terrace style house – medium standard	1,754	1,900	1,545	2,250	1,630
Individual detached house – prestige	3,500	3,000	2,883	4,150	3,007
Townhouses – medium standard	1,775	2,000	1,786	2,200	1,594
Apartments – low-rise medium standard	1,973	2,500	1,826	2,450	1,775
Apartments – high-rise	2,861	3,050	2,793	3,100	2,246
Aged care/affordable units	2,570	3,100	2,506	2,900	2,101
Retail					
Large shopping centre including mall	2,700	2,750	2,214	2,950	2,138
Neighbourhood including supermarket	1,745	2,100	1,786	2,250	1,630
Prestige car showroom	2,700	2,750	2,486	2,900	2,101

the government-owned Western Sydney Airport. USD6.5bn is allocated to Defence's Capital Facilities over four years.

In Brisbane, the USD3.1bn Queen's Wharf project will dominate construction. Meanwhile, the USD3.9bn Cross River Rail underground is underway in the city. Construction in Perth is picking up with a new Ritz Carlton, the Chevron headquarters tower and Metronet.

Activity in Sydney and Melbourne has bumped up costs and led to skill shortages and supply-chain bottlenecks, putting stress on schedules. Elsewhere, pressures are more muted.

Future outlook

Prospects in 2019 are promising, with commercial, health, defence, retail and hotel construction rising in parallel with massive multi-year road and rail projects underway.

However, house prices sliding in Sydney and Melbourne could curb discretionary spending, raising downside risks later in 2019. This will be offset by publicly funded infrastructure, private developer-led and large resource-based projects.

Australia international building costs	Brisbane AUD	Melbourne AUD	Perth AUD	Sydney AUD	Sydney USD (exchange rate: 1.38)
Composite trade rates					
Excavate basement (m ³) (1800m ³ job)	25	40	20	50	36
Excavate footings (m)	45	60	31	65	47
Concrete in slab (m ³) (1500m ³ job)	310	420	260	345	250
Reinforcement in beams (tonne)	2,450	3,000	1,991	2,450	1,775
Formwork to soffit of slab (m ²)	135	150	105	175	127
Blockwork in wall (m ²) (10,000 block job)	150	155	122	155	112
Structural steel beams (tonne)	5,800	8,500	4,917	6,000	4,348
Pre-cast concrete wall (m ²)	400	420	365	425	308
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,350	1,400	1,103	1,450	1,051
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	36	45	35	38	28
Single solid core door incl frame and hardware (no) (50 door job)	835	940	746	880	638
Painting to walls primer + 2 coats (m ²)	15	16	12	17	12
Ceramic tiling (m ²) (1000m ² job)	125	120	105	125	91
Vinyl flooring to wet areas (m ²) (500m ² job)	75	75	67	85	62
Carpet medium tufted (m ²) (4500m ² job)	71	63	59	75	54
Lighting installation (m ²) (5000m ² + job)	91	95	81	95	69
Copper pipe 15mm to wall (m) (1000m + job)	54	77	40	60	43
Fire sprinklers (per m ²) (5000m ² job)	64	60	44	58	42
Air conditioning incl main plant (m ²) (5000m ² + job)	325	320	330	360	261
Labour costs, per hour					
Group 1 Tradesman eg plumber, electrician	86	100	88	105	76
Group 2 Tradesman eg carpenter, bricklayer	70	90	77	95	69
Group 3 Tradesman eg carpet layer, tiler, plasterer	70	90	70	90	65
General labourer	65	75	64	75	54
Site foreman	98	110	95	115	83
Material costs					
Concrete 30 MPa (m ³) (1500m ³ job)	170	230	179	220	159
Reinforcement bar 16mm (tonne) (120 tonne job)	1,315	1,750	1,218	1,300	942
Concrete block (400x200) per 1000 (>10,000 block job)	3,500	3,650	3,430	3,600	2,609
Standard brick per 1000	650	650	773	810	587
Structural steel beams (tonne) (100 tonne + job)	2,500	2,750	1,910	2,500	1,812
Glass pane 10mm tempered (m ²)	312	350	251	265	192
Softwood timber for framing 100mm X 50mm (m)	4	5	4	3	2
13 mm plasterboard (m ²)	8	10	9	11	8
Emulsion paint (litre)	13	15	12	15	11
Copper pipe 15 mm (metre) (1000m + job)	13	17	18	13	9
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	6	5	4	4	3
Plant costs					
Hire 50t mobile crane + operator (day)	2,200	2,500	1,730	2,320	1,681
	Brisbane	Melbourne	Perth	Sydney	
Tendering:	Warm	Hot	Cold	Hot	
Market:	Warmer	Staying the same	Warmer	Staying the same	
Cost escalation 2018:	2.0%	4.0%	1.0%	3.5%	
Cost escalation 2019:	2.5%	5.0%	1.5%	3.5%	
Contractor's margin:	4.5%	4.0%	4.5%	4.0%	
Preliminaries:	16.0%	12.0%	12.0%	14.0%	
Location factor (USD):	93.8	112.1	86.1	107.0	
PPP coefficient:	1.8	2.1	1.7	2.0	

New Zealand

Auckland and Christchurch

A stable economy supports construction

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Economic overview

The New Zealand economy grew steadily in 2018. Annual GDP growth was running at 2.3 percent, inflation was under control at 1.9 percent and unemployment down to 4.3 percent.

House prices flattened in Auckland and Christchurch, but they are still rising in many other areas, driving demand for apartments and prompting government investment to help first-time buyers.

Construction market and trends

Construction activity remains strong with increasing government funding boosting infrastructure, health, education and residential sectors.

Major infrastructure projects include the USD2.2bn City Rail link scheme in Auckland. The 3km double rail tunnel is currently one of the largest infrastructure schemes underway in the country.

International building costs per m ² of internal area, in 2018	Auckland NZD	Christchurch NZD	Christchurch USD (exchange rate: 1.5)
Airports (Building only)			
Domestic terminal, full service	–	–	–
Low-cost carrier terminal, basic service	–	–	–
Car parks			
Multi-storey – above ground	700	700	467
Multi-storey – below ground	1,800	1,750	1,167
Commercial			
Offices – Business Park	1,800	1,800	1,200
CBD Offices – up to 20 floors medium (A-Grade)	3,000	3,100	2,067
CBD Offices – high-rise prestige	4,000	4,100	2,733
Education			
Primary and secondary	3,050	2,750	1,833
University	3,000	2,900	1,933
Hospitals			
Day centre (including basic surgeries)	3,750	3,850	2,567
Regional hospital	4,050	4,200	2,800
General hospital (e.g. city teaching hospital)	4,800	4,950	3,300
Hotels			
3 Star travellers	2,950	3,050	2,033
5 Star luxury	5,000	5,250	3,500
Resort style	–	–	–
Industrial			
Warehouse/factory units – basic	1,000	1,000	667
Large warehouse distribution centre	1,400	1,400	933
High-tech factory/laboratory	4,350	4,550	3,033
Residential			
Individual detached or terrace style house – medium standard	2,000	2,000	1,333
Individual detached house – prestige	2,000	2,000	1,333
Townhouses – medium standard	2,350	2,250	1,500
Apartments – low-rise medium standard	2,000	2,050	1,367
Apartments – high-rise	3,600	3,400	2,267
Aged care/affordable units	2,950	2,800	1,867
Retail			
Large shopping centre including mall	3,600	3,550	2,367
Neighbourhood including supermarket	1,750	1,800	1,200
Prestige car showroom	2,100	2,150	1,433

An injection of government funds to improve hospitals has livened the health sector.

Education has also benefitted from government money. The University of Otago has begun work on its new USD110m Christchurch campus.

Future outlook

Construction prospects in New Zealand remain positive, supported by a stable economy and a healthy pipeline of work. Population growth is running at 2.1 percent annually, raising demand for housing, infrastructure, education, health and sports facilities. The natural resources sector is declining due to government policy around coal mining and offshore gas exploration, and pipeline closures.

Construction costs are forecast to be 4 percent, twice general inflation, and skills shortages present a potential problem as the market heats up. With a relatively small population, contractors also tend to be relatively smaller. This limits the scope for economies of scale in the supply chain.

New Zealand international building costs	Auckland NZD	Christchurch NZD	Christchurch USD (exchange rate: 1.5)
Composite trade rates			
Excavate basement (m ³) (1800m ³ job)	42	43	29
Excavate footings (m)	84	87	58
Concrete in slab (m ³) (1500m ³ job)	378	320	213
Reinforcement in beams (tonne)	3,953	4,010	2,673
Formwork to soffit of slab (m ²)	165	168	112
Blockwork in wall (m ²) (10,000 block job)	118	121	80
Structural steel beams (tonne)	4,800	4,900	3,267
Pre-cast concrete wall (m ²)	315	287	191
Curtain wall glazing incl support system (m ²) (1000m ² job)	965	965	643
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	35	35	23
Single solid core door incl frame and hardware (no) (50 door job)	1,330	1,340	893
Painting to walls primer + 2 coats (m ²)	18	19	13
Ceramic tiling (m ²) (1000m ² job)	144	147	98
Vinyl flooring to wet areas (m ²) (500m ² job)	91	94	62
Carpet medium tufted (m ²) (4500m ² job)	48	49	33
Lighting installation (m ²) (5000m ² + job)	60	60	40
Copper pipe 15mm to wall (m) (1000m + job)	42	42	28
Fire sprinklers (per m ²) (5000m ² job)	120	120	80
Air conditioning incl main plant (m ²) (5000m ² + job)	343	348	232
Labour costs, per hour			
Group 1 Tradesman eg plumber, electrician	75	75	50
Group 2 Tradesman eg carpenter, bricklayer	55	55	37
Group 3 Tradesman eg carpet layer, tiler, plasterer	60	62	41
General labourer	46	48	32
Site foreman	100	100	67
Material costs			
Concrete 30 MPa (m ³) (1500m ³ job)	278	212	141
Reinforcement bar 16mm (tonne) (120 tonne job)	2,940	2,940	1,960
Concrete block (400x200) per 1000 (>10,000 block job)	4,700	5,100	3,400
Standard brick per 1000	1,300	1,320	880
Structural steel beams (tonne) (100 tonne + job)	1,490	1,490	993
Glass pane 10mm tempered (m ²)	85	85	57
Softwood timber for framing 100mm X 50mm (m)	6	7	5
13 mm plasterboard (m ²)	11	11	7
Emulsion paint (litre)	6	6	4
Copper pipe 15 mm (metre) (1000m + job)	6	6	4
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	2	2	1
Plant costs			
Hire 50t mobile crane + operator (day)	300	300	200

	Auckland	Christchurch
Tendering:	Warm	Warm
Market:	Staying the same	Staying the same
Cost escalation 2018:	3.5%	3.5%
Cost escalation 2019:	4.0%	4.0%
Contractor's margin:	7.0%	7.0%
Preliminaries:	14.0%	14.0%
Location factor (USD):	77.9	76.9
PPP coefficient:	1.6	1.5

Around the globe

Europe

Austria Vienna

A strong economy is supporting broad-based construction growth

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Economic overview

Austria is among the more buoyant European nations with annual GDP growth running at 2.2 percent in 2018.

House prices jumped last year and are expected to continue rising in 2019. Annual inflation ended 2018 at 1.9 percent and unemployment, at 4.9 percent in the third quarter, is falling.

With the euro area benchmark interest rate at zero and with the rate at the end of 2019 expected to be 0.25 percent, the promise of economic expansion looks good.

Construction market and trends

The Austrian construction market looks bright. Construction costs increased by 4 percent in 2018 and this is forecast to continue in 2019 with a 3 to 4 percent rise.

International building costs per m ² of internal area, in 2018	EUR	USD (exchange rate: 0.85)
Airports (Building only)		
Domestic terminal, full service	3,530	4,153
Low-cost carrier terminal, basic service	2,624	3,087
Car parks		
Multi-storey – above ground	676	796
Multi-storey – below ground	1,112	1,308
Commercial		
Offices – Business Park	2,019	2,375
CBD Offices – up to 20 floors medium (A-Grade)	2,818	3,315
CBD Offices – high-rise prestige	3,628	4,268
Education		
Primary and secondary	2,008	2,363
University	2,316	2,725
Hospitals		
Day centre (including basic surgeries)	2,449	2,881
Regional hospital	3,259	3,834
General hospital (e.g. city teaching hospital)	3,584	4,217
Hotels		
3 Star travellers	1,918	2,257
5 Star luxury	3,749	4,411
Resort style	2,427	2,855
Industrial		
Warehouse/factory units – basic	687	808
Large warehouse distribution centre	861	1,013
High-tech factory/laboratory	2,213	2,604
Residential		
Individual detached or terrace style house – medium standard	1,332	1,567
Individual detached house – prestige	1,916	2,254
Townhouses – medium standard	1,373	1,615
Apartments – low-rise medium standard	1,527	1,796
Apartments – high-rise	1,995	2,347
Aged care/affordable units	1,614	1,899
Retail		
Large shopping centre including mall	2,285	2,688
Neighbourhood including supermarket	2,131	2,508
Prestige car showroom	2,424	2,852

Demand is high, particularly in Vienna and surrounding regions where there are several large-scale projects across various sectors. There is very high demand for affordable housing driving large-scale urban residential development.

Local construction and M&E companies are coping with the demand, but competition is decreasing leading to rising construction prices and longer lead times.

In general, the cost impact tends to be lower on smaller projects.

Future outlook

The first half of 2019 is looking positive, but there are signs of cooling as major office developments complete later in the year. Other sectors should be more robust, with any slowdown more muted.

Publicly funded infrastructure is expected to support rail and airport projects. High-tech and manufacturing should benefit from growing demand and there is a continuing strong focus on development linked to the life sciences.

	EUR	USD (exchange rate: 0.85)
Austria international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	17	20
Excavate footings (m)	32	37
Concrete in slab (m ³) (1500m ³ job)	162	190
Reinforcement in beams (tonne)	1,727	2,032
Formwork to soffit of slab (m ²)	52	61
Blockwork in wall (m ²) (10,000 block job)	86	101
Structural steel beams (tonne)	4,663	5,485
Pre-cast concrete wall (m ²)	137	162
Curtain wall glazing incl support system (m ²) (1000m ² job)	779	917
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	62	73
Single solid core door incl frame and hardware (no) (50 door job)	1,066	1,254
Painting to walls primer + 2 coats (m ²)	9	11
Ceramic tiling (m ²) (1000m ² job)	68	80
Vinyl flooring to wet areas (m ²) (500m ² job)	34	40
Carpet medium tufted (m ²) (4500m ² job)	33	39
Lighting installation (m ²) (5000m ² + job)	71	84
Copper pipe 15mm to wall (m) (1000m + job)	34	40
Fire sprinklers (per m ²) (5000m ² job)	99	116
Air conditioning incl main plant (m ²) (5000m ² + job)	113	133
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	50	59
Group 2 Tradesman eg carpenter, bricklayer	44	51
Group 3 Tradesman eg carpet layer, tiler, plasterer	44	51
General labourer	32	38
Site foreman	45	53
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	135	159
Reinforcement bar 16mm (tonne) (120 tonne job)	1,031	1,213
Concrete block (400x200) per 1000 (>10,000 block job)	3,673	4,321
Standard brick per 1000	842	991
Structural steel beams (tonne) (100 tonne + job)	2,316	2,725
Glass pane 10mm tempered (m ²)	126	148
Softwood timber for framing 100mm X 50mm (m)	5	5
13 mm plasterboard (m ²)	5	5
Emulsion paint (litre)	7	8
Copper pipe 15 mm (metre) (1000m + job)	10	12
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	6	7
Plant costs		
Hire 50t mobile crane + operator (day)	1,341	1,578

Vienna

Tendering:	Hot
Market:	Staying the same
Cost escalation 2018:	4.0%
Cost escalation 2019:	3.5%
Contractor's margin:	5.0%
Preliminaries:	10.0%
Location factor (USD):	88.5
PPP coefficient:	1.1

France

Paris

Transport projects lift construction prospects

Economic overview

The French economy slowed slightly with annual GDP growth ending the year at 0.9 percent from 2.8 percent in 2017. Inflation remains low at 1.2 percent, but unemployment at 9.1 percent is an issue. Meanwhile, the policy interest rate is anchored at zero.

Construction market and trends

The market remains warm bolstered by real estate and transport. Real estate prices are still rising and last year in Paris hit a new peak.

Large transport schemes, such as the massive Grand Paris Express project, continue to support construction and open other opportunities. Work on the rapid-transit scheme linking the city's suburbs will continue until 2030.

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International building costs per m ² of internal area, in 2018	EUR	USD (exchange rate: 0.85)
Airports (Building only)		
Domestic terminal, full service	3,805	4,476
Low-cost carrier terminal, basic service	2,502	2,943
Car parks		
Multi-storey – above ground	609	716
Multi-storey – below ground	1,199	1,410
Commercial		
Offices – Business Park	1,762	2,073
CBD Offices – up to 20 floors medium (A-Grade)	2,340	2,753
CBD Offices – high-rise prestige	2,945	3,464
Education		
Primary and secondary	1,668	1,962
University	2,137	2,514
Hospitals		
Day centre (including basic surgeries)	2,502	2,943
Regional hospital	2,929	3,446
General hospital (e.g. city teaching hospital)	3,596	4,231
Hotels		
3 Star travellers	2,033	2,391
5 Star luxury	3,680	4,329
Resort style	2,710	3,189
Industrial		
Warehouse/factory units – basic	751	883
Large warehouse distribution centre	928	1,091
High-tech factory/laboratory	1,897	2,232
Residential		
Individual detached or terrace style house – medium standard	1,301	1,530
Individual detached house – prestige	2,074	2,440
Townhouses – medium standard	1,303	1,533
Apartments – low-rise medium standard	1,616	1,901
Apartments – high-rise	2,074	2,440
Aged care/affordable units	1,876	2,207
Retail		
Large shopping centre including mall	2,398	2,821
Neighbourhood including supermarket	2,009	2,363
Prestige car showroom	2,606	3,066

It includes four new metro lines connecting seven economic centres which unlock opportunities for residential construction.

Work is continuing on the major high-speed rail line linking Lyon in France to Turin in Italy, although recent political issues have clouded its future.

There are also several plans, with investment totalling around USD1.3bn, to expand and upgrade major French airports.

Future outlook

Prospects for the French construction industry are bright, with plenty of transport and airport schemes in the pipeline. Sport, leisure and hospitality should also continue to thrive as Paris prepares for the Olympic Games in 2024.

Meanwhile, construction costs are likely to rise 2.3 percent, ahead of current general inflation.

	EUR	USD (exchange rate: 0.85)
France international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	15	17
Excavate footings (m)	28	32
Concrete in slab (m ³) (1500m ³ job)	146	172
Reinforcement in beams (tonne)	1,746	2,054
Formwork to soffit of slab (m ²)	47	55
Blockwork in wall (m ²) (10,000 block job)	68	80
Structural steel beams (tonne)	3,336	3,924
Pre-cast concrete wall (m ²)	120	141
Curtain wall glazing incl support system (m ²) (1000m ² job)	678	797
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	71	83
Single solid core door incl frame and hardware (no) (50 door job)	1,033	1,215
Painting to walls primer + 2 coats (m ²)	12	14
Ceramic tiling (m ²) (1000m ² job)	68	80
Vinyl flooring to wet areas (m ²) (500m ² job)	36	42
Carpet medium tufted (m ²) (4500m ² job)	34	40
Lighting installation (m ²) (5000m ² + job)	65	76
Copper pipe 15mm to wall (m) (1000m + job)	32	38
Fire sprinklers (per m ²) (5000m ² job)	84	99
Air conditioning incl main plant (m ²) (5000m ² + job)	120	141
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	48	56
Group 2 Tradesman eg carpenter, bricklayer	42	49
Group 3 Tradesman eg carpet layer, tiler, plasterer	33	39
General labourer	26	31
Site foreman	42	49
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	106	125
Reinforcement bar 16mm (tonne) (120 tonne job)	928	1,091
Concrete block (400x200) per 1000 (>10,000 block job)	2,814	3,311
Standard brick per 1000	678	797
Structural steel beams (tonne) (100 tonne + job)	1,762	2,073
Glass pane 10mm tempered (m ²)	146	172
Softwood timber for framing 100mm X 50mm (m)	3	4
13 mm plasterboard (m ²)	4	5
Emulsion paint (litre)	6	7
Copper pipe 15 mm (metre) (1000m + job)	7	9
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	3	4
Plant costs		
Hire 50t mobile crane + operator (day)	1,355	1,594

	Paris
Tendering:	Warm
Market:	Staying the same
Cost escalation 2018:	2.7%
Cost escalation 2019:	2.3%
Contractor's margin:	7.5%
Preliminaries:	7.0%
Location factor (USD):	83.5
PPP coefficient:	1.0

Germany

Berlin, Frankfurt and Munich

An attractive market for investors keeping construction busy

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Economic overview

Annual GDP growth dipped in 2018 to 1.5 percent from 2.2 percent in 2017. Inflation, which had been rising, fell towards the end of 2018, ending at 1.9 percent. Unemployment at 3.3 percent is among the lowest in Europe.

Germany remains an attractive market for international investors and this is reflected in the strong performance of the construction sector.

Construction market and trends

Federal statistics show strong growth across all sectors of construction. The market is hot. A shortage of land and a rising population has generated high demand for housing and commercial units.

International building costs per m ² of internal area, in 2018	Berlin EUR	Frankfurt EUR	Munich EUR	Munich USD (exchange rate: 0.85)
Airports (Building only)				
Domestic terminal, full service	3,317	3,394	3,667	4,314
Low-cost carrier terminal, basic service	2,466	2,523	2,726	3,207
Car parks				
Multi-storey – above ground	635	650	702	826
Multi-storey – below ground	1,045	1,069	1,155	1,359
Commercial				
Offices – Business Park	1,897	1,941	2,097	2,467
CBD Offices – up to 20 floors medium (A-Grade)	2,648	2,709	2,927	3,443
CBD Offices – high-rise prestige	3,408	3,487	3,768	4,432
Education				
Primary and secondary	1,887	1,931	2,086	2,454
University	2,176	2,226	2,405	2,830
Hospitals				
Day centre (including basic surgeries)	2,301	2,355	2,544	2,993
Regional hospital	3,062	3,133	3,384	3,982
General hospital (e.g. city teaching hospital)	3,368	3,446	3,723	4,380
Hotels				
3 Star travellers	1,799	1,847	1,989	2,340
5 Star luxury	3,517	3,610	3,888	4,574
Resort style	2,277	2,337	2,517	2,961
Industrial				
Warehouse/factory units – basic	645	660	713	839
Large warehouse distribution centre	809	828	894	1,052
High-tech factory/laboratory	2,080	2,128	2,299	2,705
Residential				
Individual detached or terrace style house – medium standard	1,252	1,281	1,384	1,628
Individual detached house – prestige	1,800	1,842	1,990	2,341
Townhouses – medium standard	1,290	1,320	1,426	1,678
Apartments – low-rise medium standard	1,435	1,468	1,586	1,866
Apartments – high-rise	1,875	1,918	2,072	2,438
Aged care/affordable units	1,516	1,552	1,676	1,972
Retail				
Large shopping centre including mall	2,147	2,197	2,373	2,792
Neighbourhood including supermarket	2,003	2,049	2,214	2,604
Prestige car showroom	2,278	2,331	2,518	2,963

House prices are high compared to previous years due to gentrification in most major cities in Germany. Foreign investors continue to focus on real estate in Berlin, as a slight decline in prices has made the city very attractive. But skills shortages do act as a drag.

Large projects are numerous. In Frankfurt, work has started on Four, a mixed-use development including four high-rise buildings, which will run to 2023. The project consists of 600 apartments, two hotels plus retail units.

The planned USD540m expansion of Munich airport due to open in 2023 will bolster construction in south Germany.

Future outlook

Although the effect of Brexit is hard to predict, further economic growth is expected which will in turn support growth in construction.

The IT industry has a strong presence across the country which is expected to keep growing with attention focused on Berlin and Munich.

Germany international building costs	Berlin EUR	Frankfurt EUR	Munich EUR	Munich USD (exchange rate: 0.85)
Composite trade rates				
Excavate basement (m ³) (1800m ³ job)	16	17	18	21
Excavate footings (m)	30	31	33	39
Concrete in slab (m ³) (1500m ³ job)	152	156	168	198
Reinforcement in beams (tonne)	1,623	1,661	1,794	2,111
Formwork to soffit of slab (m ²)	48	50	54	63
Blockwork in wall (m ²) (10,000 block job)	81	83	89	105
Structural steel beams (tonne)	4,381	4,483	4,843	5,697
Pre-cast concrete wall (m ²)	129	132	143	168
Curtain wall glazing incl support system (m ²) (1000m ² job)	732	749	809	952
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	58	60	64	76
Single solid core door incl frame and hardware (no) (50 door job)	1,001	1,024	1,107	1,302
Painting to walls primer + 2 coats (m ²)	9	9	10	11
Ceramic tiling (m ²) (1000m ² job)	64	65	70	83
Vinyl flooring to wet areas (m ²) (500m ² job)	32	33	36	42
Carpet medium tufted (m ²) (4500m ² job)	31	32	35	41
Lighting installation (m ²) (5000m ² + job)	67	68	74	87
Copper pipe 15mm to wall (m) (1000m + job)	32	33	36	42
Fire sprinklers (per m ²) (5000m ² job)	93	95	102	120
Air conditioning incl main plant (m ²) (5000m ² + job)	107	109	118	139
Labour costs, per hour				
Group 1 Tradesman eg plumber, electrician	47	48	52	62
Group 2 Tradesman eg carpenter, bricklayer	41	42	45	53
Group 3 Tradesman eg carpet layer, tiler, plasterer	41	42	45	53
General labourer	30	31	33	39
Site foreman	42	43	46	55
Material costs				
Concrete 30 MPa (m ³) (1500m ³ job)	127	130	140	165
Reinforcement bar 16mm (tonne) (120 tonne job)	969	991	1,071	1,260
Concrete block (400x200) per 1000 (>10,000 block job)	3,451	3,531	3,815	4,488
Standard brick per 1000	791	810	875	1,029
Structural steel beams (tonne) (100 tonne + job)	2,176	2,227	2,405	2,830
Glass pane 10mm tempered (m ²)	118	121	131	154
Softwood timber for framing 100mm X 50mm (m)	4	4	5	6
13 mm plasterboard (m ²)	4	4	5	6
Emulsion paint (litre)	7	7	7	8
Copper pipe 15 mm (metre) (1000m + job)	10	10	11	13
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	5	6	6	7
Plant costs				
Hire 50t mobile crane + operator (day)	1,260	1,289	1,393	1,639

	Berlin	Frankfurt	Munich
Tendering:	Hot	Hot	Hot
Market:	Staying the same	Warmer	Staying the same
Cost escalation 2018:	4.7%	4.7%	4.7%
Cost escalation 2019:	3.0%	4.0%	3.0%
Contractor's margin:	5.0%	5.0%	5.0%
Preliminaries:	11.0%	12.5%	11.0%
Location factor (USD):	83.9	88.5	92.8
PPP coefficient:	1.0	1.0	1.1

Ireland

Dublin

Construction surges on a burst of economic growth

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Economic overview

Ireland is enjoying a strong burst of growth in 2018, with estimated GDP growth at 7.8 percent. The European Commission forecasts further strong growth of 4.5 percent this year and 3.8 percent in 2020.

Unemployment dropped to 5.3 percent at the end of 2018 from 6.2 percent a year earlier, while annual consumer inflation rose from 0.4 percent to 0.7 percent over the same period.

Construction market and trends

The Irish market is hot with official figures for 2018 Q3 showing annual growth in construction gross value added above 14 percent.

In what is the first wave of large projects following an upturn in economic performance there is a lot of office, residential and student residential projects underway.

International building costs per m ² of internal area, in 2018	EUR	USD (exchange rate: 0.85)
Airports (Building only)		
Domestic terminal, full service	4,850	5,706
Low-cost carrier terminal, basic service	3,400	4,000
Car parks		
Multi-storey – above ground	850	1,000
Multi-storey – below ground	1,350	1,588
Commercial		
Offices – Business Park	2,100	2,471
CBD Offices – up to 20 floors medium (A-Grade)	2,800	3,294
CBD Offices – high-rise prestige	3,700	4,353
Education		
Primary and secondary	1,850	2,176
University	2,950	3,471
Hospitals		
Day centre (including basic surgeries)	2,900	3,412
Regional hospital	4,200	4,941
General hospital (e.g. city teaching hospital)	4,200	4,941
Hotels		
3 Star travellers	2,400	2,824
5 Star luxury	3,600	4,235
Resort style	2,950	3,471
Industrial		
Warehouse/factory units – basic	1,025	1,206
Large warehouse distribution centre	1,300	1,529
High-tech factory/laboratory	2,400	2,824
Residential		
Individual detached or terrace style house – medium standard	1,900	2,235
Individual detached house – prestige	2,400	2,824
Townhouses – medium standard	1,900	2,235
Apartments – low-rise medium standard	2,300	2,706
Apartments – high-rise	2,500	2,941
Aged care/affordable units	2,450	2,882
Retail		
Large shopping centre including mall	3,000	3,529
Neighbourhood including supermarket	2,750	3,235
Prestige car showroom	3,150	3,706

Among the largest ongoing building projects is the EUR200m Grangegorman PPP New Educational Campus project which is due to open for the 2020/21 academic year.

Future outlook

The economy is set to continue improving, but the impact of Brexit casts an unpredictable cloud, yet construction investment is expected to be maintained.

Ireland's biggest infrastructure project on the horizon is the EUR3bn Dublin Metrolink, running 26km north to south and linking Dublin Airport to the city centre.

Other future investment includes a new urban quarter on the Guinness St James's Gate site, the new Facebook headquarters fit-out, and capital programmes for Dublin Airport and Irish Water.

	EUR	USD (exchange rate: 0.85)
Ireland international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	15	18
Excavate footings (m)	25	30
Concrete in slab (m ³) (1500m ³ job)	135	159
Reinforcement in beams (tonne)	1,200	1,412
Formwork to soffit of slab (m ²)	45	53
Blockwork in wall (m ²) (10,000 block job)	40	47
Structural steel beams (tonne)	2,200	2,588
Pre-cast concrete wall (m ²)	110	129
Curtain wall glazing incl support system (m ²) (1000m ² job)	750	882
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	68	80
Single solid core door incl frame and hardware (no) (50 door job)	900	1,059
Painting to walls primer + 2 coats (m ²)	10	12
Ceramic tiling (m ²) (1000m ² job)	90	106
Vinyl flooring to wet areas (m ²) (500m ² job)	45	53
Carpet medium tufted (m ²) (4500m ² job)	45	53
Lighting installation (m ²) (5000m ² + job)	65	76
Copper pipe 15mm to wall (m) (1000m + job)	52	61
Fire sprinklers (per m ²) (5000m ² job)	110	129
Air conditioning incl main plant (m ²) (5000m ² + job)	200	235
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	40	47
Group 2 Tradesman eg carpenter, bricklayer	38	44
Group 3 Tradesman eg carpet layer, tiler, plasterer	38	44
General labourer	27	32
Site foreman	39	46
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	120	141
Reinforcement bar 16mm (tonne) (120 tonne job)	1,050	1,235
Concrete block (400x200) per 1000 (>10,000 block job)	709	834
Standard brick per 1000	600	706
Structural steel beams (tonne) (100 tonne + job)	2,050	2,412
Glass pane 10mm tempered (m ²)	140	165
Softwood timber for framing 100mm X 50mm (m)	6	7
13 mm plasterboard (m ²)	8	9
Emulsion paint (litre)	8	9
Copper pipe 15 mm (metre) (1000m + job)	16	19
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	11	12
Plant costs		
Hire 50t mobile crane + operator (day)	1,650	1,941

Dublin

Tendering:	Hot
Market:	Staying the same
Cost escalation 2018:	7.0%
Cost escalation 2019:	7.0%
Contractor's margin:	4.0%
Preliminaries:	12.0%
Location factor (USD):	98.6
PPP coefficient:	1.1

Netherlands

Amsterdam

Construction surges on the back of a strong and stable economy

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Economic overview

The Dutch economy remains a picture of health, but some cracks began to show as world trade growth slowed markedly in the first quarter of 2018.

GDP growth in the Netherlands is expected to be just under 3 percent for 2018. Slightly down on 2017, but still strong. Domestic spending is surging on the back of higher disposable incomes, and rising consumer confidence.

However, many sentiment indicators have fallen with uncertainties over the USA-China trade conflict, the EU-Italian tensions over finances and Brexit. Yet, the government is contributing to economic expansion by boosting spending this year.

Construction market and trends

Construction is the fastest-growing sector of the Dutch economy. It is overheating, warmed by 4.5 percent

International building costs per m ² of internal area, in 2018	EUR	USD (exchange rate: 0.85)
Airports (Building only)		
Domestic terminal, full service	4,199	4,940
Low-cost carrier terminal, basic service	2,778	3,269
Car parks		
Multi-storey – above ground	686	807
Multi-storey – below ground	1,334	1,569
Commercial		
Offices – Business Park	1,932	2,273
CBD Offices – up to 20 floors medium (A-Grade)	2,629	3,093
CBD Offices – high-rise prestige	3,178	3,739
Education		
Primary and secondary	1,798	2,115
University	2,330	2,742
Hospitals		
Day centre (including basic surgeries)	2,741	3,225
Regional hospital	3,115	3,665
General hospital (e.g. city teaching hospital)	3,738	4,398
Hotels		
3 Star travellers	2,206	2,595
5 Star luxury	3,896	4,583
Resort style	2,903	3,415
Industrial		
Warehouse/factory units – basic	820	964
Large warehouse distribution centre	1,072	1,261
High-tech factory/laboratory	2,090	2,459
Residential		
Individual detached or terrace style house – medium standard	1,434	1,687
Individual detached house – prestige	2,006	2,360
Townhouses – medium standard	1,434	1,687
Apartments – low-rise medium standard	1,657	1,949
Apartments – high-rise	2,235	2,629
Aged care/affordable units	1,994	2,345
Retail		
Large shopping centre including mall	2,597	3,056
Neighbourhood including supermarket	2,330	2,742
Prestige car showroom	2,715	3,194

growth in 2018 and with similar growth expected this year.

Unsurprisingly, trade skills are a problem.

Among the large projects underway are the USD6.4bn motorways A1/A6/A9 Schiphol-Amsterdam-Almere, the expansion of Schiphol Airport, new head offices for Booking.com in Amsterdam, and the Zalmhaven Tower, an iconic 215m high residential tower in Rotterdam.

Meanwhile, Amsterdam is also benefitting from ongoing development of the Zuidas business district.

Future outlook

The economy should expand more moderately next year as domestic demand eases. But it will continue to perform well, supported by manufacturing capacity, high utilisation rates, low financing costs, low unemployment and solid expansions in exports and fixed investment.

Brexit uncertainty and other bubbling global tensions present potential risks to growth, but forecasters point to GDP 2.1 percent growth for 2019.

	EUR	USD (exchange rate: 0.85)
Netherlands international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	15	17
Excavate footings (m)	28	33
Concrete in slab (m ³) (1500m ³ job)	173	203
Reinforcement in beams (tonne)	1,576	1,854
Formwork to soffit of slab (m ²)	32	38
Blockwork in wall (m ²) (10,000 block job)	89	105
Structural steel beams (tonne)	3,152	3,708
Pre-cast concrete wall (m ²)	212	249
Curtain wall glazing incl support system (m ²) (1000m ² job)	731	861
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	91	108
Single solid core door incl frame and hardware (no) (50 door job)	1,296	1,525
Painting to walls primer + 2 coats (m ²)	19	23
Ceramic tiling (m ²) (1000m ² job)	78	92
Vinyl flooring to wet areas (m ²) (500m ² job)	54	63
Carpet medium tufted (m ²) (4500m ² job)	40	47
Lighting installation (m ²) (5000m ² + job)	79	93
Copper pipe 15mm to wall (m) (1000m + job)	30	35
Fire sprinklers (per m ²) (5000m ² job)	51	60
Air conditioning incl main plant (m ²) (5000m ² + job)	196	230
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	54	64
Group 2 Tradesman eg carpenter, bricklayer	44	52
Group 3 Tradesman eg carpet layer, tiler, plasterer	42	49
General labourer	35	41
Site foreman	61	71
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	101	119
Reinforcement bar 16mm (tonne) (120 tonne job)	842	990
Concrete block (400x200) per 1000 (>10,000 block job)	3,896	4,583
Standard brick per 1000	480	565
Structural steel beams (tonne) (100 tonne + job)	1,549	1,822
Glass pane 10mm tempered (m ²)	151	177
Softwood timber for framing 100mm X 50mm (m)	2	2
13 mm plasterboard (m ²)	6	7
Emulsion paint (litre)	10	12
Copper pipe 15 mm (metre) (1000m + job)	6	7
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	2	3
Plant costs		
Hire 50t mobile crane + operator (day)	1,113	1,310

Amsterdam

Tendering:	Overheating
Market:	Warmer
Cost escalation 2018:	8.8%
Cost escalation 2019:	9.0%
Contractor's margin:	10.0%
Preliminaries:	13.0%
Location factor (USD):	95.0
PPP coefficient:	1.0

Poland

Warsaw

Opportunities in a hot market despite growing skills shortages

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Economic overview

Poland enjoyed another year of fast economic growth in 2018. At 5 percent, it was well above most other European nations. And the primary economic indicators all look favourable.

At 1.5 percent, the reference interest rate has been unchanged since 2015 and should remain so throughout this year. Exchange rate fluctuations have been minor, with a rise of 3 percent in 2018.

Unemployment is 5.8 percent and decreasing, while inflation ended the year at 1.1 percent.

Construction market and trends

The construction market is hot. There was high demand for apartments in urban areas throughout 2017 and 2018 and prices have been rising by up to 10 percent in a year. In the main cities, growth in residential development is mainly driven by the rental market.

International building costs per m ² of internal area, in 2018	PLN	USD (exchange rate: 3.67)
Airports (Building only)		
Domestic terminal, full service	9,606	2,617
Low-cost carrier terminal, basic service	5,707	1,555
Car parks		
Multi-storey – above ground	1,495	407
Multi-storey – below ground	2,588	705
Commercial		
Offices – Business Park	4,006	1,092
CBD Offices – up to 20 floors medium (A-Grade)	4,949	1,348
CBD Offices – high-rise prestige	5,420	1,477
Education		
Primary and secondary	2,971	810
University	4,272	1,164
Hospitals		
Day centre (including basic surgeries)	3,063	835
Regional hospital	3,858	1,051
General hospital (e.g. city teaching hospital)	4,132	1,126
Hotels		
3 Star travellers	5,001	1,363
5 Star luxury	7,859	2,141
Resort style	5,477	1,492
Industrial		
Warehouse/factory units – basic	1,910	521
Large warehouse distribution centre	2,569	700
High-tech factory/laboratory	3,872	1,055
Residential		
Individual detached or terrace style house – medium standard	2,755	751
Individual detached house – prestige	3,429	934
Townhouses – medium standard	2,882	785
Apartments – low-rise medium standard	2,951	804
Apartments – high-rise	3,575	974
Aged care/affordable units	3,104	846
Retail		
Large shopping centre including mall	3,657	997
Neighbourhood including supermarket	2,743	747
Prestige car showroom	4,000	1,090

The strong economy is driving the offices sector; with relatively low-cost labour and highly qualified specialists, Poland has much to attract corporate businesses.

Future outlook

The construction market looks set to remain hot although the residential sector is likely to stabilise.

Increasing demand for energy and modernising the infrastructure are the key drivers for investment by the power and utilities sector over the long term.

Meanwhile, the private health market is growing as Poland's population is ageing and the public sector is seen as inadequate to meet the needs.

The growing corporate presence in Poland will mean opportunities for office fit-outs and data centres.

	PLN	USD (exchange rate: 3.67)
Poland international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	28	8
Excavate footings (m)	107	29
Concrete in slab (m ³) (1500m ³ job)	649	177
Reinforcement in beams (tonne)	4,995	1,361
Formwork to soffit of slab (m ²)	109	30
Blockwork in wall (m ²) (10,000 block job)	134	37
Structural steel beams (tonne)	10,401	2,834
Pre-cast concrete wall (m ²)	571	156
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,341	365
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	129	35
Single solid core door incl frame and hardware (no) (50 door job)	2,936	800
Painting to walls primer + 2 coats (m ²)	19	5
Ceramic tiling (m ²) (1000m ² job)	136	37
Vinyl flooring to wet areas (m ²) (500m ² job)	104	28
Carpet medium tufted (m ²) (4500m ² job)	107	29
Lighting installation (m ²) (5000m ² + job)	133	36
Copper pipe 15mm to wall (m) (1000m + job)	82	22
Fire sprinklers (per m ²) (5000m ² job)	81	22
Air conditioning incl main plant (m ²) (5000m ² + job)	649	177
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	36	10
Group 2 Tradesman eg carpenter, bricklayer	40	11
Group 3 Tradesman eg carpet layer, tiler, plasterer	36	10
General labourer	36	10
Site foreman	55	15
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	292	79
Reinforcement bar 16mm (tonne) (120 tonne job)	3,029	825
Concrete block (400x200) per 1000 (>10,000 block job)	4,605	1,255
Standard brick per 1000	1,037	283
Structural steel beams (tonne) (100 tonne + job)	7,625	2,078
Glass pane 10mm tempered (m ²)	396	108
Softwood timber for framing 100mm X 50mm (m)	9	2
13 mm plasterboard (m ²)	13	4
Emulsion paint (litre)	5	1
Copper pipe 15 mm (metre) (1000m + job)	19	5
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	4	1
Plant costs		
Hire 50t mobile crane + operator (day)	4,620	1,259

Warsaw

Tendering:	Hot
Market:	Staying the same
Cost escalation 2018:	6.0%
Cost escalation 2019:	4.0%
Contractor's margin:	6.0%
Preliminaries:	6.0%
Location factor (USD):	41.6
PPP coefficient:	2.1

Russia

Moscow

Little sign of a bounce following the World Cup

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Economic overview

Russia's annual GDP growth rate was running at 1.5 percent in the third quarter of 2018.

Western sanctions have hindered growth and lowered the exchange rate, but higher oil prices helped to lift the rouble later in 2018. Unemployment is below 5 percent and inflation below 4 percent, while interest rates at 7.5 percent represent a slight short-term rise.

House prices have picked up again in Moscow after two years of decline.

Construction market and trends

The World Cup was a success, but it has not warmed Russia's construction market. It remains cold. Activity does however continue apace in Moscow on urban renewal and transformation projects, the expansion of the metro, the ring highway and bridges over the Moscow river.

	RUB	USD (exchange rate: 66.38)
International building costs per m² of internal area, in 2018		
Airports (Building only)		
Domestic terminal, full service	190,000	2,862
Low-cost carrier terminal, basic service	143,900	2,168
Car parks		
Multi-storey – above ground	32,600	491
Multi-storey – below ground	38,000	572
Commercial		
Offices – Business Park	62,100	936
CBD Offices – up to 20 floors medium (A-Grade)	67,200	1,012
CBD Offices – high-rise prestige	79,700	1,201
Education		
Primary and secondary	50,000	753
University	76,500	1,152
Hospitals		
Day centre (including basic surgeries)	54,600	823
Regional hospital	76,300	1,149
General hospital (e.g. city teaching hospital)	86,700	1,306
Hotels		
3 Star travellers	70,900	1,068
5 Star luxury	131,100	1,975
Resort style	97,900	1,475
Industrial		
Warehouse/factory units – basic	34,900	526
Large warehouse distribution centre	41,500	625
High-tech factory/laboratory	75,600	1,139
Residential		
Individual detached or terrace style house – medium standard	32,100	484
Individual detached house – prestige	48,500	731
Townhouses – medium standard	38,600	582
Apartments – low-rise medium standard	43,500	655
Apartments – high-rise	48,500	731
Aged care/affordable units	32,100	484
Retail		
Large shopping centre including mall	65,300	984
Neighbourhood including supermarket	48,900	737
Prestige car showroom	60,100	905

Major projects outside the capital include the under-construction Moscow to St Petersburg highway. Gazprom's massive Power of Siberia gas pipeline project is ongoing, and work started last year on its Amur Processing Plant, the largest such plant in Russia.

Future outlook

The market looks set to stay cold in 2019. Residential construction costs are set to rise in 2019, with legislation changes for new-built residences. Escrow accounts will be mandatory for developers from July 2019 and VAT has risen from 18 to 20 percent.

There should be growth in housing work, based on current projects and development of New Moscow Area. There has also been an increase in projects related to retail, transport and education.

Higher commodity prices should boost work in the oil and gas sector.

	RUB	USD (exchange rate: 66.38)
Russia international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	670	10
Excavate footings (m)	900	14
Concrete in slab (m ³) (1500m ³ job)	10,400	157
Reinforcement in beams (tonne)	77,200	1,163
Formwork to soffit of slab (m ²)	1,740	26
Blockwork in wall (m ²) (10,000 block job)	2,110	32
Structural steel beams (tonne)	135,900	2,047
Pre-cast concrete wall (m ²)	10,100	152
Curtain wall glazing incl support system (m ²) (1000m ² job)	57,800	871
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	3,300	50
Single solid core door incl frame and hardware (no) (50 door job)	36,600	551
Painting to walls primer + 2 coats (m ²)	680	10
Ceramic tiling (m ²) (1000m ² job)	4,220	64
Vinyl flooring to wet areas (m ²) (500m ² job)	3,490	53
Carpet medium tufted (m ²) (4500m ² job)	3,240	49
Lighting installation (m ²) (5000m ² + job)	3,900	59
Copper pipe 15mm to wall (m) (1000m + job)	690	10
Fire sprinklers (per m ²) (5000m ² job)	1,800	27
Air conditioning incl main plant (m ²) (5000m ² + job)	9,800	148
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	870	13
Group 2 Tradesman eg carpenter, bricklayer	870	13
Group 3 Tradesman eg carpet layer, tiler, plasterer	870	13
General labourer	770	12
Site foreman	1,270	19
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	5,150	78
Reinforcement bar 16mm (tonne) (120 tonne job)	38,900	586
Concrete block (400x200) per 1000 (>10,000 block job)	79,650	1,200
Standard brick per 1000	14,100	212
Structural steel beams (tonne) (100 tonne + job)	58,900	887
Glass pane 10mm tempered (m ²)	8,100	122
Softwood timber for framing 100mm X 50mm (m)	260	4
13 mm plasterboard (m ²)	160	2
Emulsion paint (litre)	75	1
Copper pipe 15 mm (metre) (1000m + job)	370	6
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	75	1
Plant costs		
Hire 50t mobile crane + operator (day)	58,000	874

Moscow

Tendering:	Cold
Market:	Staying the same
Cost escalation 2018:	4.0%
Cost escalation 2019:	4.0%
Contractor's margin:	7.0%
Preliminaries:	8.0%
Location factor (USD):	45.4
PPP coefficient:	37.5

Spain

Barcelona and Madrid

Solid growth and rising demand warm the construction market

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Economic overview

Although Spain's economy was among the more buoyant in Europe, its annual GDP growth at 2.4 percent in 2018 was slower than the 3.1 percent achieved in 2019.

Unemployment remains high, above 14 percent by the end of 2018, but it is coming down. It was above 16 percent at the start of 2018 and above 20 percent in 2019.

House prices have been rising in central Madrid, Barcelona and coastal areas. Policy interest rates remain at zero, but there are expectations of a rise to 0.25 percent by the end of 2019.

International building costs per m ² of internal area, in 2018	Barcelona EUR	Madrid EUR	Madrid USD (exchange rate: 0.85)
Airports (Building only)			
Domestic terminal, full service	3,462	3,411	4,013
Low-cost carrier terminal, basic service	2,489	2,452	2,884
Car parks			
Multi-storey – above ground	458	451	530
Multi-storey – below ground	808	796	936
Commercial			
Offices – Business Park	1,202	1,184	1,393
CBD Offices – up to 20 floors medium (A-Grade)	2,294	2,260	2,659
CBD Offices – high-rise prestige	2,458	2,422	2,849
Education			
Primary and secondary	1,238	1,220	1,435
University	1,507	1,485	1,747
Hospitals			
Day centre (including basic surgeries)	2,142	2,110	2,483
Regional hospital	2,813	2,772	3,261
General hospital (e.g. city teaching hospital)	3,084	3,038	3,574
Hotels			
3 Star travellers	1,866	1,839	2,163
5 Star luxury	3,074	3,028	3,563
Resort style	2,086	2,055	2,417
Industrial			
Warehouse/factory units – basic	492	484	570
Large warehouse distribution centre	710	700	823
High-tech factory/laboratory	1,529	1,507	1,773
Residential			
Individual detached or terrace style house – medium standard	1,171	1,154	1,357
Individual detached house – prestige	1,991	1,961	2,307
Townhouses – medium standard	1,405	1,384	1,629
Apartments – low-rise medium standard	1,288	1,269	1,493
Apartments – high-rise	1,741	1,715	2,018
Aged care/affordable units	1,667	1,643	1,933
Retail			
Large shopping centre including mall	2,185	2,153	2,532
Neighbourhood including supermarket	1,857	1,830	2,153
Prestige car showroom	2,403	2,368	2,786

Construction market and trends

Spain is shaking off the oversupply generated before the financial crisis. The construction market is warming, confidence is growing and rising foreign investment is fuelling demand in metropolitan cities.

There is growing demand for high-quality housing in Madrid, Barcelona and coastal areas and high-quality office space in Madrid and Barcelona.

Meanwhile, the budget for public transport networks is 21.9 percent higher than last year.

Future outlook

The market is expected to warm up in 2019 as confidence in the Spanish market increases. Interest rates are set to remain low and banks seem prepared to continue lending to investors. The public infrastructure budget is expected to receive a 12.7 percent boost for 2019.

Spain international building costs	Barcelona EUR	Madrid EUR	Madrid USD (exchange rate: 0.85)
Composite trade rates			
Excavate basement (m ³) (1800m ³ job)	12	12	14
Excavate footings (m)	19	19	22
Concrete in slab (m ³) (1500m ³ job)	165	163	192
Reinforcement in beams (tonne)	1,191	1,174	1,381
Formwork to soffit of slab (m ²)	31	30	36
Blockwork in wall (m ²) (10,000 block job)	37	37	43
Structural steel beams (tonne)	2,548	2,510	2,953
Pre-cast concrete wall (m ²)	83	82	96
Curtain wall glazing incl support system (m ²) (1000m ² job)	619	610	718
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	52	51	60
Single solid core door incl frame and hardware (no) (50 door job)	915	902	1,061
Painting to walls primer + 2 coats (m ²)	8	7	9
Ceramic tiling (m ²) (1000m ² job)	43	42	50
Vinyl flooring to wet areas (m ²) (500m ² job)	42	41	49
Carpet medium tufted (m ²) (4500m ² job)	31	31	36
Lighting installation (m ²) (5000m ² + job)	83	82	96
Copper pipe 15mm to wall (m) (1000m + job)	23	23	27
Fire sprinklers (per m ²) (5000m ² job)	29	29	34
Air conditioning incl main plant (m ²) (5000m ² + job)	113	111	131
Labour costs, per hour			
Group 1 Tradesman eg plumber, electrician	37	36	43
Group 2 Tradesman eg carpenter, bricklayer	32	31	37
Group 3 Tradesman eg carpet layer, tiler, plasterer	26	26	31
General labourer	19	19	22
Site foreman	40	40	47
Material costs			
Concrete 30 MPa (m ³) (1500m ³ job)	86	85	100
Reinforcement bar 16mm (tonne) (120 tonne job)	837	825	971
Concrete block (400x200) per 1000 (>10,000 block job)	2,096	2,065	2,429
Standard brick per 1000	369	364	428
Structural steel beams (tonne) (100 tonne + job)	1,622	1,598	1,880
Glass pane 10mm tempered (m ²)	95	93	110
Softwood timber for framing 100mm X 50mm (m)	5	5	6
13 mm plasterboard (m ²)	5	5	6
Emulsion paint (litre)	5	5	6
Copper pipe 15 mm (metre) (1000m + job)	4	4	5
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	4	4	4
Plant costs			
Hire 50t mobile crane + operator (day)	1,244	1,220	1,435

	Barcelona	Madrid
Tendering:	Warm	Warm
Market:	Warmer	Warmer
Cost escalation 2018:	3.5%	4.0%
Cost escalation 2019:	3.5%	5.0%
Contractor's margin:	5.5%	5.5%
Preliminaries:	5.0%	5.0%
Location factor (USD):	70.7	70.9
PPP coefficient:	0.8	0.8

Sweden

Stockholm

A hint of cooling, but infrastructure spending offers sound promise

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Economic overview

Sweden's third quarter GDP in 2018 although 1.6 percent up on a year earlier dipped slightly on the previous quarter. Despite this hint of cooling, GDP growth for 2018 should end comfortably above 2 percent.

Inflation of 2 percent was pushed up by higher housing and utility costs and the Krona has weakened.

House prices fell slightly over the year and housing starts dipped.

Construction market and trends

One of the fastest-growing sectors is data centres, driven by attractive natural cooling, low energy costs and a highly reliable electricity grid.

The offices sector appears solid, with occupancy strong and less than 1 percent availability of office space in Stockholm's central business district. Gothenburg and Malmö are also warming. There is rising investment in flexible office-hotel solutions.

International building costs per m ² of internal area, in 2018	SEK	USD (exchange rate: 8.8)
Airports (Building only)		
Domestic terminal, full service	43,250	4,915
Low-cost carrier terminal, basic service	28,613	3,252
Car parks		
Multi-storey – above ground	9,412	1,070
Multi-storey – below ground	13,707	1,558
Commercial		
Offices – Business Park	18,065	2,053
CBD Offices – up to 20 floors medium (A-Grade)	27,079	3,077
CBD Offices – high-rise prestige	32,733	3,720
Education		
Primary and secondary	20,270	2,303
University	18,476	2,100
Hospitals		
Day centre (including basic surgeries)	27,518	3,127
Regional hospital	24,731	2,810
General hospital (e.g. city teaching hospital)	24,310	2,763
Hotels		
3 Star travellers	25,142	2,857
5 Star luxury	30,035	3,413
Resort style	29,901	3,398
Industrial		
Warehouse/factory units – basic	9,022	1,025
Large warehouse distribution centre	11,669	1,326
High-tech factory/laboratory	15,610	1,774
Residential		
Individual detached or terrace style house – medium standard	12,007	1,364
Individual detached house – prestige	20,662	2,348
Townhouses – medium standard	12,007	1,364
Apartments – low-rise medium standard	14,118	1,604
Apartments – high-rise	23,021	2,616
Aged care/affordable units	17,722	2,014
Retail		
Large shopping centre including mall	24,456	2,779
Neighbourhood including supermarket	23,999	2,727
Prestige car showroom	27,965	3,178

Almost USD90bn of investment in new rail and road infrastructure and restorative works is planned for 2018-2029, potentially more than local firms can deliver.

House building has slowed, with prices and activity falling.

Labour is costly in Sweden compared with other major European countries, although materials prices are similar. Importantly, the industry has a

reputation for delivering projects on time and budget.

Future outlook

Weaker consumption and a fall in house prices points to Sweden's economy cooling in late 2018, although this might be a temporary dip.

Industrial, manufacturing, commercial offices, fit-out and infrastructure still look strong and provide support for the construction sector. Indeed, the

capacity of local contractors may be stretched, opening opportunities for foreign contractors.

Sweden international building costs	SEK	USD (exchange rate: 8.8)
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	99	11
Excavate footings (m)	288	33
Concrete in slab (m ³) (1500m ³ job)	1,500	170
Reinforcement in beams (tonne)	16,233	1,845
Formwork to soffit of slab (m ²)	330	37
Blockwork in wall (m ²) (10,000 block job)	917	104
Structural steel beams (tonne)	25,000	2,841
Pre-cast concrete wall (m ²)	1,520	173
Curtain wall glazing incl support system (m ²) (1000m ² job)	7,529	856
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	937	107
Single solid core door incl frame and hardware (no) (50 door job)	12,000	1,364
Painting to walls primer + 2 coats (m ²)	180	20
Ceramic tiling (m ²) (1000m ² job)	1,000	114
Vinyl flooring to wet areas (m ²) (500m ² job)	420	48
Carpet medium tufted (m ²) (4500m ² job)	560	64
Lighting installation (m ²) (5000m ² + job)	814	92
Copper pipe 15mm to wall (m) (1000m + job)	309	35
Fire sprinklers (per m ²) (5000m ² job)	450	51
Air conditioning incl main plant (m ²) (5000m ² + job)	2,000	227
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	460	52
Group 2 Tradesman eg carpenter, bricklayer	450	51
Group 3 Tradesman eg carpet layer, tiler, plasterer	420	48
General labourer	380	43
Site foreman	550	63
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	1,040	118
Reinforcement bar 16mm (tonne) (120 tonne job)	8,673	986
Concrete block (400x200) per 1000 (>10,000 block job)	40,129	4,560
Standard brick per 1000	4,944	562
Structural steel beams (tonne) (100 tonne + job)	15,955	1,813
Glass pane 10mm tempered (m ²)	1,555	177
Softwood timber for framing 100mm X 50mm (m)	21	2
13 mm plasterboard (m ²)	15	2
Emulsion paint (litre)	100	11
Copper pipe 15 mm (metre) (1000m + job)	70	8
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	15	2
Plant costs		
Hire 50t mobile crane + operator (day)	12,000	1,364

Stockholm

Tendering:	Warm
Market:	Cooler
Cost escalation 2018:	4.0%
Cost escalation 2019:	2.0%
Contractor's margin:	10.0%
Preliminaries:	15.0%
Location factor (USD):	81.3
PPP coefficient:	9.7

Around the globe

Europe

Switzerland

Zurich

Focus shifts to finance and IT infrastructure

Economic overview

Annual GDP growth in Switzerland was running at 2.4 percent in the third quarter of 2018.

Unemployment at around 2.5 percent in late 2018 was close to the ten-year low. Annual inflation was running at 0.9 percent.

Rising consumption in the Eurozone is putting pressure on financial institutions to raise interest rates to keep inflation in check. This could impact on the Swiss economy and lower growth.

Construction market and trends

Switzerland's construction market was warm in 2018. But with fewer civil engineering projects coming through, bigger civils firms are turning attention to large-scale property

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International building costs per m ² of internal area, in 2018	CHF	USD (exchange rate: 0.96)
Airports (Building only)		
Domestic terminal, full service	5,810	6,052
Low-cost carrier terminal, basic service	4,480	4,667
Car parks		
Multi-storey – above ground	1,145	1,193
Multi-storey – below ground	1,535	1,599
Commercial		
Offices – Business Park	2,850	2,969
CBD Offices – up to 20 floors medium (A-Grade)	4,050	4,219
CBD Offices – high-rise prestige	4,530	4,719
Education		
Primary and secondary	2,845	2,964
University	3,245	3,380
Hospitals		
Day centre (including basic surgeries)	3,655	3,807
Regional hospital	5,165	5,380
General hospital (e.g. city teaching hospital)	5,570	5,802
Hotels		
3 Star travellers	3,235	3,370
5 Star luxury	6,025	6,276
Resort style	4,490	4,677
Industrial		
Warehouse/factory units – basic	1,435	1,495
Large warehouse distribution centre	1,640	1,708
High-tech factory/laboratory	3,245	3,380
Residential		
Individual detached or terrace style house – medium standard	2,045	2,130
Individual detached house – prestige	3,050	3,177
Townhouses – medium standard	2,050	2,135
Apartments – low-rise medium standard	2,280	2,375
Apartments – high-rise	3,300	3,438
Aged care/affordable units	2,665	2,776
Retail		
Large shopping centre including mall	3,755	3,911
Neighbourhood including supermarket	3,450	3,594
Prestige car showroom	4,161	4,334

projects, lowering tender prices – though not necessarily final account construction costs.

An oversupply in housing is likely to suppress growth in 2019, despite a strong finish to 2018.

Most major data centre providers in Europe are positioning themselves in the local Swiss market in what is a growth sector. IT companies continue to expand their footprints in Zurich.

International banks are also investing heavily in Zurich.

Future outlook

Construction output should hold steady in 2019. Swiss taxation levels are among the lowest in Europe, attracting workforce and corporations to Zurich, Basel and Geneva.

After a surge, the housing sector is likely to slow down. While existing transport infrastructure is well maintained, there is investment being ploughed into fibre-optic connectivity infrastructure and data centres.

Meanwhile, Lausanne is preparing to host the Winter Youth Olympics in 2020.

	CHF	USD (exchange rate: 0.96)
Switzerland international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	29	30
Excavate footings (m)	51	53
Concrete in slab (m ³) (1500m ³ job)	258	269
Reinforcement in beams (tonne)	2,416	2,517
Formwork to soffit of slab (m ²)	79	82
Blockwork in wall (m ²) (10,000 block job)	132	138
Structural steel beams (tonne)	5,160	5,375
Pre-cast concrete wall (m ²)	199	207
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,156	1,204
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	97	101
Single solid core door incl frame and hardware (no) (50 door job)	1,595	1,661
Painting to walls primer + 2 coats (m ²)	14	15
Ceramic tiling (m ²) (1000m ² job)	155	161
Vinyl flooring to wet areas (m ²) (500m ² job)	70	73
Carpet medium tufted (m ²) (4500m ² job)	84	88
Lighting installation (m ²) (5000m ² + job)	110	115
Copper pipe 15mm to wall (m) (1000m + job)	56	58
Fire sprinklers (per m ²) (5000m ² job)	101	105
Air conditioning incl main plant (m ²) (5000m ² + job)	167	174
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	113	118
Group 2 Tradesman eg carpenter, bricklayer	112	117
Group 3 Tradesman eg carpet layer, tiler, plasterer	105	109
General labourer	95	99
Site foreman	130	135
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	209	218
Reinforcement bar 16mm (tonne) (120 tonne job)	1,480	1,542
Concrete block (400x200) per 1000 (>10,000 block job)	5,407	5,632
Standard brick per 1000	1,244	1,296
Structural steel beams (tonne) (100 tonne + job)	3,325	3,464
Glass pane 10mm tempered (m ²)	188	196
Softwood timber for framing 100mm X 50mm (m)	7	7
13 mm plasterboard (m ²)	9	9
Emulsion paint (litre)	10	10
Copper pipe 15 mm (metre) (1000m + job)	17	18
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	11	11
Plant costs		
Hire 50t mobile crane + operator (day)	2,305	2,401

	Zurich
Tendering:	Warm
Market:	Staying the same
Cost escalation 2018:	0.5%
Cost escalation 2019:	0.7%
Contractor's margin:	5.5%
Preliminaries:	11.0%
Location factor (USD):	139.4
PPP coefficient:	2.2

Turkey

Istanbul

Political and financial risks cool the construction market

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Economic overview

Turkey's economy is experiencing a difficult period. A strong recovery in 2017 was followed by turbulence in early 2018 related to election uncertainties and persisting regional geopolitical tensions, which created risks. GDP grew by 1.6 percent year-on-year in the third quarter of 2018, slowing from a 5.3 percent expansion in the previous three-month period. The exchange rate is highly

volatile, with the lira falling despite hikes in the policy interest rate.

This is putting acute upward pressure on prices.

Construction market and trends

Construction has chilled with projects slowed due to financial turbulence, resulting in a surplus of skilled labour. Investors have headed for housing projects where demand seems more

International building costs per m ² of internal area, in 2018	TRY	USD (exchange rate: 5.7)
Airports (Building only)		
Domestic terminal, full service	9,188	1,612
Low-cost carrier terminal, basic service	5,892	1,034
Car parks		
Multi-storey – above ground	1,683	295
Multi-storey – below ground	1,936	340
Commercial		
Offices – Business Park	3,623	636
CBD Offices – up to 20 floors medium (A-Grade)	4,440	779
CBD Offices – high-rise prestige	4,692	823
Education		
Primary and secondary	2,475	434
University	3,600	631
Hospitals		
Day centre (including basic surgeries)	2,875	504
Regional hospital	3,841	674
General hospital (e.g. city teaching hospital)	4,325	759
Hotels		
3 Star travellers	3,784	664
5 Star luxury	7,418	1,301
Resort style	5,478	961
Industrial		
Warehouse/factory units – basic	1,898	333
Large warehouse distribution centre	2,599	456
High-tech factory/laboratory	4,300	754
Residential		
Individual detached or terrace style house – medium standard	2,266	398
Individual detached house – prestige	3,047	535
Townhouses – medium standard	2,695	473
Apartments – low-rise medium standard	2,629	461
Apartments – high-rise	3,432	602
Aged care/affordable units	2,420	425
Retail		
Large shopping centre including mall	3,393	595
Neighbourhood including supermarket	2,640	463
Prestige car showroom	3,525	618

certain and, importantly payback times are shorter, with investors needing to repay loans in foreign currency.

Meanwhile, residential development and urban renovation projects are pushing demand for power and utility projects and regional growth is spurring retail development.

Istanbul's new airport, vying to be among the world's biggest, remains under construction, although inaugurated in October for partial opening in December. Other transport projects, both road and rail, linking to the airport are under construction.

Among other major projects is a new bridge over the Dardanelles strait where work has started.

Future outlook

Weak demand, currency volatility, with high inflation and interest rates makes it tough for construction in Turkey.

But the government is trying to support construction with tax cuts and cheaper long-term loans.

Turkey international building costs	TRY	USD (exchange rate: 5.7)
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	50	9
Excavate footings (m)	50	9
Concrete in slab (m ³) (1500m ³ job)	400	70
Reinforcement in beams (tonne)	4,000	702
Formwork to soffit of slab (m ²)	100	18
Blockwork in wall (m ²) (10,000 block job)	120	21
Structural steel beams (tonne)	7,000	1,228
Pre-cast concrete wall (m ²)	450	79
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,500	263
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	85	15
Single solid core door incl frame and hardware (no) (50 door job)	1,200	211
Painting to walls primer + 2 coats (m ²)	25	4
Ceramic tiling (m ²) (1000m ² job)	170	30
Vinyl flooring to wet areas (m ²) (500m ² job)	120	21
Carpet medium tufted (m ²) (4500m ² job)	150	26
Lighting installation (m ²) (5000m ² + job)	150	26
Copper pipe 15mm to wall (m) (1000m + job)	75	13
Fire sprinklers (per m ²) (5000m ² job)	100	18
Air conditioning incl main plant (m ²) (5000m ² + job)	700	123
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	50	9
Group 2 Tradesman eg carpenter, bricklayer	45	8
Group 3 Tradesman eg carpet layer, tiler, plasterer	45	8
General labourer	30	5
Site foreman	75	13
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	210	37
Reinforcement bar 16mm (tonne) (120 tonne job)	3,400	596
Concrete block (400x200) per 1000 (>10,000 block job)	3,100	544
Standard brick per 1000	1,000	175
Structural steel beams (tonne) (100 tonne + job)	3,800	667
Glass pane 10mm tempered (m ²)	220	39
Softwood timber for framing 100mm X 50mm (m)	10	2
13 mm plasterboard (m ²)	12	2
Emulsion paint (litre)	16	3
Copper pipe 15 mm (metre) (1000m + job)	30	5
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	10	2
Plant costs		
Hire 50t mobile crane + operator (day)	3,000	526

Istanbul

Tendering:	Cold
Market:	Cooler
Cost escalation 2018:	15.0%
Cost escalation 2019:	12.0%
Contractor's margin:	5.0%
Preliminaries:	10.0%
Location factor (USD):	25.2
PPP coefficient:	1.8

Around the globe

Europe

UK London

Infrastructure growth should soften the effects of easing commercial activity

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Economic overview

London drives the UK economy. The capital's economic growth rate is set to slow further in 2019, with Brexit uncertainty casting a shadow. Despite this softening in activity, significant commitment to London's infrastructure capital projects and programmes, sustained foreign and direct investment are expected to compensate for the ongoing drag on business confidence.

Construction market and trends

Although construction output continued to rise in the initial period following the Brexit referendum in 2016, the built environment sector materially lost momentum during 2018, concluding with a -1.7 percent quarter on quarter growth rate in Q4 2018.

International building costs per m ² of internal area, in 2018	GBP	USD (exchange rate: 0.76)
Airports (Building only)		
Domestic terminal, full service	4,033	5,307
Low-cost carrier terminal, basic service	2,992	3,937
Car parks		
Multi-storey – above ground	747	982
Multi-storey – below ground	1,152	1,515
Commercial		
Offices – Business Park	2,500	3,289
CBD Offices – up to 20 floors medium (A-Grade)	2,900	3,816
CBD Offices – high-rise prestige	3,750	4,934
Education		
Primary and secondary	2,640	3,474
University	3,750	4,934
Hospitals		
Day centre (including basic surgeries)	2,867	3,772
Regional hospital	3,595	4,731
General hospital (e.g. city teaching hospital)	4,045	5,322
Hotels		
3 Star travellers	2,850	3,750
5 Star luxury	4,450	5,855
Resort style	3,150	4,145
Industrial		
Warehouse/factory units – basic	920	1,211
Large warehouse distribution centre	1,099	1,446
High-tech factory/laboratory	2,200	2,895
Residential		
Individual detached or terrace style house – medium standard	2,042	2,687
Individual detached house – prestige	3,574	4,702
Townhouses – medium standard	2,961	3,896
Apartments – low-rise medium standard	2,676	3,521
Apartments – high-rise	3,609	4,749
Aged care/affordable units	2,200	2,895
Retail		
Large shopping centre including mall	2,140	2,816
Neighbourhood including supermarket	1,478	1,944
Prestige car showroom	1,809	2,380

Major UK government-backed investments in rail transport and utilities are acting as a counterweight to the softening residential and commercial sectors. It was no surprise to see a return in client appetite to use the single stage tender procurement route in construction in 2018. This has continued into 2019.

Future outlook

Skill shortages are a key challenge in the built environment. An ageing workforce, combined with resurgent economic performance in Eastern Europe and the uncertainty created for EU nationals residing in London, are a genuine barrier to building appropriate capability in the supply chain. A weakening pound, rising material input prices and the use of single stage, will drive some unpredictability in tender pricing during the first half of 2019.

The sector enjoyed the unenviable reputation of topping the UK league table of new company insolvencies in 2018. The annual growth rate in construction insolvencies peaked in Q3 2018 at 23.7 percent, contributing to the highest annual number of insolvencies seen in the industry since 2013.

	GBP	USD (exchange rate: 0.76)
UK (London) international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	15	20
Excavate footings (m)	23	30
Concrete in slab (m ³) (1500m ³ job)	177	233
Reinforcement in beams (tonne)	1,115	1,467
Formwork to soffit of slab (m ²)	49	65
Blockwork in wall (m ²) (10,000 block job)	67	88
Structural steel beams (tonne)	2,600	3,421
Pre-cast concrete wall (m ²)	130	171
Curtain wall glazing incl support system (m ²) (1000m ² job)	911	1,199
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	60	79
Single solid core door incl frame and hardware (no) (50 door job)	1,097	1,443
Painting to walls primer + 2 coats (m ²)	9	12
Ceramic tiling (m ²) (1000m ² job)	107	141
Vinyl flooring to wet areas (m ²) (500m ² job)	48	64
Carpet medium tufted (m ²) (4500m ² job)	36	47
Lighting installation (m ²) (5000m ² + job)	100	132
Copper pipe 15mm to wall (m) (1000m + job)	50	66
Fire sprinklers (per m ²) (5000m ² job)	40	53
Air conditioning incl main plant (m ²) (5000m ² + job)	200	263
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	44	58
Group 2 Tradesman eg carpenter, bricklayer	38	50
Group 3 Tradesman eg carpet layer, tiler, plasterer	35	46
General labourer	24	31
Site foreman	47	62
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	138	181
Reinforcement bar 16mm (tonne) (120 tonne job)	1,063	1,399
Concrete block (400x200) per 1000 (>10,000 block job)	1,128	1,484
Standard brick per 1000	521	686
Structural steel beams (tonne) (100 tonne + job)	2,160	2,842
Glass pane 10mm tempered (m ²)	110	145
Softwood timber for framing 100mm X 50mm (m)	5	6
13 mm plasterboard (m ²)	7	9
Emulsion paint (litre)	6	8
Copper pipe 15 mm (metre) (1000m + job)	6	8
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	3	4
Plant costs		
Hire 50t mobile crane + operator (day)	1,258	1,655

London

Tendering:	Lukewarm
Market:	Staying the same
Cost escalation 2018:	2.1%
Cost escalation 2019:	2.5%
Contractor's margin:	4.2%
Preliminaries:	14.0%
Location factor (USD):	100.0
PPP coefficient:	1.0

Around the globe

Europe

UK

Other regions

UK's regional cities are pushing for growth

Economic overview

UK economic growth hit a six-year low of 1.4 percent in 2018. This growth is polarised across the UK regions, for example Scotland, the North West and the South West are exceeding the UK as a whole at 1.5 percent or above. Wales and Northern Ireland, in contrast have grown by just 0.8 and 0.9 percent respectively.

Despite economic fundamentals remaining strong, with record low unemployment figures being close to 4.0 percent and the consumer price index running close to the Bank of England 2.0 percent target; forecasters expect the UK's economic outlook to remain subdued, notwithstanding the hot spots of Birmingham and Manchester.

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International building costs per m ² of internal area, in 2018	Northern Ireland GBP	Scotland GBP	North GBP	Central GBP	South GBP
Airports (Building only)					
Domestic terminal, full service	2,910	3,330	3,483	3,297	3,601
Low cost carrier terminal, basic service	2,285	2,560	2,520	2,540	2,647
Car parks					
Multi storey above ground	595	600	595	663	677
Multi storey below ground	820	860	913	825	1,068
Commercial					
Offices – Business Park	1,445	1,718	1,610	1,779	1,970
CBD Offices – up to 20 floors medium (A-Grade)	1,620	1,953	1,839	1,900	2,550
CBD Offices – high-rise prestige	2,130	2,517	2,519	2,498	2,890
Education					
Primary and secondary	1,360	1,750	1,620	1,589	1,828
University	1,930	2,347	2,386	2,273	2,675
Hospitals					
Day centre (including basic surgeries)	1,530	1,777	1,818	1,630	1,970
Regional hospital	1,340	2,677	2,574	2,688	2,760
General hospital (e.g. city teaching hospital)	2,745	3,167	3,223	3,201	3,380
Hotels					
3 Star travellers	1,480	1,670	1,790	1,820	1,970
5 Star luxury	2,550	2,613	2,700	2,857	2,920
Resort style	2,080	2,303	2,441	2,328	2,590
Industrial					
Warehouse/factory units – basic	700	717	741	757	790
Large warehouse distribution centre	770	830	820	852	940
High tech factory/laboratory	1,550	1,800	1,815	1,850	1,910
Residential					
Individual detached or terrace style house medium standard	1,100	1,350	1,409	1,423	1,520
Individual detached house prestige	1,540	1,815	1,738	1,794	2,580
Townhouses medium standard	1,380	1,600	1,560	1,587	2,140
Apartments low-rise medium standard	1,430	1,737	1,778	1,767	2,080
Apartments high-rise	1,865	2,257	2,321	2,233	2,420
Aged care/affordable units	1,350	1,710	1,613	1,693	1,860
Retail					
Large shopping centre including mall	1,580	1,783	1,781	1,873	1,940
Neighbourhood incl supermarket	1,060	1,167	1,244	1,281	1,350
Prestige car showroom	1,350	1,607	1,544	1,640	1,660

Construction market and trends

The UK regional devolution strategy, which saw metro mayors taking powers for strategic development within city regions in 2017, has clearly been positive for UK construction regionally.

The North West, particularly Greater Manchester, is a hot spot. Infrastructure investment in trams and Manchester Airport is reflecting foreign direct investment in the residential and leisure sectors.

Elsewhere in the UK, the main civils work for the HS2 link from London to Birmingham, commences in 2019. The Cambridge-Milton Keynes-Oxford corridor also acts on a beacon for growth.

Future outlook

Although UK construction output is expected to weaken overall in 2019, many of the UK regions will enjoy robust performance. The UK's central and south regions are predicted to

outperform London between 2019-2023 (set to reach 2.3 and 2.2 percent respectively). The north's growth, however, is expected to turn negative at 0.4 percent.

With margins compressed, insolvencies on the rise and Brexit outcomes uncertain, tender price inflation forecasting, particularly in the construction sector, remains volatile.

	Northern Ireland GBP	Scotland GBP	North GBP	Central GBP	South GBP
UK (other regions) international building costs					
Composite trade rates					
Excavate basement (m ³) (1800m ³ job)	6	13	13	11	16
Excavate footings (m)	12	17	19	18	20
Concrete in slab (m ³) (1500m ³ job)	87	152	152	151	170
Reinforcement in beams (tonne)	785	1,150	1,150	1,040	1,265
Formwork to soffit of slab (m ²)	35	41	44	42	57
Blockwork in wall (m ²) (10,000 block job)	27	40	44	41	56
Structural steel beams (tonne)	1,510	1,750	1,935	1,900	2,290
Pre-cast concrete wall (m ²)	78	95	98	94	100
Curtain wall glazing incl support system (m ²) (1000m ² job)	455	560	543	541	640
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	31	38	35	36	51
Single solid core door incl frame and hardware (no) (50 door job)	600	735	706	678	775
Painting to walls primer + 2 coats (m ²)	6	7	7	9	8
Ceramic tiling (m ²) (1000m ² job)	45	54	50	47	65
Vinyl flooring to wet areas (m ²) (500m ² job)	25	31	30	33	34
Carpet medium tufted (m ²) (4500m ² job)	23	28	28	30	32
Lighting installation (m ²) (5000m ² + job)	60	66	61	65	76
Copper pipe 15mm to wall (m) (1000+ metre job)	23	30	28	26	28
Fire sprinklers (per m ²) (5000m ² job)	35	40	39	42	46
Air conditioning incl main plant (m ²) (5000m ² + job)	92	132	123	120	155
Labour costs, per hour					
Group 1 Tradesman eg plumber/electrician	27	34	35	35	39
Group 2 Tradesman eg carpenter bricklayer	23	29	28	27	35
Group 3 Tradesman eg carpet layer, tiler, plasterer	20	26	27	26	34
General labourer	16	22	21	23	22
Site foreman	30	34	35	35	42
Material costs					
Concrete 30 MPa (m ³) (1500m ³ job)	70	97	94	94	122
Reinforcement bar 16mm (tonne) (120 tonne job)	730	870	880	880	1,000
Concrete block (400x200) per 1000 (>10,000 block job)	440	830	825	800	905
Standard brick per 1000	380	395	462	418	475
Structural steel beams (tonne) (100 tonne +job)	1,260	1,515	1,600	1,600	1,996
Glass pane 10mm tempered (m ²)	95	105	103	98	101
Softwood timber for framing 100mm X 50mm (m)	4	4	4	4	4
13 mm plasterboard (m ²)	4	4	4	4	4
Emulsion paint (litre)	4	4	4	4	4
Copper pipe 15 mm (metre) (1000+ metre job)	6	6	4	5	6
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m+ job)	3	3	2	2	3
Plant costs					
Hire 50t mobile crane + operator (day)	640	940	950	936	1,125
	Northern Ireland	Scotland	North	Central	South
Tendering:	Cold	Lukewarm	Warm	Warm	Lukewarm
Market:	Staying the same	Staying the same	Staying the same	Warmer	Staying the same
Cost escalation 2018:	0.5%	2.1%	2.3%	3.3%	2.0%
Cost escalation 2019:	1.5%	3.1%	2.1%	2.5%	2.5%
Contractor's margin:	3.0%	4.5%	3.9%	5.0%	3.5%
Preliminaries:	12.5%	11.0%	11.6%	8.5%	13.4%
Location factor (USD):	61.9	76.1	78.2	79.3	87.6
PPP coefficient:	0.6	0.8	0.8	0.8	0.9

Around the globe

Middle East

Oman

Muscat

Higher oil revenues should boost non-oil sector developments

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Economic overview

Oman's GDP grew 2.1 percent, modest by historic standards, but higher oil prices and natural gas production starting at Khazzan oil field has lifted the growth forecast for 2019 to 2.5 percent.

Efforts to diversify the economy continue with investment in manufacturing, logistics and tourism. This push is apparent in the Duqm

Special Economic Zone, which aims to attract foreign investment.

Construction market and trends

The real estate market is still struggling with oversupply and low demand, partly due to expat visa restrictions.

With the new airport open, investment in the hospitality sector should rise at an estimated 3 percent annually over ten years.

International building costs per m ² of internal area, in 2018	OMR	USD (exchange rate: 0.39)
Airports (Building only)		
Domestic terminal, full service	1,400	3,590
Low-cost carrier terminal, basic service	900	2,308
Car parks		
Multi-storey – above ground	280	718
Multi-storey – below ground	350	897
Commercial		
Offices – Business Park	360	923
CBD Offices – up to 20 floors medium (A-Grade)	425	1,090
CBD Offices – high-rise prestige	580	1,487
Education		
Primary and secondary	475	1,218
University	530	1,359
Hospitals		
Day centre (including basic surgeries)	500	1,282
Regional hospital	600	1,538
General hospital (e.g. city teaching hospital)	750	1,923
Hotels		
3 Star travellers	630	1,615
5 Star luxury	950	2,436
Resort style	985	2,526
Industrial		
Warehouse/factory units – basic	350	897
Large warehouse distribution centre	320	821
High-tech factory/laboratory	500	1,282
Residential		
Individual detached or terrace style house – medium standard	470	1,205
Individual detached house – prestige	730	1,872
Townhouses – medium standard	410	1,051
Apartments – low-rise medium standard	385	987
Apartments – high-rise	500	1,282
Aged care/affordable units	–	–
Retail		
Large shopping centre including mall	450	1,154
Neighbourhood including supermarket	460	1,179
Prestige car showroom	730	1,872

The development of Duqm as an industrial city port is gathering pace, with reports of strong private sector interest in investing in the proposed USD2.6bn freight railway line from Al Shuwamiyah to Duqm and further reports of Chinese investment.

Future outlook

Several government-funded infrastructure projects are in the pipeline which could invigorate the construction market. These include

the Al Batinah expressway, water networks, hospitals and renewable energy, which would also open development opportunities near the airport. Proposals to set up free zones in Buraimi and Musandam are still under review.

But there are threats to costs. Oman has yet to declare an official date for the roll-out of VAT. This would raise inflation, currently at 3 percent, further dampening a weak real estate market.

	OMR	USD (exchange rate: 0.39)
Oman international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	3	8
Excavate footings (m)	3	8
Concrete in slab (m ³) (1500m ³ job)	34	87
Reinforcement in beams (tonne)	340	872
Formwork to soffit of slab (m ²)	7	18
Blockwork in wall (m ²) (10,000 block job)	10	26
Structural steel beams (tonne)	880	2,256
Pre-cast concrete wall (m ²)	45	115
Curtain wall glazing incl support system (m ²) (1000m ² job)	115	295
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	15	38
Single solid core door incl frame and hardware (no) (50 door job)	400	1,026
Painting to walls primer + 2 coats (m ²)	2	5
Ceramic tiling (m ²) (1000m ² job)	10	26
Vinyl flooring to wet areas (m ²) (500m ² job)	9	23
Carpet medium tufted (m ²) (4500m ² job)	27	69
Lighting installation (m ²) (5000m ² + job)	25	64
Copper pipe 15mm to wall (m) (1000m + job)	10	26
Fire sprinklers (per m ²) (5000m ² job)	12	31
Air conditioning incl main plant (m ²) (5000m ² + job)	40	103
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	2	5
Group 2 Tradesman eg carpenter, bricklayer	2	5
Group 3 Tradesman eg carpet layer, tiler, plasterer	2	5
General labourer	1	3
Site foreman	4	10
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	22	56
Reinforcement bar 16mm (tonne) (120 tonne job)	240	615
Concrete block (400x200) per 1000 (>10,000 block job)	170	436
Standard brick per 1000	185	474
Structural steel beams (tonne) (100 tonne + job)	540	1,385
Glass pane 10mm tempered (m ²)	70	179
Softwood timber for framing 100mm X 50mm (m)	1	3
13 mm plasterboard (m ²)	2	5
Emulsion paint (litre)	2	4
Copper pipe 15 mm (metre) (1000m + job)	3	6
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	1	3
Plant costs		
Hire 50t mobile crane + operator (day)	200	513

Muscat

Tendering:	Cold
Market:	Warmer
Cost escalation 2018:	-1.0%
Cost escalation 2019:	0.0%
Contractor's margin:	4.0%
Preliminaries:	8.0%
Location factor (USD):	34.4
PPP coefficient:	0.2

Around the globe

Middle East

Qatar Doha

World Cup deadline should boost activity

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Economic overview

At 2.5 percent, Qatar's annual GDP is weak by historic standards, but rising as the economy is easing itself out of a soft patch. Inflation is mildly negative with prices dropping by 0.2 percent over 2018.

Construction market and trends

Market conditions are currently challenging, with border restrictions leading to increases in some prices as alternative procurement routes

are opened to bring materials into the country. Despite this, several major projects are underway, not least seven new state-of-the-art stadiums being built for the football World Cup in 2020.

Other projects include Lusail City, a greenfield site development covering 25 square kilometres that will house 200,000 people when completed in 2020. The scheme includes schools, a hospital, offices, retail and a light rail and metro link.

International building costs per m ² of internal area, in 2018	QAR	USD (exchange rate: 3.64)
Airports (Building only)		
Domestic terminal, full service	-	-
Low-cost carrier terminal, basic service	-	-
Car parks		
Multi-storey – above ground	3,480	956
Multi-storey – below ground	4,235	1,163
Commercial		
Offices – Business Park	4,900	1,346
CBD Offices – up to 20 floors medium (A-Grade)	7,160	1,967
CBD Offices – high-rise prestige	10,920	3,000
Education		
Primary and secondary	7,650	2,102
University	7,720	2,121
Hospitals		
Day centre (including basic surgeries)	9,645	2,650
Regional hospital	13,030	3,580
General hospital (e.g. city teaching hospital)	13,870	3,810
Hotels		
3 Star travellers	7,520	2,066
5 Star luxury	13,535	3,718
Resort style	14,010	3,849
Industrial		
Warehouse/factory units – basic	4,610	1,266
Large warehouse distribution centre	5,115	1,405
High-tech factory/laboratory	6,770	1,860
Residential		
Individual detached or terrace style house – medium standard	6,925	1,902
Individual detached house – prestige	9,895	2,718
Townhouses – medium standard	6,570	1,805
Apartments – low-rise medium standard	5,855	1,609
Apartments – high-rise	7,390	2,030
Aged care/affordable units	-	-
Retail		
Large shopping centre including mall	7,920	2,176
Neighbourhood including supermarket	5,950	1,635
Prestige car showroom	9,035	2,482

Msheireb Downtown Doha is undergoing massive regeneration with new hotels, apartments and offices due for completion in 2020.

The 400,000 square-metre extension of Hamad International airport will cater for up to 53 million passengers a year by 2020. Other transport schemes include Doha Metro rail, a new 300km rail network that will eventually include 95 stations.

Future outlook

Despite the recovery in crude oil prices in 2018 construction is well down on the boom years of the recent past. But activity is expected to pick up as the World Cup deadline looms and pressure builds to finish the stadiums.

	QAR	USD (exchange rate: 3.64)
Qatar international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	36	10
Excavate footings (m)	46	13
Concrete in slab (m ³) (1500m ³ job)	597	164
Reinforcement in beams (tonne)	3,795	1,043
Formwork to soffit of slab (m ²)	148	41
Blockwork in wall (m ²) (10,000 block job)	180	49
Structural steel beams (tonne)	12,930	3,552
Pre-cast concrete wall (m ²)	657	180
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,960	538
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	190	52
Single solid core door incl frame and hardware (no) (50 door job)	4,750	1,305
Painting to walls primer + 2 coats (m ²)	25	7
Ceramic tiling (m ²) (1000m ² job)	280	77
Vinyl flooring to wet areas (m ²) (500m ² job)	185	51
Carpet medium tufted (m ²) (4500m ² job)	300	82
Lighting installation (m ²) (5000m ² + job)	385	106
Copper pipe 15mm to wall (m) (1000m + job)	61	17
Fire sprinklers (per m ²) (5000m ² job)	125	34
Air conditioning incl main plant (m ²) (5000m ² + job)	825	227
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	42	12
Group 2 Tradesman eg carpenter, bricklayer	41	11
Group 3 Tradesman eg carpet layer, tiler, plasterer	26	7
General labourer	14	4
Site foreman	44	12
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	350	96
Reinforcement bar 16mm (tonne) (120 tonne job)	2,470	679
Concrete block (400x200) per 1000 (>10,000 block job)	4,250	1,168
Standard brick per 1000	3,050	838
Structural steel beams (tonne) (100 tonne + job)	6,850	1,882
Glass pane 10mm tempered (m ²)	760	209
Softwood timber for framing 100mm X 50mm (m)	20	5
13 mm plasterboard (m ²)	13	4
Emulsion paint (litre)	12	3
Copper pipe 15 mm (metre) (1000m + job)	16	4
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	3	1
Plant costs		
Hire 50t mobile crane + operator (day)	3,550	975

	Doha
Tendering:	Cold
Market:	Staying the same
Cost escalation 2018:	0.1%
Cost escalation 2019:	2.0%
Contractor's margin:	7.5%
Preliminaries:	13.0%
Location factor (USD):	52.3
PPP coefficient:	2.4

Saudi Arabia

Riyadh

Picking up pace on oil and diversification

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Economic overview

Saudi Arabia, a large nation in the region with 32.6 million people, has seen modest growth in the economy. Annual GDP growth at 2.5 percent by the third quarter of 2018 was up after a two-year soft patch, while inflation ended the year at 2.4 percent.

The nation is highly reliant on oil and the government, like many in the Middle East, is intent on broadening the economic base. Oil prices rose through

most of 2018 before falling back late in the year.

Construction market and trends

The mood in the construction sector is optimistic. Demand for housing is growing with the Saudi Ministry seeing a need for 3 million new homes by 2025. Mixed-use developments dominate the construction scene, but costs are starting to rise, and approvals can be complex and prolonged.

International building costs per m ² of internal area, in 2018	SAR	USD (exchange rate: 3.75)
Airports (Building only)		
Domestic terminal, full service	14,500	3,867
Low-cost carrier terminal, basic service	10,000	2,667
Car parks		
Multi-storey – above ground	2,100	560
Multi-storey – below ground	3,200	853
Commercial		
Offices – Business Park	4,300	1,147
CBD Offices – up to 20 floors medium (A-Grade)	5,000	1,333
CBD Offices – high-rise prestige	6,000	1,600
Education		
Primary and secondary	4,900	1,307
University	6,100	1,627
Hospitals		
Day centre (including basic surgeries)	5,500	1,467
Regional hospital	7,000	1,867
General hospital (e.g. city teaching hospital)	–	–
Hotels		
3 Star travellers	5,500	1,467
5 Star luxury	8,250	2,200
Resort style	9,500	2,533
Industrial		
Warehouse/factory units – basic	–	–
Large warehouse distribution centre	3,350	893
High-tech factory/laboratory	4,950	1,320
Residential		
Individual detached or terrace style house – medium standard	4,800	1,280
Individual detached house – prestige	5,250	1,400
Townhouses – medium standard	4,600	1,227
Apartments – low-rise medium standard	4,250	1,133
Apartments – high-rise	4,800	1,280
Aged care/affordable units	–	–
Retail		
Large shopping centre including mall	5,100	1,360
Neighbourhood including supermarket	4,900	1,307
Prestige car showroom	7,800	2,080

Current large mixed-use projects include Al Faisaliah Smart City, to be built as an extension to the holy City of Makkah with nearly a million homes. By 2050 the aim is to house 6.5 million people who will enjoy smart city services.

A Korean consortium is building the Dahiyat Al Fursan mixed-use scheme 35km north of Riyadh. It will see 100,000 homes built

with infrastructure, educational and commercial buildings and research and development centres.

Up to USD21.3bn is expected to be spent over time expanding facilities at the Grand Mosque to include new buildings, prayer halls and ceremonial areas.

Future outlook

A rally in oil production and a pick-up in non-oil economic activity is likely to bolster the economy in 2019.

Opportunities could also flow from the National Transformation Program aimed at improving education, social reforms and economic diversification.

	SAR	USD (exchange rate: 3.75)
Saudi Arabia international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	23	6
Excavate footings (m)	35	9
Concrete in slab (m ³) (1500m ³ job)	281	75
Reinforcement in beams (tonne)	3,654	974
Formwork to soffit of slab (m ²)	121	32
Blockwork in wall (m ²) (10,000 block job)	115	31
Structural steel beams (tonne)	11,000	2,933
Pre-cast concrete wall (m ²)	450	120
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,800	480
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	200	53
Single solid core door incl frame and hardware (no) (50 door job)	5,000	1,333
Painting to walls primer + 2 coats (m ²)	25	7
Ceramic tiling (m ²) (1000m ² job)	150	40
Vinyl flooring to wet areas (m ²) (500m ² job)	200	53
Carpet medium tufted (m ²) (4500m ² job)	320	85
Lighting installation (m ²) (5000m ² + job)	220	59
Copper pipe 15mm to wall (m) (1000m + job)	100	27
Fire sprinklers (per m ²) (5000m ² job)	120	32
Air conditioning incl main plant (m ²) (5000m ² + job)	550	147
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	25	7
Group 2 Tradesman eg carpenter, bricklayer	25	7
Group 3 Tradesman eg carpet layer, tiler, plasterer	25	7
General labourer	18	5
Site foreman	34	9
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	189	50
Reinforcement bar 16mm (tonne) (120 tonne job)	2,373	633
Concrete block (400x200) per 1000 (>10,000 block job)	1,575	420
Standard brick per 1000	2,100	560
Structural steel beams (tonne) (100 tonne + job)	7,000	1,867
Glass pane 10mm tempered (m ²)	680	181
Softwood timber for framing 100mm X 50mm (m)	14	4
13 mm plasterboard (m ²)	11	3
Emulsion paint (litre)	33	9
Copper pipe 15 mm (metre) (1000m + job)	27	7
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	10	3
Plant costs		
Hire 50t mobile crane + operator (day)	3,150	840

Riyadh

Tendering:	Cold
Market:	Warmer
Cost escalation 2018:	0.0%
Cost escalation 2019:	5.0%
Contractor's margin:	7.0%
Preliminaries:	10.0%
Location factor (USD):	39.9
PPP coefficient:	2.0

UAE

Abu Dhabi and Dubai

Opportunities emerge as the economy perks up

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Economic overview

The economic performance across all sectors in the UAE has been positive but mixed, possibly a result of VAT being introduced in January. But GDP forecast is expected to have grown 2.9 percent in 2018, up from 0.8 percent in 2017, although below the post-GFC average of 4.3 percent.

The country's economy rests heavily on tourism, services and mineral fuels including oil.

Construction market and trends

The construction sector is optimistic, with three strong growth areas; data centres, power and utilities and transport infrastructure.

Dubai's Expo 2020 remains a catalyst for development across Dubai and will undoubtedly become the key driver in stabilising the market throughout 2019 and into 2020.

	AED	USD (exchange rate: 3.67)
International building costs per m² of internal area, in 2018		
Airports (Building only)		
Domestic terminal, full service	16,500	4,496
Low-cost carrier terminal, basic service	11,400	3,106
Car parks		
Multi-storey – above ground	2,800	763
Multi-storey – below ground	3,300	899
Commercial		
Offices – Business Park	4,700	1,281
CBD Offices – up to 20 floors medium (A-Grade)	5,100	1,390
CBD Offices – high-rise prestige	6,560	1,787
Education		
Primary and secondary	5,750	1,567
University	8,000	2,180
Hospitals		
Day centre (including basic surgeries)	6,000	1,635
Regional hospital	7,800	2,125
General hospital (e.g. city teaching hospital)	11,500	3,134
Hotels		
3 Star travellers	6,500	1,771
5 Star luxury	10,100	2,752
Resort style	12,500	3,406
Industrial		
Warehouse/factory units – basic	2,600	708
Large warehouse distribution centre	3,500	954
High-tech factory/laboratory	5,200	1,417
Residential		
Individual detached or terrace style house – medium standard	5,820	1,586
Individual detached house – prestige	8,460	2,305
Townhouses – medium standard	5,640	1,537
Apartments – low-rise medium standard	5,450	1,485
Apartments – high-rise	5,750	1,567
Aged care/affordable units	–	–
Retail		
Large shopping centre including mall	5,300	1,444
Neighbourhood including supermarket	5,440	1,482
Prestige car showroom	8,800	2,398

Abu Dhabi has been muted, although the recent government stimulus package will contribute to construction in the Emirate and hopefully bolster, and in some cases reignite, the private developer sectors.

Future outlook

Activity looks set on a flat path this year and next. Investment is focused on more viable projects in contrast to some of the way-out proposals mooted in recent

years. With this comes greater emphasis on cost effectiveness.

The slight recovery in oil prices will support government spending on infrastructure and economic development programmes. Diversifying away from oil and gas is a priority and this will drive construction.

	AED	USD (exchange rate: 3.67)
UAE international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	25	7
Excavate footings (m)	30	8
Concrete in slab (m ³) (1500m ³ job)	465	127
Reinforcement in beams (tonne)	4,000	1,090
Formwork to soffit of slab (m ²)	125	34
Blockwork in wall (m ²) (10,000 block job)	130	35
Structural steel beams (tonne)	11,000	2,997
Pre-cast concrete wall (m ²)	450	123
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,800	490
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	200	54
Single solid core door incl frame and hardware (no) (50 door job)	5,000	1,362
Painting to walls primer + 2 coats (m ²)	25	7
Ceramic tiling (m ²) (1000m ² job)	150	41
Vinyl flooring to wet areas (m ²) (500m ² job)	200	54
Carpet medium tufted (m ²) (4500m ² job)	320	87
Lighting installation (m ²) (5000m ² + job)	280	76
Copper pipe 15mm to wall (m) (1000m + job)	-	-
Fire sprinklers (per m ²) (5000m ² job)	150	41
Air conditioning incl main plant (m ²) (5000m ² + job)	550	150
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	28	8
Group 2 Tradesman eg carpenter, bricklayer	26	7
Group 3 Tradesman eg carpet layer, tiler, plasterer	26	7
General labourer	16	4
Site foreman	60	16
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	245	67
Reinforcement bar 16mm (tonne) (120 tonne job)	2,200	599
Concrete block (400x200) per 1000 (>10,000 block job)	3,500	954
Standard brick per 1000	-	-
Structural steel beams (tonne) (100 tonne + job)	7,800	2,125
Glass pane 10mm tempered (m ²)	680	185
Softwood timber for framing 100mm X 50mm (m)	14	4
13 mm plasterboard (m ²)	14	4
Emulsion paint (litre)	10	3
Copper pipe 15 mm (metre) (1000m + job)	-	-
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	-	-
Plant costs		
Hire 50t mobile crane + operator (day)	2,700	736

UAE

Tendering:	Lukewarm
Market:	Staying the same
Cost escalation 2018:	1.5%
Cost escalation 2019:	2.0%
Contractor's margin:	8.0%
Preliminaries:	12.0%
Location factor (USD):	43.0
PPP coefficient:	2.0

Canada

Vancouver, Ottawa, Edmonton and Toronto

Bright prospects, but not without challenges

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Economic overview

Canada's economy has slowed. Annual GDP growth dipped to 1.9 percent in mid-2018 from 3.8 percent a year earlier. The exchange rate dropped across the year, but inflation, at 2.4 percent, is holding stable.

After steadily rising, house prices levelled off in 2018 and the two biggest markets, Toronto and Vancouver, show signs of softening.

Construction market and trends

Nationally, the best performing sectors are residential, education and office development plus, publicly funded projects. High demand and foreign investment still drive the housing market. But across the four cities there is a mixed picture, reflecting their primary activities.

Toronto has seen a sharp rise in residential and office development,

International building costs per m ² of internal area, in 2018	Vancouver CAD	Ottawa CAD	Edmonton CAD	Toronto CAD	Toronto USD (exchange rate: 1.28)
Airports (Building only)					
Domestic terminal, full service	8,809	6,873	6,700	6,546	5,074
Low-cost carrier terminal, basic service	6,335	4,943	4,800	4,708	3,649
Car parks					
Multi-storey – above ground	965	970	920	924	716
Multi-storey – below ground	1,453	1,829	1,300	1,391	1,078
Commercial					
Offices – Business Park	2,234	2,278	2,300	2,059	1,596
CBD Offices – up to 20 floors medium (A-Grade)	2,503	2,475	2,800	2,745	2,128
CBD Offices – high-rise prestige	3,579	3,487	3,700	3,695	2,864
Education					
Primary and secondary	2,896	2,081	2,000	2,112	1,637
University	3,929	4,246	4,200	4,434	3,437
Hospitals					
Day centre (including basic surgeries)	4,032	3,037	4,100	4,223	3,274
Regional hospital	6,351	6,984	6,250	6,651	5,156
General hospital (e.g. city teaching hospital)	7,561	7,902	7,700	7,918	6,138
Hotels					
3 Star travellers	2,045	2,429	2,400	2,314	1,808
5 Star luxury	4,629	4,556	4,100	4,065	3,151
Resort style	3,681	2,868	3,100	3,167	2,455
Industrial					
Warehouse/factory units – basic	1,023	816	1,000	1,056	818
Large warehouse distribution centre	1,319	928	1,100	1,161	900
High-tech factory/laboratory	2,704	2,494	2,300	2,375	1,841
Residential					
Individual detached or terrace style house – medium standard	3,203	2,306	3,100	3,220	2,496
Individual detached house – prestige	4,366	4,545	4,300	4,329	3,355
Townhouses – medium standard	1,668	1,547	1,300	1,584	1,228
Apartments – low-rise medium standard	1,964	2,306	1,700	2,112	1,637
Apartments – high-rise	3,337	2,106	2,400	2,006	1,555
Aged care/affordable units	2,099	2,278	2,400	2,270	1,760
Retail					
Large shopping centre including mall	2,368	2,193	2,500	2,851	2,210
Neighbourhood including supermarket	1,900	2,000	2,000	1,900	1,484
Prestige car showroom	2,754	2,559	2,600	2,956	2,292

supported by its lively financial services and manufacturing industries.

Inward migration is a big driver in Vancouver and there are plans to allow more duplexes to ease land constraints and contain high residential real estate prices. But attention within the British Columbia construction market is being drawn north to Kitimat, following a USD30bn investment in liquefied natural gas (LNG) projects.

Construction in Ottawa is currently supported by large government-funded projects.

Meanwhile, Edmonton's construction sector has remained subdued having slumped when the latest mining and energy boom faded, a fate also afflicting Calgary.

Future outlook

The outlook remains bright for Canada. Migration is strong and LNG is a growth area promising massive investment and job creation, mainly in British Columbia and Alberta, but benefits should ripple across the country's economy.

There are signs that a tight labour supply could restrain growth in the year ahead.

Canada international building costs	Vancouver CAD	Ottawa CAD	Edmonton CAD	Toronto CAD	Toronto USD (exchange rate: 1.28)
Composite trade rates					
Excavate basement (m ³) (1800m ³ job)	44	18	25	20	16
Excavate footings (m)	35	32	35	35	27
Concrete in slab (m ³) (1500m ³ job)	200	236	240	225	174
Reinforcement in beams (tonne)	2,250	2,625	2,100	2,500	1,938
Formwork to soffit of slab (m ²)	158	150	160	175	136
Blockwork in wall (m ²) (10,000 block job)	194	200	170	175	137
Structural steel beams (tonne)	5,200	4,725	5,000	4,500	3,488
Pre-cast concrete wall (m ²)	460	210	350	300	234
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,400	1,250	1,150	1,350	1,047
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	50	50	50	50	39
Single solid core door incl frame and hardware (no) (50 door job)	1,000	1,365	1,300	1,300	1,008
Painting to walls primer + 2 coats (m ²)	12	8	12	12	9
Ceramic tiling (m ²) (1000m ² job)	130	95	110	110	85
Vinyl flooring to wet areas (m ²) (500m ² job)	70	65	75	75	58
Carpet medium tufted (m ²) (4500m ² job)	55	65	65	65	51
Lighting installation (m ²) (5000m ² + job)	86	88	84	84	65
Copper pipe 15mm to wall (m) (1000m + job)	78	78	76	76	59
Fire sprinklers (per m ²) (5000m ² job)	43	44	42	42	33
Air conditioning incl main plant (m ²) (5000m ² + job)	250	257	245	245	190
Labour costs, per hour					
Group 1 Tradesman eg plumber, electrician	70	71	70	72	56
Group 2 Tradesman eg carpenter, bricklayer	65	63	60	64	49
Group 3 Tradesman eg carpet layer, tiler, plasterer	60	58	55	60	46
General labourer	60	54	45	55	43
Site foreman	85	84	90	86	66
Material costs					
Concrete 30 MPa (m ³) (1500m ³ job)	190	121	240	195	151
Reinforcement bar 16mm (tonne) (120 tonne job)	2,250	1,995	2,100	1,900	1,473
Concrete block (400x200) per 1000 (>10,000 block job)	1,780	1,773	1,800	1,689	1,309
Standard brick per 1000	1,113	1,109	1,100	1,056	818
Structural steel beams (tonne) (100 tonne + job)	2,800	3,296	5,000	3,139	2,433
Glass pane 10mm tempered (m ²)	378	372	360	354	274
Softwood timber for framing 100mm X 50mm (m)	8	7	7	7	5
13 mm plasterboard (m ²)	25	11	12	12	9
Emulsion paint (litre)	12	11	12	12	9
Copper pipe 15 mm (metre) (1000m + job)	12	11	12	12	9
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	9	8	9	9	7
Plant costs					
Hire 50t mobile crane + operator (day)	2,240	2,146	2,400	2,044	1,584
	Vancouver	Ottawa	Edmonton	Toronto	
Tendering:	Hot	Hot	Hot	Hot	
Market:	Staying the same	Warmer	Staying the same	Warmer	
Cost escalation 2018:	5.0%	4.5%	2.0%	3.0%	
Cost escalation 2019:	5.0%	3.0%	2.0%	3.0%	
Contractor's margin:	3.5%	3.0%	5.0%	6.0%	
Preliminaries:	10.0%	8.0%	9.0%	10.0%	
Location factor (USD):	120.1	101.5	99.2	106.2	
PPP coefficient:	2.2	1.8	1.9	1.9	

Mexico

Mexico City

New trade deal and a booming USA add reasons for cheer

Economic overview

Mexico's GDP was estimated to have grown 2.5 percent in 2018 and is forecast to grow to 2.7 percent in 2019. Mexico's GDP growth rate, estimated at 2.1 percent in 2018 by the IMF, is expected to remain stable through to 2020. Meanwhile, the population of 124 million is expanding at around 1 percent annually.

Foreign direct investment is strong with 39 percent from USA and 15.4 percent from Spain. However, Mexico does suffer from skill shortages and a brain drain.

Construction market and trends

Residential is the fastest growing sector driven by high demand, which has pushed up property values and rents. Mixed-use developments are also being built across the country, especially in larger urban centres.

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International building costs per m ² of internal area, in 2018	MXN	USD (exchange rate: 18.87)
Airports (Building only)		
Domestic terminal, full service	47,758	2,531
Low-cost carrier terminal, basic service	35,094	1,860
Car parks		
Multi-storey – above ground	8,522	452
Multi-storey – below ground	16,238	861
Commercial		
Offices – Business Park	11,920	632
CBD Offices – up to 20 floors medium (A-Grade)	19,198	1,017
CBD Offices – high-rise prestige	27,910	1,479
Education		
Primary and secondary	15,614	827
University	23,001	1,219
Hospitals		
Day centre (including basic surgeries)	21,669	1,148
Regional hospital	28,170	1,493
General hospital (e.g. city teaching hospital)	40,630	2,153
Hotels		
3 Star travellers	19,624	1,040
5 Star luxury	34,000	1,802
Resort style	39,722	2,105
Industrial		
Warehouse/factory units – basic	10,557	559
Large warehouse distribution centre	11,730	622
High-tech factory/laboratory	50,056	2,653
Residential		
Individual detached or terrace style house – medium standard	14,417	764
Individual detached house – prestige	19,198	1,017
Townhouses – medium standard	12,440	659
Apartments – low-rise medium standard	9,913	525
Apartments – high-rise	13,917	738
Aged care/affordable units	12,159	644
Retail		
Large shopping centre including mall	19,800	1,049
Neighbourhood including supermarket	15,450	819
Prestige car showroom	24,551	1,301

The market for shopping centres is buoyant with developers now targeting medium-sized cities and markets. Mexico is relatively easy for doing business and a destination for overseas investment. However, local government decision-making can be slow.

Plans for a USD13bn New Mexico City International Airport (NAIM) have been suspended in favour of expanding the city's airport infrastructure by building

new runways at Santa Lucia military airbase and improving Toluca airport.

The Maya Train, a 1,500km planned railroad connecting Cancun and Palenque to other destinations in the Yucatan, is a government priority.

In the five cities of Mexico City, Guadalajara, Monterrey, Queretaro and Puebla around 3 million square metres of corporate offices are being built and high-rise towers are in vogue, with

Torres Obispado in Monterrey (at 285m high) set to be completed this year among the tallest.

Future outlook

A booming USA economy and tight labour markets on both sides of the Rio Grande bode well for short-term growth.

The new United States-Mexico-Canada Agreement (USMCA) replacing NAFTA should add certainty easing fears of damaging tariffs.

	MXN	USD (exchange rate: 18.87)
Mexico international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	64	7
Excavate footings (m)	64	3
Concrete in slab (m ³) (1500m ³ job)	3,392	180
Reinforcement in beams (tonne)	28,509	1,511
Formwork to soffit of slab (m ²)	391	21
Blockwork in wall (m ²) (10,000 block job)	434	23
Structural steel beams (tonne)	38,808	2,057
Pre-cast concrete wall (m ²)	2,431	129
Curtain wall glazing incl support system (m ²) (1000m ² job)	4,002	212
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	330	17
Single solid core door incl frame and hardware (no) (50 door job)	8,802	466
Painting to walls primer + 2 coats (m ²)	80	4
Ceramic tiling (m ²) (1000m ² job)	750	40
Vinyl flooring to wet areas (m ²) (500m ² job)	550	29
Carpet medium tufted (m ²) (4500m ² job)	700	37
Lighting installation (m ²) (5000m ² + job)	2,200	117
Copper pipe 15mm to wall (m) (1000m + job)	131	7
Fire sprinklers (per m ²) (5000m ² job)	400	21
Air conditioning incl main plant (m ²) (5000m ² + job)	3,000	159
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	113	6
Group 2 Tradesman eg carpenter, bricklayer	108	6
Group 3 Tradesman eg carpet layer, tiler, plasterer	98	5
General labourer	63	3
Site foreman	125	7
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	2,252	119
Reinforcement bar 16mm (tonne) (120 tonne job)	16,549	877
Concrete block (400x200) per 1000 (>10,000 block job)	17,290	916
Standard brick per 1000	2,990	158
Structural steel beams (tonne) (100 tonne + job)	33,619	1,782
Glass pane 10mm tempered (m ²)	2,040	108
Softwood timber for framing 100mm X 50mm (m)	40	2
13 mm plasterboard (m ²)	121	6
Emulsion paint (litre)	85	5
Copper pipe 15 mm (metre) (1000m + job)	101	5
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	19	1
Plant costs		
Hire 50t mobile crane + operator (day)	15,195	805

Mexico City

Tendering:	Lukewarm
Market:	Staying the same
Cost escalation 2018:	4.0%
Cost escalation 2019:	5.0%
Contractor's margin:	10.0%
Preliminaries:	5.0%
Location factor (USD):	39.8
PPP coefficient:	10.1

USA

New York City and Atlanta

More jobs and rising wages are supporting construction activity

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Economic overview

New York's economy and that of Atlanta remain very active. In both cities, unemployment dipped in 2018 to record lows in New York City of just above 4 percent and just below 4 percent in Atlanta.

Both construction markets remain strong supported by expanding employment and rising real earnings.

Construction market and trends

There are several major commercial building projects on the West Side of Manhattan. The Hudson Yards area will continue for at least the next five years, with phase 2, the western portion of the development, Hudson Yards. JP Morgan Chase is also planning to start construction this year on its new headquarters at an estimated cost of USD3bn.

International building costs per m ² of internal area, in 2018	New York City		Atlanta	
	(m ²)	USD (ft ²)	(m ²)	USD (ft ²)
Airports (Building only)				
Domestic terminal, full service	6700	623	5,362	498
Low-cost carrier terminal, basic service	3810	354	2,999	279
Car parks				
Multi-storey above ground	1,520	141	587	55
Multi-storey below ground	2,410	224	1,140	106
Commercial				
Offices – Business Park	3,045	283	1,373	128
CBD Offices – up to 20 floors medium (A-Grade)	5,475	509	2,361	219
CBD Offices – high-rise prestige	6,170	573	3,777	351
Education				
Primary and secondary	2,540	236	2,150	200
University	4,060	377	3,384	314
Hospitals				
Day centre (including basic surgeries)	3,130	291	2,454	228
Regional hospital	5,940	552	3,176	295
General hospital (e.g. city teaching hospital)	6,090	566	3,921	364
Hotels				
3 Star travellers	3,020	281	1,785	166
5 Star luxury	5,370	499	3,916	364
Resort style	3,680	342	2,415	224
Industrial				
Warehouse/factory units – basic	1,320	123	726	67
Large warehouse distribution centre	1,800	167	1,059	98
High-tech factory/laboratory	5,380	500	5,101	474
Residential				
Individual detached or terrace style house – medium standard	3,095	288	1,497	139
Individual detached house – prestige	4,055	377	2,937	273
Townhouses – medium standard	2,030	189	1,094	102
Apartments – low-rise medium standard	2,450	228	1,359	126
Apartments – high-rise	3,300	307	1,707	159
Aged care/affordable units	2,135	198	1,290	120
Retail				
Large shopping centre including mall	3,850	358	2,894	269
Neighbourhood including supermarket	2,030	189	1,289	120
Prestige car showroom	3,450	321	3,161	294

The hospitality sector has shown strong growth as a key part of mixed-use developments including luxury residential and retail spaces on street level.

Among an array of major projects are the USD55.4bn Long Island Sound Tunnel, continuation of the USD14.2bn Second Avenue Subway Project and the USD13bn Gateway Tunnel, the USD10.2bn Eastside Access Project that is currently underway and the

USD10bn JFK International Airport Expansion is set to begin in 2020.

There is a strong emerging trend in the multi-family housing market where it's replacing the saturated luxury market in volume terms.

In Atlanta, construction is underway on the USD2bn Switch Data Center Campus in Lithia Springs, and the USD2bn Assembly Yards Mixed-Use Development in Doraville.

Future outlook

Steady activity is forecast for the infrastructure and transport sector, with spending at all major airports and upgrades in rail and road networks.

Education is drawing ever greater attention where prospects for construction are rising.

USA (New York City) international building costs	New York City		Atlanta	
	(m ²)	USD (ft ²)	(m ²)	USD (ft ²)
Composite trade rates				
Excavate basement (m ³) (1800m ³ job)	40	1	14	1
Excavate footings (m)	40	12	19	6
Concrete in slab (m ³) (1500m ³ job)	330	9	306	9
Reinforcement in beams (tonne)	2,130	1,936	1,769	1,609
Formwork to soffit of slab (m ²)	95	9	64	6
Blockwork in wall (m ²) (10,000 block job)	270	25	112	10
Structural steel beams (tonne)	6,600	6,000	5,673	5,157
Pre-cast concrete wall (m ²)	290	27	284	26
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,930	179	1,169	109
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	95	9	67	6
Single solid core door incl frame and hardware (no) (50 door job)	2,410	2,410	1,285	1,285
Painting to walls primer + 2 coats (m ²)	22	2	17	2
Ceramic tiling (m ²) (1000m ² job)	175	16	108	10
Vinyl flooring to wet areas (m ²) (500m ² job)	105	10	69	6
Carpet medium tufted (m ²) (4500m ² job)	70	7	64	6
Lighting installation (m ²) (5000m ² + job)	165	15	164	15
Copper pipe 15mm to wall (m) (1000m + job)	60	18	52	16
Fire sprinklers (per m ²) (5000m ² job)	60	6	37	3
Air conditioning incl main plant (m ²) (5000m ² + job)	495	46	311	29
Labour costs, per hour				
Group 1 Tradesman eg plumber, electrician	129	129	72	72
Group 2 Tradesman eg carpenter, bricklayer	100	100	63	63
Group 3 Tradesman eg carpet layer, tiler, plasterer	88	88	51	51
General labourer	88	88	45	45
Site foreman	150	150	101	101
Material costs				
Concrete 30 MPa (m ³) (1500m ³ job)	160	4	156	5
Reinforcement bar 16mm (tonne) (120 tonne job)	1,165	1,059	1,111	1,010
Concrete block (400x200) per 1000 (>10,000 block job)	1,370	1,370	1,158	1,158
Standard brick per 1000	595	595	509	509
Structural steel beams (tonne) (100 tonne + job)	2,890	2,627	2,269	2,063
Glass pane 10mm tempered (m ²)	258	24	266	25
Softwood timber for framing 100mm X 50mm (m)	5	2	6	2
13 mm plasterboard (m ²)	12	1	11	1
Emulsion paint (litre)	7	27	7	26
Copper pipe 15 mm (metre) (1000m + job)	13	4	15	4
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	6	2	7	2
Plant costs				
Hire 50t mobile crane + operator (day)	3,860	3,860	2,279	2,279
	New York City		Atlanta	
Tendering:	Warm		Warm	
Market:	Staying the same		Staying the same	
Cost escalation 2018:	3.5%		3.1%	
Cost escalation 2019:	3.0%		4.2%	
Contractor's margin:	7.0%		5.2%	
Preliminaries:	13.0%		11.0%	
Location factor (USD):	144.9		102.6	
PPP coefficient:	2.2		1.6	

USA

Chicago, Indianapolis and Houston

Uncertainty clouds sound economic fundamentals

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Economic overview

The mood in the central states of the USA is mixed. Unemployment is down to below 4 percent and real wage growth is supportive.

But as the Chicago Fed Survey of Business Conditions shows, business sentiment is volatile. It saw optimism dive in 2018 following tricky trade negotiations and the government shutdown.

Construction market and trends

Construction in Chicago, Indianapolis and Houston is growing, workforces have expanded in all these cities. Labour costs are high in Chicago and Indianapolis has a skills shortage.

Top-performing sectors in Chicago currently include office development and sports, leisure and hospitality, with transport performing relatively well. High-profile projects, including the

International building costs per m ² of internal area, in 2018	Chicago		Indianapolis		Houston	
	(m ²)	USD (ft ²)	(m ²)	USD (ft ²)	(m ²)	USD (ft ²)
Airports (Building only)						
Domestic terminal, full service	6,195	576	5,523	513	5,162	480
Low-cost carrier terminal, basic service	3,465	322	3,090	287	2,887	268
Car parks						
Multi-storey – above ground	792	74	605	56	565	53
Multi-storey – below ground	1,537	143	1,174	109	1,098	102
Commercial						
Offices – Business Park	1,652	154	1,348	125	1,322	123
CBD Offices – up to 20 floors medium (A-Grade)	3,182	296	2,318	215	2,273	211
CBD Offices – high-rise prestige	5,091	473	3,709	345	3,636	338
Education						
Primary and secondary	2,500	232	2,465	229	2,448	228
University	3,788	352	3,486	324	3,258	303
Hospitals						
Day centre (including basic surgeries)	3,071	285	2,528	235	2,363	220
Regional hospital	4,719	439	3,271	304	3,057	284
General hospital (e.g. city teaching hospital)	4,916	457	4,039	375	3,775	351
Hotels						
3 Star travellers	2,406	224	1,839	171	1,718	160
5 Star luxury	5,277	490	4,033	375	3,770	350
Resort style	3,139	292	2,488	231	2,325	216
Industrial						
Warehouse/factory units – basic	978	91	712	66	698	65
Large warehouse distribution centre	1,224	114	1,040	97	1,020	95
High-tech factory/laboratory	4,300	400	3,928	365	4,911	456
Residential						
Individual detached or terrace style house – medium standard	1,730	161	1,470	137	1,441	134
Individual detached house – prestige	3,958	368	2,884	268	2,827	263
Townhouses – medium standard	1,264	117	1,074	100	1,053	98
Apartments – low-rise medium standard	1,570	146	1,334	124	1,308	122
Apartments – high-rise	2,054	191	1,676	156	1,643	153
Aged care/affordable units	1,428	133	1,267	118	1,242	115
Retail						
Large shopping centre including mall	3,343	311	2,842	264	2,786	259
Neighbourhood including supermarket	1,613	150	1,266	118	1,241	115
Prestige car showroom	3,350	311	3,104	288	3,043	283

Obama library, currently under construction, is driving regeneration works in Chicago.

In Indianapolis, the health and sports, education, leisure and hospitality sectors are strong. Construction costs have risen notably but show no signs of denting the current USD3.5bn worth of projects in the pipeline.

Houston construction starts for the 12 months ending September 2018 totalled USD19bn, up 10 percent over a year. Construction has seen moderate growth at around 2 to 3 percent annually with healthcare and higher education leading.

Future outlook

The effect of tariffs is causing pockets of stress, particularly in Indianapolis.

Chicago's slow population and employment growth is resulting in a relatively weak housing market in 2019. In Indianapolis, prospects look brighter supported by a strong market in Indiana. Houston's strong population growth will continue to underpin growth in construction generally.

USA (other regions) international building costs	Chicago		Indianapolis		Houston	
	(m ²)	USD (ft ²)	(m ²)	USD (ft ²)	(m ²)	USD (ft ²)
Composite trade rates						
Excavate basement (m ³) (1800m ³ job)	16	1	14	1	13	1
Excavate footings (m)	22	7	20	6	19	6
Concrete in slab (m ³) (1500m ³ job)	354	10	316	9	295	8
Reinforcement in beams (tonne)	2,044	1,854	1,823	1,657	1,703	1,549
Formwork to soffit of slab (m ²)	74	7	66	6	61	6
Blockwork in wall (m ²) (10,000 block job)	130	12	116	11	108	10
Structural steel beams (tonne)	6,554	5,958	5,844	5,313	5,462	4,965
Pre-cast concrete wall (m ²)	328	30	292	27	273	25
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,351	126	1,205	112	1,126	105
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	77	7	69	6	64	6
Single solid core door incl frame and hardware (no) (50 door job)	1,484	1,484	1,323	1,323	1,237	1,237
Painting to walls primer + 2 coats (m ²)	19	2	17	2	16	1
Ceramic tiling (m ²) (1000m ² job)	125	12	112	10	104	10
Vinyl flooring to wet areas (m ²) (500m ² job)	79	7	71	7	66	6
Carpet medium tufted (m ²) (4500m ² job)	74	7	66	6	62	6
Lighting installation (m ²) (5000m ² + job)	189	18	169	16	158	15
Copper pipe 15mm to wall (m) (1000m + job)	60	18	53	16	50	15
Fire sprinklers (per m ²) (5000m ² job)	43	4	39	4	36	3
Air conditioning incl main plant (m ²) (5000m ² + job)	359	33	320	30	299	28
Labour costs, per hour						
Group 1 Tradesman eg plumber, electrician	79	79	63	63	70	70
Group 2 Tradesman eg carpenter, bricklayer	75	75	58	58	60	60
Group 3 Tradesman eg carpet layer, tiler, plasterer	77	77	52	52	49	49
General labourer	47	47	44	44	43	43
Site foreman	115	115	66	66	97	97
Material costs						
Concrete 30 MPa (m ³) (1500m ³ job)	150	4	150	4	150	4
Reinforcement bar 16mm (tonne) (120 tonne job)	1,070	973	1,070	973	1,070	973
Concrete block (400x200) per 1000 (>10,000 block job)	1,114	1114	1,114	1114	1,114	1,114
Standard brick per 1000	490	490	490	490	490	490
Structural steel beams (tonne) (100 tonne + job)	2,185	1,986	2,185	1,986	2,185	1,986
Glass pane 10mm tempered (m ²)	256	24	256	24	256	24
Softwood timber for framing 100mm X 50mm (m)	6	2	6	2	6	2
13 mm plasterboard (m ²)	10	1	10	1	10	1
Emulsion paint (litre)	7	25	7	25	7	25
Copper pipe 15 mm (metre) (1000m + job)	14	4	14	4	14	4
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	7	2	7	2	7	2
Plant costs						
Hire 50t mobile crane + operator (day)	3,072	3072	1,360	1360	2,194	2,194
	Chicago	Indianapolis	Houston			
Tendering:	Warm	Hot	Warm			
Market:	Staying the same	Warmer	Warmer			
Cost escalation 2018:	4.0%	2.0%	4.0%			
Cost escalation 2019:	4.0%	4.0%	4.0%			
Contractor's margin:	6.0%	6.0%	5.0%			
Preliminaries:	12.0%	12.0%	10.6%			
Location factor (USD):	114.3	95.9	98.3			
PPP coefficient:	1.8	1.5	1.5			

USA

San Francisco, Seattle and Phoenix

Cost pressures an issue as workloads continue to rise

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Economic overview

The western states enjoyed some of the fastest economic growth in the USA in 2018 with unemployment in all three cities dipping during the year below 4.0 percent. This vibrancy is reflected in high levels of construction in all three cities.

Construction market and trends

Demand for new-build commercial buildings in all three cities is outstripping supply.

In San Francisco, where demand is being driven by major tech firms and the cost of living is high, overall construction costs are expected to start outpacing those in New York.

The bay area construction is the hottest market in the USA and Silicon Valley's tech giants are building commercial offices worth more than USD20bn targeting completion within five years.

International building costs per m ² of internal area, in 2018	San Francisco		Seattle		Phoenix	
	(m ²)	USD (ft ²)	(m ²)	USD (ft ²)	(m ²)	USD (ft ²)
Airports (Building only)						
Domestic terminal, full service	6,930	644	5,800	539	5,302	493
Low-cost carrier terminal, basic service	3,960	368	3,425	318	2,966	276
Car parks						
Multi-storey – above ground	1,470	137	1,000	93	732	68
Multi-storey – below ground	2,360	219	1,875	174	1,127	105
Commercial						
Offices – Business Park	3,230	300	2,350	218	1,340	124
CBD Offices – up to 20 floors medium (A-Grade)	5,250	488	2,720	253	2,292	213
CBD Offices – high-rise prestige	6,730	625	5,500	511	3,654	340
Education						
Primary and secondary	2,690	250	2,500	232	2,514	234
University	4,120	383	3,200	297	3,295	306
Hospitals						
Day centre (including basic surgeries)	4,304	400	2,490	231	2,443	227
Regional hospital	7,776	723	4,150	386	3,121	290
General hospital (e.g. city teaching hospital)	8,136	756	6,450	599	3,852	358
Hotels						
3 Star travellers	3,230	300	2,850	265	1,767	164
5 Star luxury	6,240	580	4,300	400	3,817	355
Resort style	3,850	358	2,725	253	2,394	222
Industrial						
Warehouse/factory units – basic	1,310	122	1,190	111	718	67
Large warehouse distribution centre	1,680	156	1,480	138	1,030	96
High-tech factory/laboratory	5,410	503	5,150	479	5,053	470
Residential						
Individual detached or terrace style house – medium standard	3,010	280	2,500	232	1,469	137
Individual detached house – prestige	4,300	400	3,750	349	2,882	268
Townhouses – medium standard	2,580	240	1,780	165	1,074	100
Apartments – low-rise medium standard	2,800	260	2,025	188	1,333	124
Apartments – high-rise	3,770	350	2,350	218	1,672	155
Aged care/affordable units	2,260	210	1,725	160	1,282	119
Retail						
Large shopping centre including mall	3,890	362	3,560	331	2,834	263
Neighbourhood including supermarket	1,950	181	1,425	132	1,243	116
Prestige car showroom	3,400	283	3,090	287	3,096	288

In Seattle, several large-scale developments were approved or started last year. These include Microsoft's c.USD2bn campus expansion, Sea-Tac Airport's c.USD2bn masterplan development and the c.USD850m KeyArena renovation.

There are, however, signs of cooling in the residential sector.

In Phoenix, the pace of growth, particularly in manufacturing, emerging tech and higher education, has stretched resources creating cost issues and shortages with both materials and labour. Among the big projects is Intel's USD7bn Fab 42 factory in Chandler, currently under construction.

Future outlook

The outcome of the USA mid-term elections could impact on major economic issues, such as immigration, trade policy or economic reforms, leading to a shift sentiment and in turn construction activity.

The big issue facing construction in the three cities is increasing costs driven by high and rising levels of demand and growing shortages, with the impact of tariffs increasing upward pressures.

USA (other regions) international building costs	San Francisco		Seattle		Phoenix	
	(m ²)	USD (ft ²)	(m ²)	USD (ft ²)	(m ²)	USD (ft ²)
Composite trade rates						
Excavate basement (m ³) (1800m ³ job)	30	1	27	1	13	1
Excavate footings (m)	32	10	58	19	19	6
Concrete in slab (m ³) (1500m ³ job)	350	10	380	11	304	9
Reinforcement in beams (tonne)	2,230	2,027	1,825	1,659	1,753	1,594
Formwork to soffit of slab (m ²)	100	9	110	10	63	6
Blockwork in wall (m ²) (10,000 block job)	185	17	110	10	111	10
Structural steel beams (tonne)	6,400	5,818	5,850	5,318	5,621	5,110
Pre-cast concrete wall (m ²)	320	30	615	57	281	26
Curtain wall glazing incl support system (m ²) (1000m ² job)	1,560	145	1,300	121	1,159	108
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	120	11	71	7	66	6
Single solid core door incl frame and hardware (no) (50 door job)	2,400	2,400	1,420	1,420	1,273	1,273
Painting to walls primer + 2 coats (m ²)	16	1	8	1	16	2
Ceramic tiling (m ²) (1000m ² job)	160	15	180	17	107	10
Vinyl flooring to wet areas (m ²) (500m ² job)	80	7	77	7	68	6
Carpet medium tufted (m ²) (4500m ² job)	70	7	62	6	64	6
Lighting installation (m ²) (5000m ² + job)	185	17	180	17	162	15
Copper pipe 15mm to wall (m) (1000m + job)	60	18	53	16	51	16
Fire sprinklers (per m ²) (5000m ² job)	80	7	48	4	37	3
Air conditioning incl main plant (m ²) (5000m ² + job)	560	52	415	39	308	29
Labour costs, per hour						
Group 1 Tradesman eg plumber, electrician	115	115	95	95	71	71
Group 2 Tradesman eg carpenter, bricklayer	95	95	71	71	62	62
Group 3 Tradesman eg carpet layer, tiler, plasterer	80	80	75	75	50	50
General labourer	70	70	61	61	44	44
Site foreman	130	130	119	119	100	100
Material costs						
Concrete 30 MPa (m ³) (1500m ³ job)	165	5	155	4	155	4
Reinforcement bar 16mm (tonne) (120 tonne job)	1,400	1,273	975	886	1,101	1,001
Concrete block (400x200) per 1000 (>10,000 block job)	1,450	1,450	1,075	1,075	1,147	1,147
Standard brick per 1000	600	600	500	500	505	505
Structural steel beams (tonne) (100 tonne + job)	3,500	3,182	2,915	2,650	2,248	2,044
Glass pane 10mm tempered (m ²)	280	26	300	28	264	25
Softwood timber for framing 100mm X 50mm (m)	5	5	4	4	6	6
13 mm plasterboard (m ²)	12	1	11	1	11	1
Emulsion paint (litre)	8	30	7	27	7	26
Copper pipe 15 mm (metre) (1000m + job)	14	4	11	3	14	4
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	7	2	6	2	7	2
Plant costs						
Hire 50t mobile crane + operator (day)	3,400	3,400	3,300	3,300	2,258	2,258
	San Francisco		Seattle		Phoenix	
Tendering:	Overheating		Overheating		Warm	
Market:	Warmer		Staying the same		Warmer	
Cost escalation 2018:	5.0%		5.0%		4.0%	
Cost escalation 2019:	6.0%		6.0%		3.0%	
Contractor's margin:	7.0%		4.0%		5.0%	
Preliminaries:	10.0%		7.0%		10.6%	
Location factor (USD):	138.5		115.7		103.6	
PPP coefficient:	2.1		1.9		1.6	

Argentina

Buenos Aires

Recession constrains opportunities in construction

Economic overview

The economy dived into recession in 2018 and the IMF, forecasting a weak economy in 2019, has raised the country's bailout package to USD57bn.

Argentina has suffered the impact of slowing global trade as a result of tariff increases and has seen annual inflation rise from 25 to 48 percent during 2018.

Construction market and trends

The construction sector is under significant pressure. Nevertheless, several projects are under construction in Buenos Aires, including mixed-use developments, residential apartment towers and restoration of historic buildings, with major urban reclamation at Parque Paseo del Bajo in Buenos Aires.

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International building costs per m ² of internal area, in 2018	ARS	USD (exchange rate: 38.5)
Airports (Building only)		
Domestic terminal, full service	66,262	1,721
Low-cost carrier terminal, basic service	50,845	1,321
Car parks		
Multi-storey – above ground	16,810	437
Multi-storey – below ground	25,280	657
Commercial		
Offices – Business Park	17,423	453
CBD Offices – up to 20 floors medium (A-Grade)	37,680	979
CBD Offices – high-rise prestige	44,180	1,148
Education		
Primary and secondary	42,906	1,114
University	64,131	1,666
Hospitals		
Day centre (including basic surgeries)	42,035	1,092
Regional hospital	51,307	1,333
General hospital (e.g. city teaching hospital)	78,591	2,041
Hotels		
3 Star travellers	40,582	1,054
5 Star luxury	98,230	2,551
Resort style	83,484	2,168
Industrial		
Warehouse/factory units – basic	17,304	449
Large warehouse distribution centre	23,846	619
High-tech factory/laboratory	116,103	3,016
Residential		
Individual detached or terrace style house – medium standard	30,550	794
Individual detached house – prestige	40,960	1,064
Townhouses – medium standard	39,230	1,019
Apartments – low-rise medium standard	27,640	718
Apartments – high-rise	46,360	1,204
Aged care/affordable units	36,160	939
Retail		
Large shopping centre including mall	66,740	1,734
Neighbourhood including supermarket	39,950	1,038
Prestige car showroom	63,670	1,654

The stronger sectors are road, rail and port projects, renewable energy, oil and gas, and mining and metals. Exploitation of the massive Vaca Muerta, "Dead Cow", shale deposits in Neuquén Basin is attracting huge investment and boosting oil and gas exports.

Several PPP-financed road projects are proceeding. A China-Argentina consortium is currently building a hydroelectric power plant at La

Barrancosa, 2,000km south of Buenos Aires, and discussions are underway with China to build a nuclear power plant Atucha 3, near Buenos Aires.

Among several real estate projects underway is Harbour Tower, a 52-storey high-rise residential tower being built at Puerto Madero's Dock 1, within the multiple-use project Madero Harbour.

Future outlook

The recession looks set to continue in the first half 2019. The IMF's USD57bn injection into the economy should help improve confidence and investment.

With high inflation generally, construction cost rises are the highest of any region in this survey, at 43 percent in 2018.

	ARS	USD (exchange rate: 38.5)
Argentina international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	135	4
Excavate footings (m)	199	5
Concrete in slab (m ³) (1500m ³ job)	3,890	101
Reinforcement in beams (tonne)	62,977	1,636
Formwork to soffit of slab (m ²)	379	10
Blockwork in wall (m ²) (10,000 block job)	597	16
Structural steel beams (tonne)	37,294	969
Pre-cast concrete wall (m ²)	2,672	69
Curtain wall glazing incl support system (m ²) (1000m ² job)	6,476	168
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	557	14
Single solid core door incl frame and hardware (no) (50 door job)	9,685	252
Painting to walls primer + 2 coats (m ²)	143	4
Ceramic tiling (m ²) (1000m ² job)	210	5
Vinyl flooring to wet areas (m ²) (500m ² job)	490	13
Carpet medium tufted (m ²) (4500m ² job)	1,324	34
Lighting installation (m ²) (5000m ² + job)	1,419	37
Copper pipe 15mm to wall (m) (1000m + job)	728	19
Fire sprinklers (per m ²) (5000m ² job)	800	21
Air conditioning incl main plant (m ²) (5000m ² + job)	3,548	92
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	107	3
Group 2 Tradesman eg carpenter, bricklayer	91	2
Group 3 Tradesman eg carpet layer, tiler, plasterer	80	2
General labourer	78	2
Site foreman	248	6
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	4,360	113
Reinforcement bar 16mm (tonne) (120 tonne job)	68,355	1,775
Concrete block (400x200) per 1000 (>10,000 block job)	31,500	818
Standard brick per 1000	6,983	181
Structural steel beams (tonne) (100 tonne + job)	67,297	1,748
Glass pane 10mm tempered (m ²)	4,867	126
Softwood timber for framing 100mm X 50mm (m)	98	3
13 mm plasterboard (m ²)	181	5
Emulsion paint (litre)	884	23
Copper pipe 15 mm (metre) (1000m + job)	230	6
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	21	1
Plant costs		
Hire 50t mobile crane + operator (day)	26,400	686

Buenos Aires

Tendering:	Lukewarm
Market:	Staying the same
Cost escalation 2018:	43.4%
Cost escalation 2019:	18.0%
Contractor's margin:	12.0%
Preliminaries:	15.0%
Location factor (USD):	45.5
PPP coefficient:	22.0

Brazil

São Paulo

Economic recovery lifts the prospects of construction

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Economic overview

Having come out of three years of recession, the economy was growing at an annual rate of 1.4 percent by late 2018.

Major exports include iron ore and oil products, agricultural products, steel, machinery and equipment. Trade disputes, especially between the USA and China, have provided opportunities to boost exports of raw materials.

Construction market and trends

Construction in São Paulo is very busy with several new developments underway, including apartment towers, office towers, retail and data centres. Mixed-use development is increasing.

Hotels and hospitality are at the start of an upswing. Brazil has the largest pipeline of hotel construction projects in South America with more than 250 hotels under consideration or construction. Accor Hotels and

International building costs per m ² of internal area, in 2018	BRL	USD (exchange rate: 4.05)
Airports (Building only)		
Domestic terminal, full service	10,057	2,483
Low-cost carrier terminal, basic service	5,457	1,347
Car parks		
Multi-storey – above ground	2,084	514
Multi-storey – below ground	2,202	544
Commercial		
Offices – Business Park	3,180	785
CBD Offices – up to 20 floors medium (A-Grade)	3,180	785
CBD Offices – high-rise prestige	3,581	884
Education		
Primary and secondary	3,260	805
University	4,569	1,128
Hospitals		
Day centre (including basic surgeries)	8,170	2,017
Regional hospital	8,188	2,022
General hospital (e.g. city teaching hospital)	8,727	2,155
Hotels		
3 Star travellers	6,502	1,606
5 Star luxury	11,771	2,907
Resort style	10,523	2,598
Industrial		
Warehouse/factory units – basic	2,360	583
Large warehouse distribution centre	2,360	583
High-tech factory/laboratory	5,761	1,423
Residential		
Individual detached or terrace style house – medium standard	2,175	537
Individual detached house – prestige	3,919	968
Townhouses – medium standard	2,530	625
Apartments – low-rise medium standard	2,530	625
Apartments – high-rise	2,985	737
Aged care/affordable units	2,530	625
Retail		
Large shopping centre including mall	2,614	645
Neighbourhood including supermarket	3,662	904
Prestige car showroom	4,285	1,058

Marriot International have the largest number of projects underway.

With economic and political uncertainty abating, residential development should rise. Healthcare, life science and other sectors that have long-term investments will also increase.

Infrastructure will be strong but much more is needed. Power and utilities are undergoing major rejuvenation including new renewable energy and

transmission systems such as the new 1.5GW combined cycle thermal power station near Aracaju, Sergipe.

Future outlook

The outlook is much brighter, with opportunities for construction lifted by growing demand and a strengthening financial position. Rising employment will boost domestic consumption and should, with improving access to credit, propel growth.

São Paulo and Rio de Janeiro are seeing new projects moving to construction and gradually confidence and momentum will resume.

	BRL	USD (exchange rate: 4.05)
Brazil international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	68	17
Excavate footings (m)	13	3
Concrete in slab (m ³) (1500m ³ job)	349	86
Reinforcement in beams (tonne)	7,114	1,756
Formwork to soffit of slab (m ²)	146	36
Blockwork in wall (m ²) (10,000 block job)	88	22
Structural steel beams (tonne)	8,079	1,995
Pre-cast concrete wall (m ²)	297	73
Curtain wall glazing incl support system (m ²) (1000m ² job)	2,959	731
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	116	29
Single solid core door incl frame and hardware (no) (50 door job)	1,069	264
Painting to walls primer + 2 coats (m ²)	26	6
Ceramic tiling (m ²) (1000m ² job)	149	37
Vinyl flooring to wet areas (m ²) (500m ² job)	240	59
Carpet medium tufted (m ²) (4500m ² job)	275	68
Lighting installation (m ²) (5000m ² + job)	380	94
Copper pipe 15mm to wall (m) (1000m + job)	29	7
Fire sprinklers (per m ²) (5000m ² job)	279	69
Air conditioning incl main plant (m ²) (5000m ² + job)	882	218
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	45	11
Group 2 Tradesman eg carpenter, bricklayer	40	10
Group 3 Tradesman eg carpet layer, tiler, plasterer	35	9
General labourer	30	7
Site foreman	103	25
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	425	105
Reinforcement bar 16mm (tonne) (120 tonne job)	5,162	1,275
Concrete block (400x200) per 1000 (>10,000 block job)	2,960	731
Standard brick per 1000	831	205
Structural steel beams (tonne) (100 tonne + job)	5,870	1,449
Glass pane 10mm tempered (m ²)	277	68
Softwood timber for framing 100mm X 50mm (m)	18	4
13 mm plasterboard (m ²)	31	8
Emulsion paint (litre)	13	3
Copper pipe 15 mm (metre) (1000m + job)	28	7
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	5	1
Plant costs		
Hire 50t mobile crane + operator (day)	10,709	2,644

	São Paulo
Tendering:	Lukewarm
Market:	Warmer
Cost escalation 2018:	4.5%
Cost escalation 2019:	4.5%
Contractor's margin:	7.4%
Preliminaries:	7.3%
Location factor (USD):	58.9
PPP coefficient:	3.2

Chile

Santiago

A sound economy provides widespread opportunity

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Economic overview

GDP growth remains solid with the World Bank expecting 4 percent growth for 2018, although weaker mining exports slowed growth in the third quarter.

Energy prices have continued to rise. However, consumer inflation sits at 2.8 percent. House prices rose steadily, up 5 percent in 2018, adding to already firm consumer confidence.

Construction market and trends

The construction sector is on an upward trend, despite a dip in building permits in the third quarter of 2018. Santiago airport is undergoing a USD650m expansion to 30 million passengers per year. Santiago metro has announced two new lines that would almost double the network's length, connecting to more outlying suburbs by 2026.

International building costs per m ² of internal area, in 2018	CLP	USD (exchange rate: 667)
Airports (Building only)		
Domestic terminal, full service	1,932,902	2,898
Low-cost carrier terminal, basic service	1,420,370	2,129
Car parks		
Multi-storey – above ground	325,738	488
Multi-storey – below ground	620,678	931
Commercial		
Offices – Business Park	512,596	769
CBD Offices – up to 20 floors medium (A-Grade)	825,542	1,238
CBD Offices – high-rise prestige	1,200,211	1,799
Education		
Primary and secondary	767,350	1,150
University	1,130,425	1,695
Hospitals		
Day centre (including basic surgeries)	828,303	1,242
Regional hospital	1,076,794	1,614
General hospital (e.g. city teaching hospital)	1,553,068	2,328
Hotels		
3 Star travellers	966,353	1,449
5 Star luxury	2,622,959	3,932
Resort style	1,987,927	2,980
Industrial		
Warehouse/factory units – basic	433,591	650
Large warehouse distribution centre	630,875	946
High-tech factory/laboratory	2,152,539	3,227
Residential		
Individual detached or terrace style house – medium standard	619,957	929
Individual detached house – prestige	825,542	1,238
Townhouses – medium standard	436,514	654
Apartments – low-rise medium standard	426,287	639
Apartments – high-rise	598,450	897
Aged care/affordable units	522,872	784
Retail		
Large shopping centre including mall	973,072	1,459
Neighbourhood including supermarket	759,278	1,138
Prestige car showroom	1,206,561	1,809

Several road expansion and rejuvenation projects are set to proceed, with 53 regional projects identified over a ten-year USD8bn programme.

Two big mining projects, Quebrada Blanca2 and Los Pelambres Inco, have the green light to proceed, adding to the portfolio of investments by state-owned Codelco.

Future outlook

Most sectors should expect solid growth, underpinned by a healthy economy. Real estate in particular has shown good returns for overseas investors, which is expected to continue.

Chile is playing a leading role in developing nanoparticles from copper and lithium, which have myriad applications in health and technology.

Its tourism is expanding strongly, especially in remote areas, and to date the hotel sector has not caught up, presenting significant opportunities.

	CLP	USD (exchange rate: 667)
Chile international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	10,691	16
Excavate footings (m)	24,749	37
Concrete in slab (m ³) (1500m ³ job)	128,516	193
Reinforcement in beams (tonne)	818,850	1,228
Formwork to soffit of slab (m ²)	25,518	38
Blockwork in wall (m ²) (10,000 block job)	30,420	46
Structural steel beams (tonne)	1,244,008	1,865
Pre-cast concrete wall (m ²)	119,480	179
Curtain wall glazing incl support system (m ²) (1000m ² job)	196,700	295
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	21,173	32
Single solid core door incl frame and hardware (no) (50 door job)	432,600	649
Painting to walls primer + 2 coats (m ²)	3,234	5
Ceramic tiling (m ²) (1000m ² job)	37,018	55
Vinyl flooring to wet areas (m ²) (500m ² job)	24,921	37
Carpet medium tufted (m ²) (4500m ² job)	32,723	49
Lighting installation (m ²) (5000m ² + job)	89,301	134
Copper pipe 15mm to wall (m) (1000m + job)	17,075	26
Fire sprinklers (per m ²) (5000m ² job)	13,221	20
Air conditioning incl main plant (m ²) (5000m ² + job)	99,704	149
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	8,065	12
Group 2 Tradesman eg carpenter, bricklayer	7,560	11
Group 3 Tradesman eg carpet layer, tiler, plasterer	4,738	7
General labourer	4,223	6
Site foreman	9,537	14
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	91,567	137
Reinforcement bar 16mm (tonne) (120 tonne job)	641,711	962
Concrete block (400x200) per 1000 (>10,000 block job)	1,411,100	2,116
Standard brick per 1000	149,350	224
Structural steel beams (tonne) (100 tonne + job)	995,207	1,492
Glass pane 10mm tempered (m ²)	118,450	178
Softwood timber for framing 100mm X 50mm (m)	1,738	3
13 mm plasterboard (m ²)	4,532	7
Emulsion paint (litre)	5,047	8
Copper pipe 15 mm (metre) (1000m + job)	2,974	4
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	2,266	3
Plant costs		
Hire 50t mobile crane + operator (day)	746,750	1,120

Santiago

Tendering:	Lukewarm
Market:	Warmer
Cost escalation 2018:	2.1%
Cost escalation 2019:	2.6%
Contractor's margin:	10.3%
Preliminaries:	12.4%
Location factor (USD):	55.3
PPP coefficient:	470.2

Colombia

Bogotá

A solid platform built for construction growth

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Economic overview

GDP in the third quarter of 2018 was up 2.3 percent on a year ago and inflation was contained within target over 2018 at 4.25 percent.

After the fall in commodity prices, notably oil, in 2014 the country had to diversify its income sources to fill a gap in fiscal revenues equivalent to 3.3 percent of GDP. Thanks to spending controls, the country's economy

remains healthy, providing a solid base for growth this year.

Construction market and trends

The BD Bacata tower in Bogotá was recently commissioned at USD260m. However, a new mixed-use twin tower complex, the Atrio, is under construction, which will become Colombia's tallest buildings.

International building costs per m ² of internal area, in 2018	COP	USD (exchange rate: 3,007)
Airports (Building only)		
Domestic terminal, full service	8,400,000	2,793
Low-cost carrier terminal, basic service	6,000,000	1,995
Car parks		
Multi-storey – above ground	1,800,000	599
Multi-storey – below ground	2,400,000	798
Commercial		
Offices – Business Park	3,050,000	1,014
CBD Offices – up to 20 floors medium (A-Grade)	3,500,000	1,164
CBD Offices – high-rise prestige	4,825,000	1,605
Education		
Primary and secondary	2,135,000	710
University	3,950,000	1,314
Hospitals		
Day centre (including basic surgeries)	4,625,000	1,538
Regional hospital	5,800,000	1,929
General hospital (e.g. city teaching hospital)	6,500,000	2,162
Hotels		
3 Star travellers	3,500,000	1,164
5 Star luxury	5,020,000	1,669
Resort style	4,690,000	1,560
Industrial		
Warehouse/factory units – basic	1,630,000	542
Large warehouse distribution centre	1,450,000	482
High-tech factory/laboratory	9,000,000	2,993
Residential		
Individual detached or terrace style house – medium standard	2,380,000	791
Individual detached house – prestige	2,750,000	915
Townhouses – medium standard	2,205,000	733
Apartments – low-rise medium standard	2,350,000	782
Apartments – high-rise	3,050,000	1,014
Aged care/affordable units	1,680,000	559
Retail		
Large shopping centre including mall	4,135,000	1,375
Neighbourhood including supermarket	2,410,000	801
Prestige car showroom	2,640,000	878

Among shopping mall developments ongoing is the El Eden Shopping Centre in Bogotá, the largest in Colombia at 320,000 square metres.

Recently, an increase in the budget for education was made in order to improve the public universities. And there are plans to use PPP procurement for building hospitals and prisons.

Bogotá Metro, a 24km elevated line costing approximately USD4.5bn, is the largest infrastructure project in the country. Work is set to start in 2020.

Meanwhile, major highway construction is underway including the Cartagena Baranquilla and Ruta del Sol II highways.

Future outlook

Colombia maintains a solid macroeconomic framework, a flexible exchange rate and successfully managed to navigate external and domestic shocks to its economy. This provides a good platform for the construction sector.

The sector is warming, and construction costs are increasing, possibly to 8 percent per annum this year.

	COP	USD (exchange rate: 3,007)
Colombia international building costs		
Composite trade rates		
Excavate basement (m ³) (1800m ³ job)	25,000	8
Excavate footings (m)	30,100	10
Concrete in slab (m ³) (1500m ³ job)	570,000	190
Reinforcement in beams (tonne)	4,650,000	1,546
Formwork to soffit of slab (m ²)	104,000	35
Blockwork in wall (m ²) (10,000 block job)	190,000	63
Structural steel beams (tonne)	4,000,000	1,330
Pre-cast concrete wall (m ²)	210,000	70
Curtain wall glazing incl support system (m ²) (1000m ² job)	702,000	233
Plasterboard 13mm thick to stud wall (m ²) (3000m ² job)	74,000	25
Single solid core door incl frame and hardware (no) (50 door job)	2,600,000	865
Painting to walls primer + 2 coats (m ²)	38,500	13
Ceramic tiling (m ²) (1000m ² job)	82,000	27
Vinyl flooring to wet areas (m ²) (500m ² job)	116,000	39
Carpet medium tufted (m ²) (4500m ² job)	185,000	62
Lighting installation (m ²) (5000m ² + job)	534,000	178
Copper pipe 15mm to wall (m) (1000m + job)	77,000	26
Fire sprinklers (per m ²) (5000m ² job)	156,000	52
Air conditioning incl main plant (m ²) (5000m ² + job)	430,000	143
Labour costs, per hour		
Group 1 Tradesman eg plumber, electrician	18,000	6
Group 2 Tradesman eg carpenter, bricklayer	17,000	6
Group 3 Tradesman eg carpet layer, tiler, plasterer	13,000	4
General labourer	11,000	4
Site foreman	19,500	6
Material costs		
Concrete 30 MPa (m ³) (1500m ³ job)	567,000	189
Reinforcement bar 16mm (tonne) (120 tonne job)	3,280,000	1,091
Concrete block (400x200) per 1000 (>10,000 block job)	2,400,000	798
Standard brick per 1000	1,000,000	333
Structural steel beams (tonne) (100 tonne + job)	10,100,000	3,359
Glass pane 10mm tempered (m ²)	265,000	88
Softwood timber for framing 100mm X 50mm (m)	20,000	7
13 mm plasterboard (m ²)	23,000	8
Emulsion paint (litre)	21,500	7
Copper pipe 15 mm (metre) (1000m + job)	16,000	5
Copper cable (metre) (3C + E, 2.5mm PVC) (100,000m + job)	7,300	2
Plant costs		
Hire 50t mobile crane + operator (day)	2,050,000	682

Bogotá

Tendering:	Lukewarm
Market:	Warmer
Cost escalation 2018:	6.5%
Cost escalation 2019:	8.0%
Contractor's margin:	6.0%
Preliminaries:	13.0%
Location factor (USD):	54.1
PPP coefficient:	2078.0

Methodology

Comparing construction costs

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.

Method one: 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.

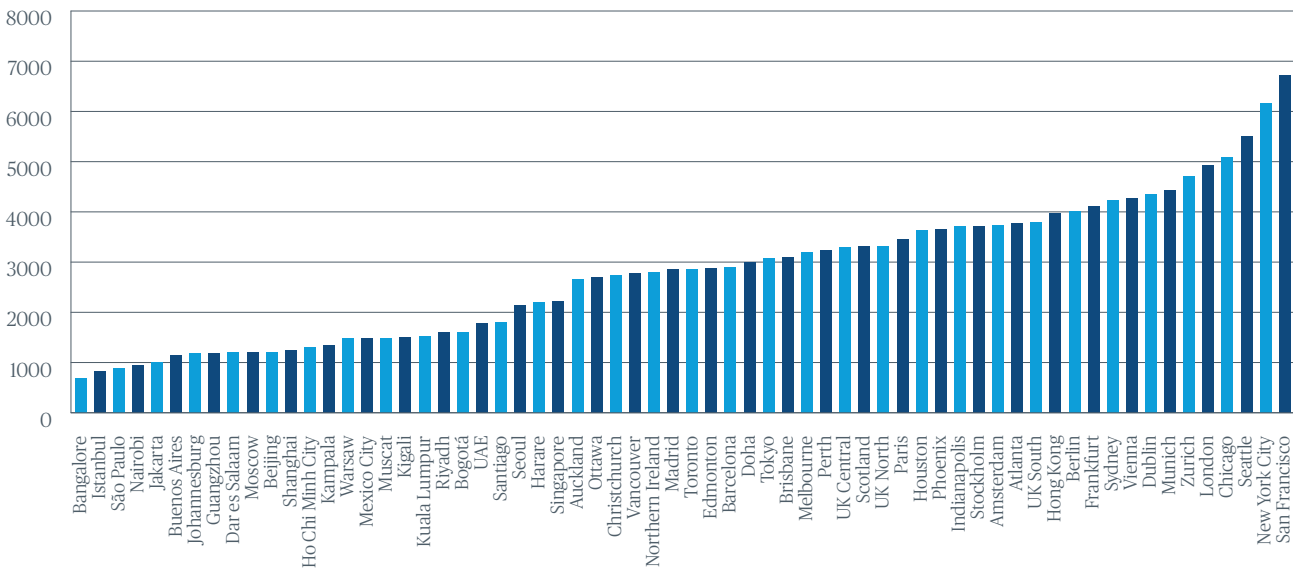
Advantages

- 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.

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



Method two: Purchasing Power Parity (PPP)

The PPP measure shows costs in relation to cost of living in the country. It indicates the construction cost per square metre in the local currency, relative to the costs of a basket of construction materials and labour. The PPP cost of a particular building type is calculated by dividing the cost in m² in local currency by the PPP coefficient. A lower PPP cost generally indicates more efficient construction (see page 113 for more detail).

Advantages

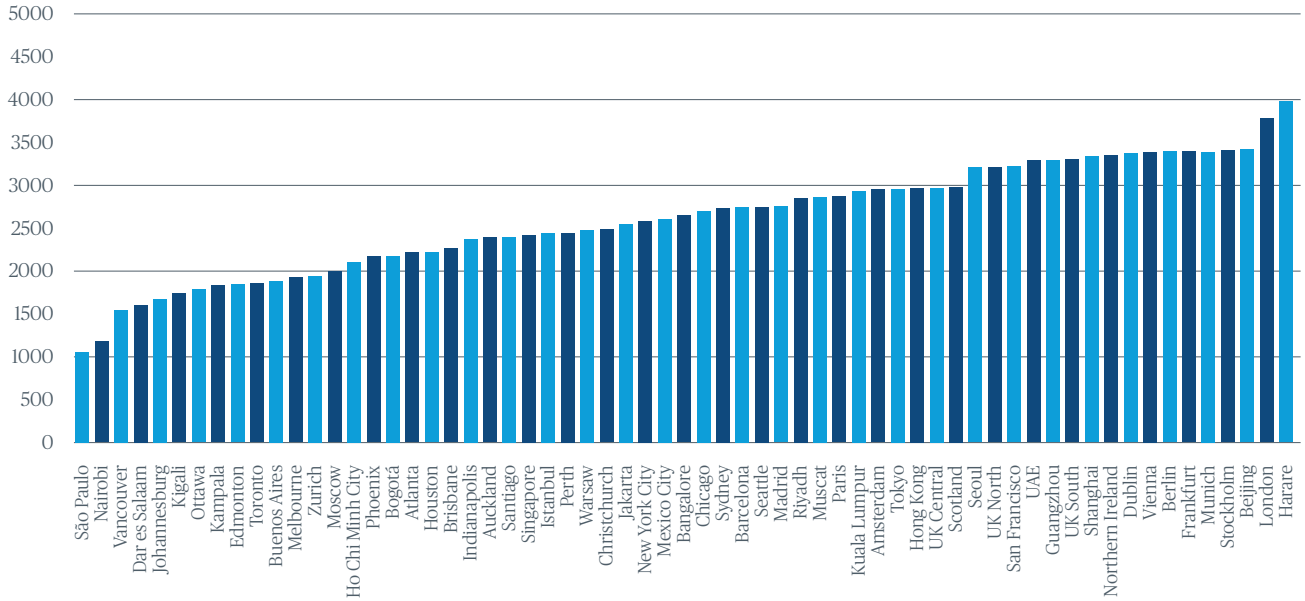
- Leaves exchange rate out of the equation.

- Useful for governments, policy-makers and researchers to compare costs and efficiency with other countries.

Disadvantages

- For a global firm looking to build overseas, it can be more convenient to look at cost in its home currency.
- The cost of the basket of goods ignores contractors' margins, labour productivity and preliminaries.

CBD Offices - high-rise prestige using PPP



Method three: location factors

Location factors extend the basket of goods approach used in method two (PPP) by adding labour productivity, market conditions, contractors' preliminaries and margins.

A similarly specified building constructed for USD100m in London (location factor 100) should cost USD108m in Toronto (location factor 108) at the exchange rate as of the first quarter of 2018.

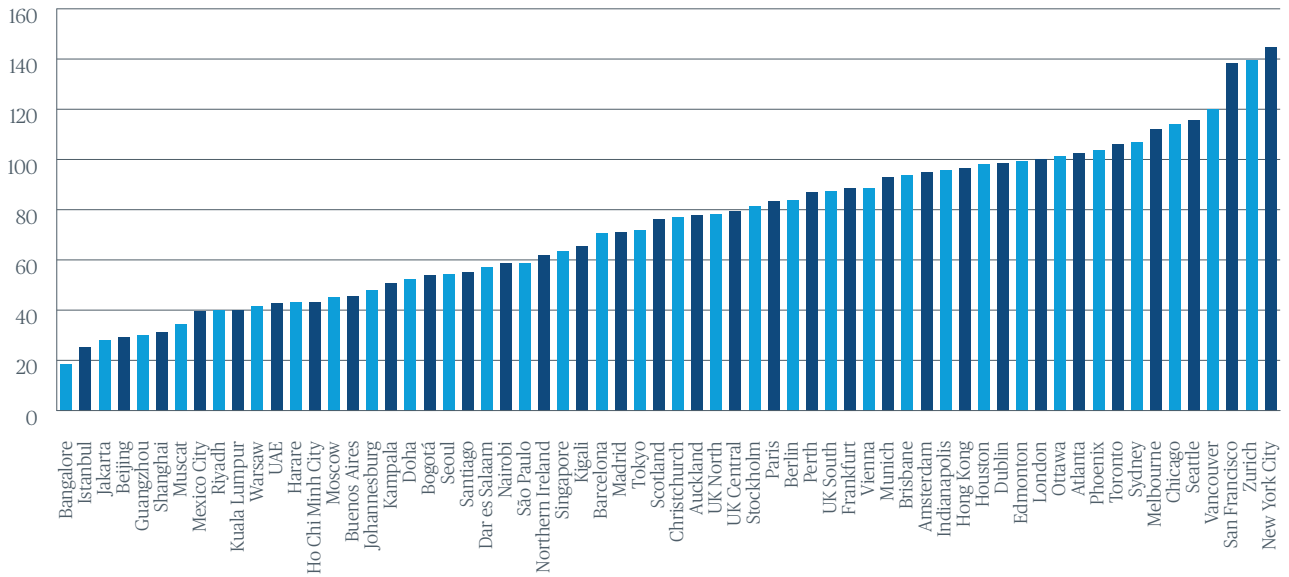
Advantages

- Useful for a company considering a complex investment in several locations and wanting to know the cost in a single currency.
- Will show the difference in cost between countries of buildings built with similar specifications and inclusions.

Disadvantages

- As this method uses a common currency, it is subject to the same disadvantages as method one.
- In practice, local building codes, methods and specifications are different between regions.

CBD Offices - high-rise prestige using location factors



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 collated in Q4 2018.

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.

Labour costs

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

Composite trade rates

Composite trade rates are the fully installed rates charged by the subcontractor to cover labour, materials, delivery, plant, overheads and margins, and sales tax.

Construction costs and exchange rates

This survey's construction cost data comes from programmes underway at the beginning of 2018, and excludes applicable taxes. All exchange rates are from January 2019.

Purchasing Power Parity (PPP)

PPP is a technique that compares construction costs with the cost of living (purchasing power) in each country. In short, it's a better way to compare construction costs between countries.

The PPP methodology removes the impact of exchange rates, which are notoriously volatile. Often costs are converted to USD (or any other currency) in order to compare costs between countries. Because exchange rates have fluctuated so much in recent times, this can give a false impression of how a country's construction costs compare with others. A high exchange rate will make local costs look high against the comparison country. A low exchange rate will do the opposite.

To gain a better indication of whether a country's construction is expensive we use PPP. A standard basket of goods is priced in each country in the local currency. This basket includes quantities of labour, plant and materials common to all forms of construction. Then we compare the cost of the basket of goods with the cost of construction in the country to obtain a purchasing power parity cost.

The higher the PPP cost, the higher the cost of construction in local cost-of-living terms. PPP costs can, therefore, be used to better compare the relative costs of building from country to country.

Though such indexes are used in some branches of economics, it has not often been used to compare construction costs. We have developed this methodology with the Centre for Comparative Construction Research (CCCR) at Bond University, Australia, using its CitiBloc method for the calculation of basket item costs.

To compare PPP costs, divide the \$/m² rate in local currency by the PPP coefficient for that country.

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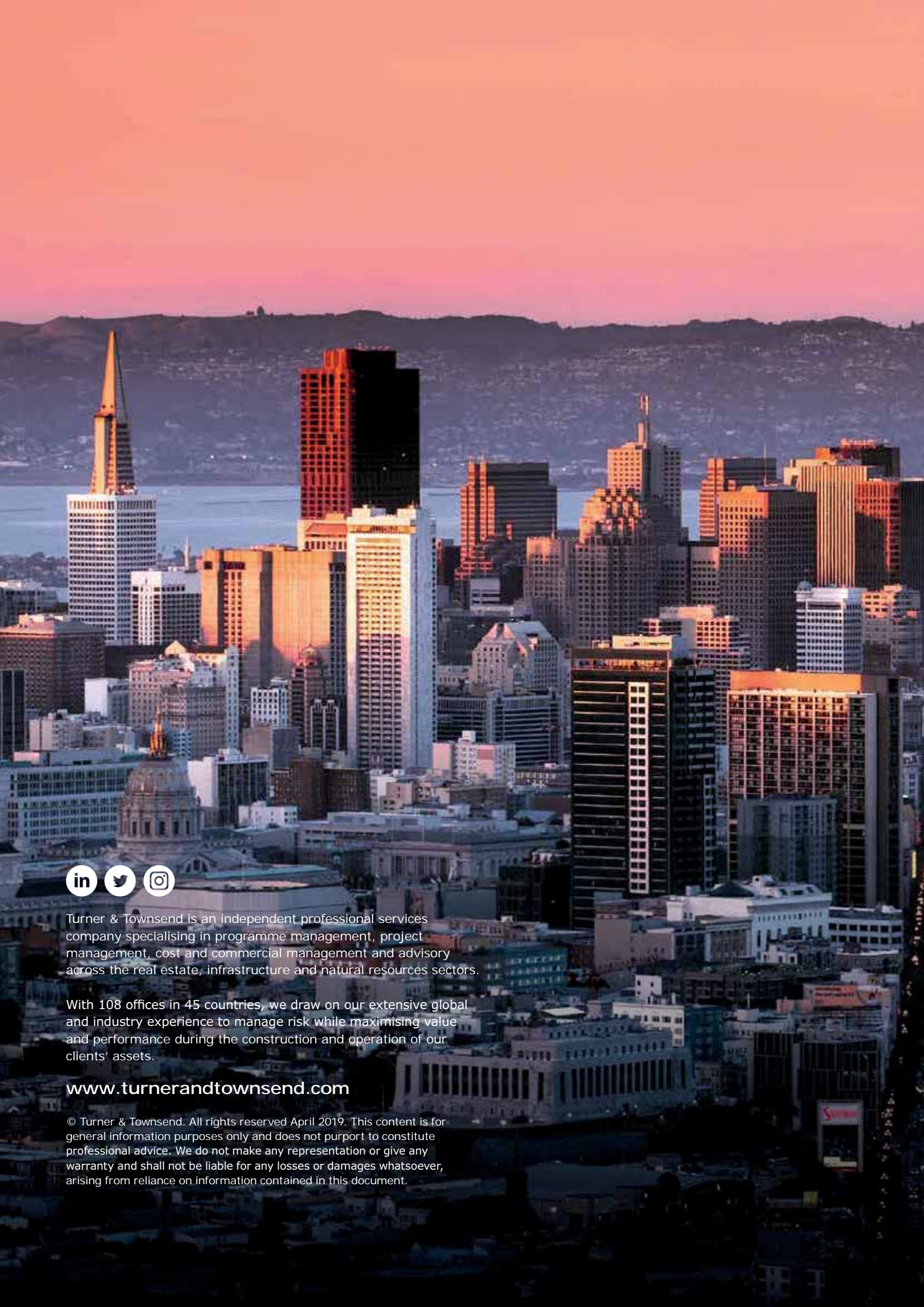
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