AECOM

Middle East

Property & Construction Handbook

2023

Delivering a better world

Foreword

As the global economy continues to face considerable headwinds amidst a year of positive market growth, the risk of a global recession lingers as geopolitics, energy and economic shocks are sustained. Inversely, the outlook for the MENA region, specifically the GCC remains strong as diversification plans continue at a rapid pace and oil prices remain robust.

While the recovery for the region remains positive, considerable caution is required. Stalling growth rates, market shocks from conflict, high and continued inflation, tightening of financial conditions, rising debt levels, potential for new coronavirus outbreaks/variants, all have the potential to stifle projections.

This edition of AECOM's Middle East Property & Construction Handbook assesses trends and new opportunities that have presented themselves during another year of recovery. The handbook also reviews the impacts and threats experienced over the last 12 months on local, regional and international markets.

At AECOM, our goal has always been to develop and adapt our knowledge in line with the ever-changing trends and construction growth opportunities, as well as to provide agile, innovative and industry-leading solutions to our clients.

Within our detailed economic round-up, we discuss the global and MENA regions' current economic and construction performance and present the upcoming challenges and expected future opportunities.

We have carefully selected articles, written by AECOM specialists, that focus on prevailing themes within the property and construction market. These articles aim to provoke thought in relation to the growing opportunities within the Middle East. This includes, "City wellbeing", where we explore how we can enhance community wellness through city and urban masterplanning, "ESG across the project lifecycle", where we look at the influence and considerations that environmental, social and corporate governance (ESG) has on each stage of a project's lifecycle, and "Sustainable Legacies" provides an overview of our ESG strategy and how we work in partnership with our clients to leave a positive, lasting impact for communities and our planet.

Furthermore, we explore the "UN Climate Change Conference COP27/28" by reviewing the outcomes of the COP27 meeting and looking ahead to COP28, which the UAE will host in 2023.

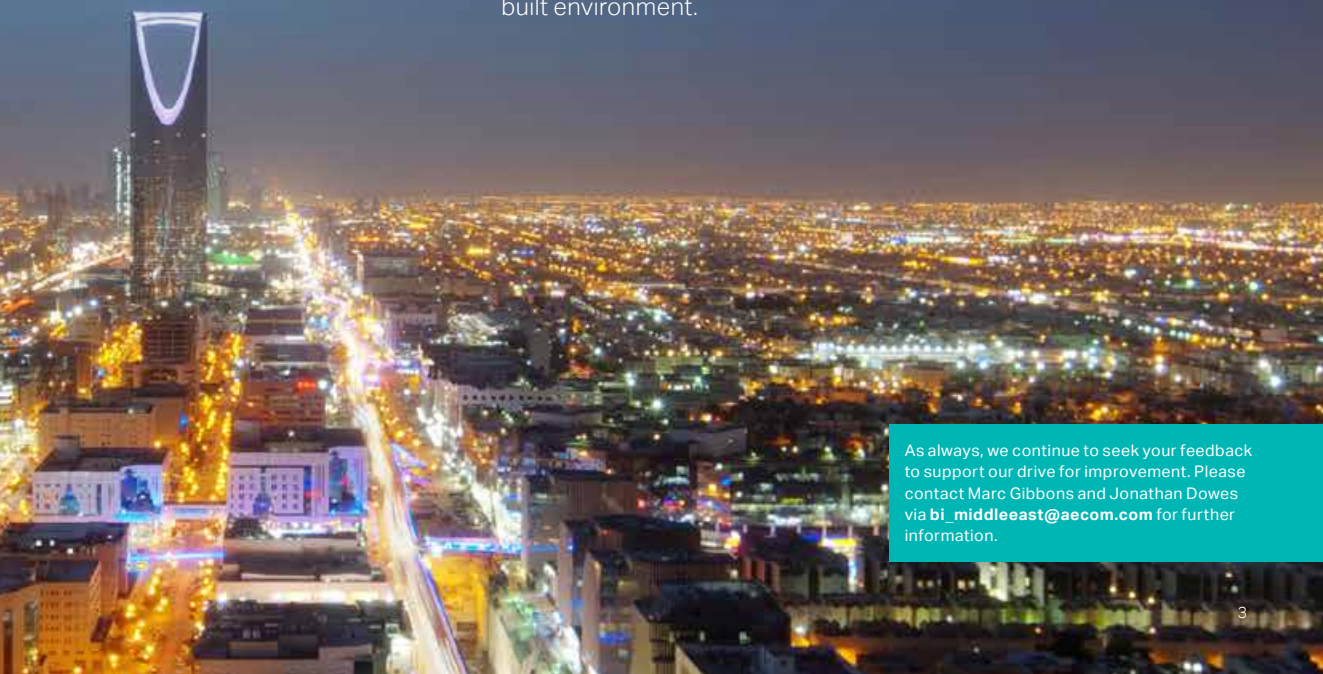
Finally, we delve into the recent chapter of AECOM's digital transformation journey by showcasing how our focus on innovative and transformative solutions are being employed to improve outcomes for our clients and communities.

As with previous years, we include as a point of reference a synopsis of typical regional procurement routes, forms of contract and building regulation compliance across the Middle East. The reference data section provides averaged international and regional cost data within the built environment.

This data acts as an indicative high-level guide and comparison of building asset costs and should be used circumspectly.

Like the nature of any project, its interpretation is dependent upon several project specific factors and assumptions. For specific current and benchmarked cost data, please reach out to AECOM's Program Cost Consulting team to assist you in obtaining relevant and specific costs for projects.

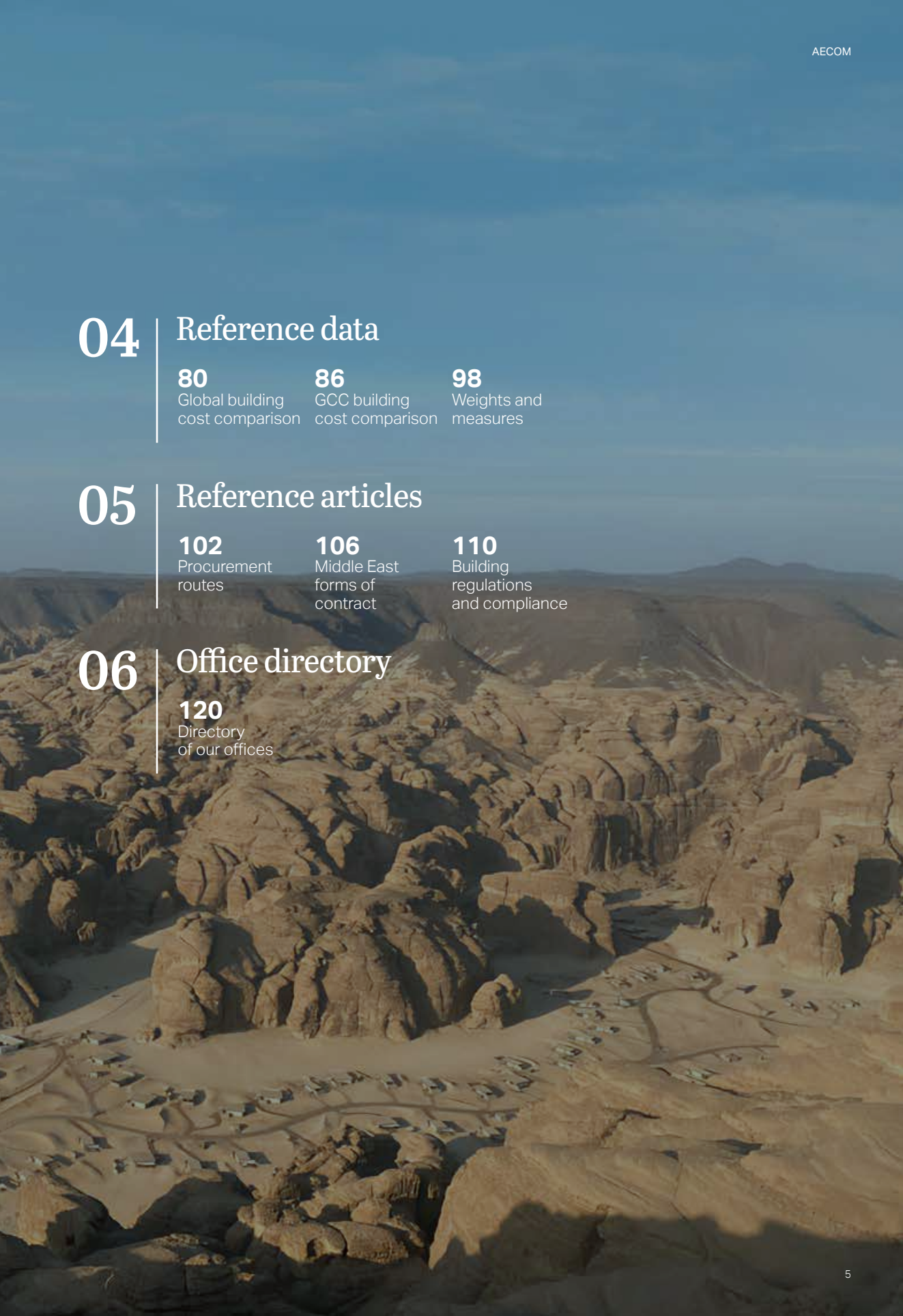
We hope that you find our review, analysis and construction market evaluations beneficial and of value in navigating your decision-making in 2023. We look forward to working together to deliver a better world.



As always, we continue to seek your feedback to support our drive for improvement. Please contact Marc Gibbons and Jonathan Dowes via **bi_middleeast@aecom.com** for further information.

Contents

Habitas Resort, AlUla, KSA



01 Global market review

IN BRIEF

Global economic review

Following on from the devastating impact of the coronavirus pandemic, the global economy has continued to face ongoing challenges that have rippled through markets and economies across the world during 2022. These have included higher inflation and interest rates, in addition to increased commodity prices.

As a result, countries across the world are contending with slower growth rates at a time when many economies were emerging from a period of weaker growth due to the coronavirus pandemic. Many countries must now contend with the impacts of stagflation, which has the potential to persist well into the future.

Stagflation refers to periods where inflation rates are high or increasing, yet economic growth is slow and unemployment rates are high or increasing. This presents a difficult dilemma for economic policy makers as actions taken to reduce inflation can lead to unfavourable rises in unemployment and actions taken to reduce unemployment can worsen inflation.

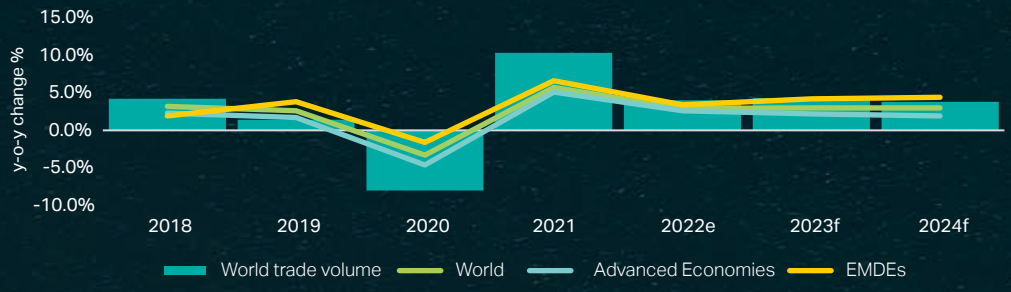
According to the World Bank – Global Economic Prospects Report (2022), global growth was forecasted to slow sharply from 5.7 per cent in 2021 to 2.9 per cent in 2022, which represents a 2.8 per cent contraction. Global growth in 2023 is forecasted to edge up slightly to a subdued level of 3 per cent.

In a bid to overcome downside risks, the World Bank outlines that policy makers across the globe will need to concentrate their efforts across five key areas.

Firstly, by limiting the harm to people affected by the war in Ukraine. Secondly, counter the spike in oil and food prices by increasing the supply of key food and energy supplies. The third area of action is the need to act on debt relief. The fourth area of focus relates to health preparedness and efforts to contain the coronavirus. In conclusion, the World Bank sees the fifth area of effort being the need to focus on the transition to low-carbon energy supply.

Advanced economies are forecasted to decline from 5.1 per cent in 2021 to 2.6 per cent in 2022. Growth for 2023 is expected to be in the area of 2.2 per cent. Growth for Emerging Markets and Developing Economies (EMDE's) are projected to slow from 6.6 per cent in 2021 to 3.4 per cent in 2022 and is expected to improve to 4.3 per cent between 2023 and 2024.

Real GDP Growth



Source: World Bank Economic Prospects, 2022

Global inflation

It is noted that up to June 2022, inflation across all segments of the global economy has accelerated, mainly due to post-coronavirus demands and ongoing supply constraints. This has been further exacerbated by labour market constraints, coupled with increasing commodity prices and the ongoing conflict in Ukraine. Within the World Bank – Global Economic Prospects Report (2022), global median headline CPI inflation rose to 7.8 per cent (y/y) in April 2022, which represented a level not seen since 2008.

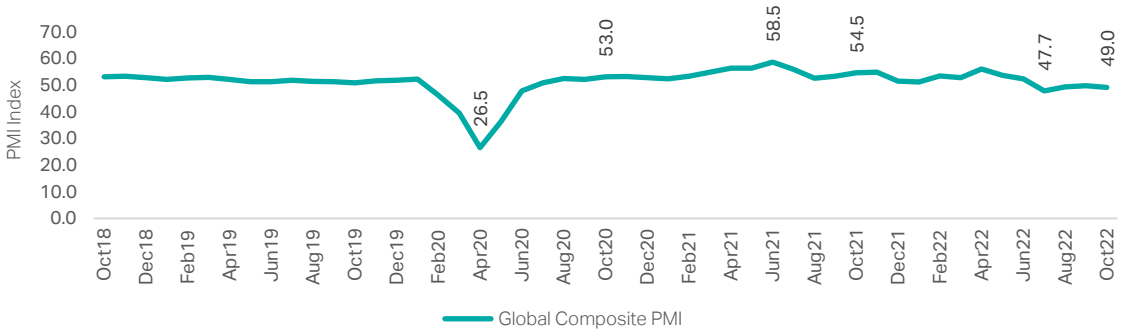
Aggregate EMDE inflation increased to circa 9.4 per cent, a level also not seen since 2008, whilst inflation in advanced economies reached circa 6.9 per cent, a level not seen since 1982.

Purchasing Managers Index (PMI)

The global composite Purchasing Managers Index (PMI) for 2022 remained above the 50 point mark until July, when it dropped to 47.7 points, the first drop below 50 since post-coronavirus recovery witnessed in June 2020. Since then, it marginally recovered to 49.7 points in September on the back of increases in global goods trade volume before falling back to 49 points in October 2022. This was a result of weaknesses in global manufacturing activity and goods trade.

Q2 2022 levels represented a 28-month low, dating back to June 2020. This illustrates a contraction of activity with business confidence declining as a result of ongoing geopolitical tensions, growing stagflation and financial instability. Whilst a weakened demand for goods has eased supply chain issues, it is also noted that exports of services have been boosted with increased global tourism.

Global Composite PMI



Source: IHS Markit, JP Morgan

Commodity prices

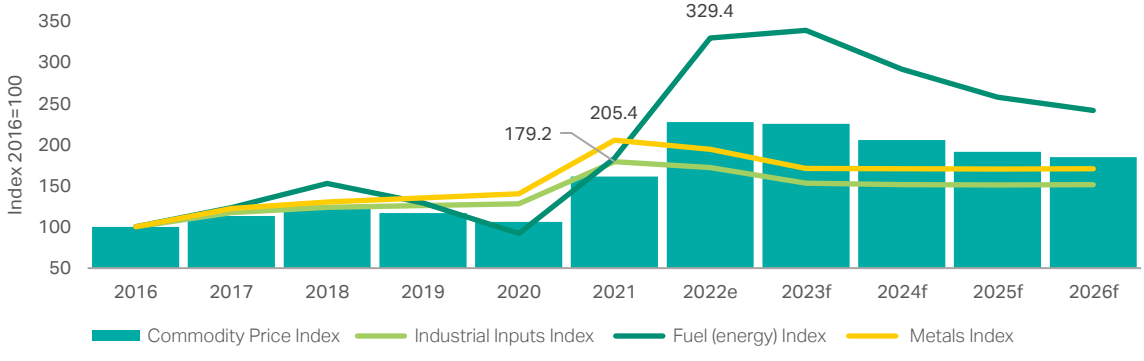
There is evidence of a significant slowdown in global growth with widening concerns of a global recession, both of which are impacting commodity prices. Furthermore, several nations and economies are also experiencing considerable currency depreciation that is exacerbating their already fragile economic position. As the outlook for global growth weakens, it is expected that commodity prices will fall over the next 24 months, albeit still above a five-year average.

As reported by the World Bank – Commodity Market Outlook Report (October 2022), energy prices are expected to fall by 11 per cent in 2023 and 12 per cent in 2024. Agricultural and metal prices are projected to decline 5 and 15 per cent respectively in 2023, before stabilizing in 2024. However, in the same report the World Bank outlined a number of short and medium term risks, such as supply issues in Europe exacerbated by the ongoing Ukraine-Russia conflict, which could result in further increased energy prices. This in turn may lead to higher non-energy prices in other areas, such as food supply.

A recent Special Focus report issued by the World Bank outlines that widening concerns of a global recession have impacted copper prices since peaking in March 2022. Furthermore, it outlines that a change in demand for aluminum has led to lower aluminum prices, and that prices will likely remain volatile as the energy transition unfolds and the demand moves from fossil fuels to renewables, which will benefit some metal producers.

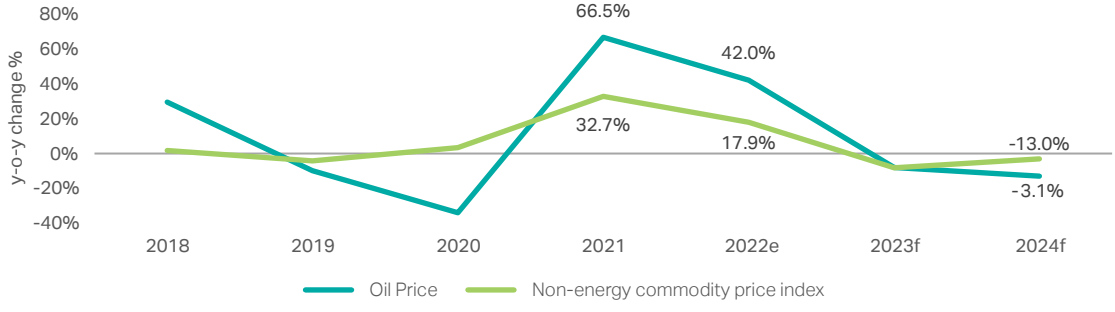
The below graph illustrates how commodity prices, and energy in particular, have increased since 2020. Whilst there have been reductions in metal prices since peaking in 2022, it is predicted that energy prices may only peak in 2023 before easing from 2024 onwards.

Commodity Price Indices



Source: IMF, World Economic Outlook Database, October 2022

Growth in Commodity Prices



Source: World Bank Economic Prospects, 2022

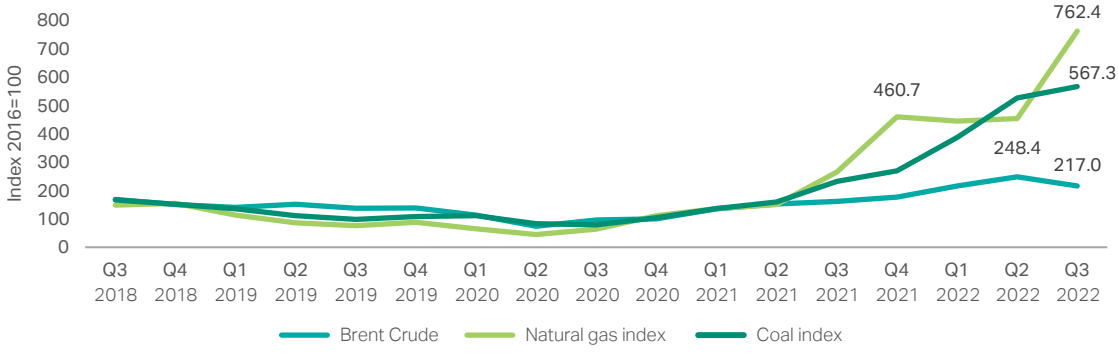
The above graph outlines the impact of fluctuating oil prices on non-energy pricing.

Energy

Over the course of 2022, energy prices continued to rise steadily, building on a trend that commenced during Q3 2021 and continued up to Q3 2022, with pronounced fluctuations in natural gas and coal from levels witnessed in 2020. Whilst prices for natural gas appeared to level during the first half of 2022 the markets witnessed a significant rise following Q2 2022, as several European countries looked to increase reserves. Despite global efforts towards a transition to cleaner forms of energy, the price of coal also increased during the same period as many countries sought to secure supply ahead of winter periods in the northern hemisphere. During the same period of time, it is evident from the below graph that whilst oil prices have increased since lows of 2020, they have not fluctuated at the same level when compared to gas and coal.

As reported by the World Bank – Commodity Market Outlook Report (October 2022), energy prices have declined from record highs earlier in 2022 amid slowing global growth and concerns about a possible global recession. Prices have been extremely volatile, with wide divergence between individual energy commodities. The main downside risk for energy markets is a global recession, which could cause a marked reduction in energy demand and sharply lower prices.

Changes in Energy Prices



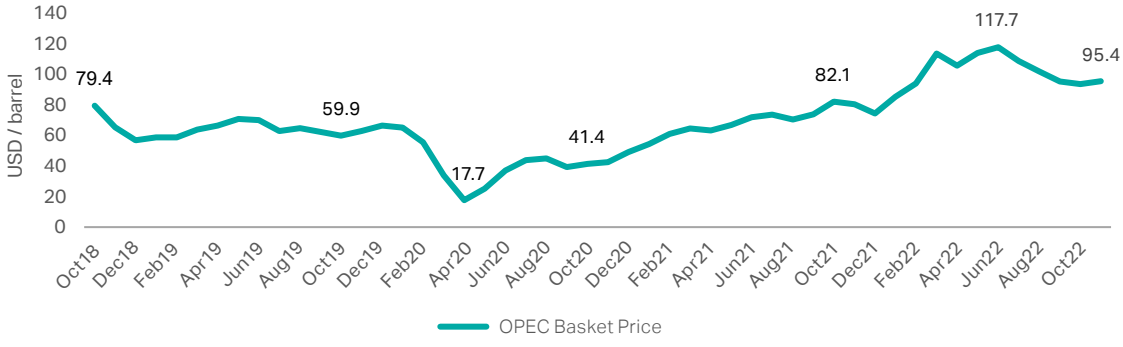
Source: IMF Primary Commodity Prices

Oil

Since peaking in June 2022 at circa USD 117/bbl OPEC Basket, oil prices have fallen by circa 19 per cent and was priced at USD 95/bbl during Q3 2022. Consistent with the overall trend witnessed across energy prices, oil prices during 2022 have been influenced by widening concerns of a global recession, further coronavirus restrictions in China and the release of oil reserves from major economies across the globe. As a result, there was a decline in global oil consumption during 2022, however, the impact was offset by many economies moving away from natural gas to oil due to a spike in natural gas prices over the course of 2022. As reported by the World Bank – Commodity Market Outlook Report (October 2022), during Q3 2022, OPEC+ members agreed to cut production by two million barrels per day, however, any potential rebound may prove to be temporary as the actual reduction may be just over half of this headline number.

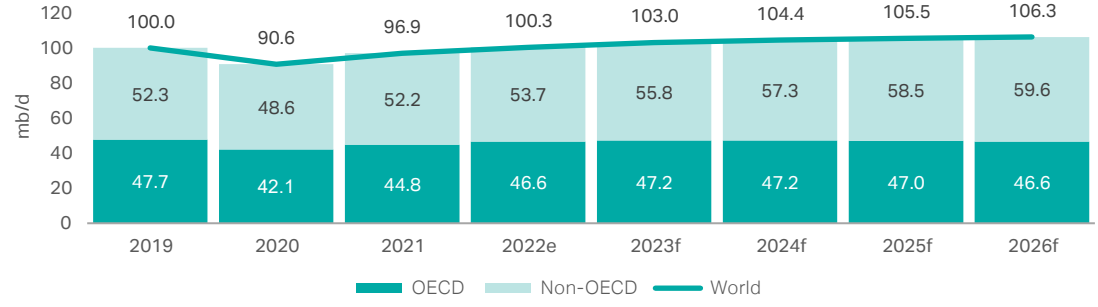
Additionally, the World Bank – Commodity Market Outlook Report (October 2022) outlines that downside risks primarily arise from threats to global consumption, stemming from a global recession and more prolonged coronavirus restrictions in China. The upside risks are dominated by supply issues, including the extent to which Russia's exports are impacted by new trade measures, OPEC+ supply decisions, possible disappointment in production from the United States and lower levels of strategic oil reserves.

OPEC Basket Price



Source: OPEC

Medium-term oil demand



Source: OPEC 2022 World Oil Outlook 2045

Natural gas and coal

As reported by the World Bank – Commodity Market Outlook Report (October 2022), natural gas prices have been exceptionally volatile, with some forecasts expected to reach all-time highs in Q3 2023 before sharply declining. As several European countries look to increase reserves of natural gas, prices reached an all-time high of USD 70/mmbtu in August 2022, whilst coal prices also reached an all-time high of USD 330/mt in July 2022. During 2022, the price fluctuations witnessed within the natural gas markets also influenced movements in the price of coal as several economies focused on securing energy supply from the coal market, as a result of increases in gas prices. These decisions were contrary to the understood priorities of several economies who had earlier sought to transition away from coal towards cleaner sources of energy.

Metals

There was high volatility within the metals market during 2021 and 2022. The World Bank outlines that the metals and minerals price index fell 20 per cent in Q3 2022 (q/q) and was 31 per cent lower in September than their March peak.

As concerns of a global recession widen, the price outlook for metals has also fallen, with demand continuing to weaken following the post-pandemic highs of 2021. During this period, the demand for metals has also been suppressed due to the lockdowns in China, although it is expected to be boosted as restrictions are lifted moving forward.

According to the World Bank, metal prices are expected to fall by 15 per cent in 2023, following a marginal decline in 2022. Risks to the outlook are skewed to the downside and include a global recession as

well as the potential of further lockdowns and deterioration in the real estate sector in China.

Upside price risks include the possibility of further declines of energy-intensive smelting activity if energy prices increase more than anticipated. Aluminum and zinc are especially vulnerable to fluctuations in energy prices as they are the most energy intensive metals to process.

During Q3 2022, copper prices declined 19 per cent (q/q), with the market witnessing similar challenges during 2022 as that of other metals.

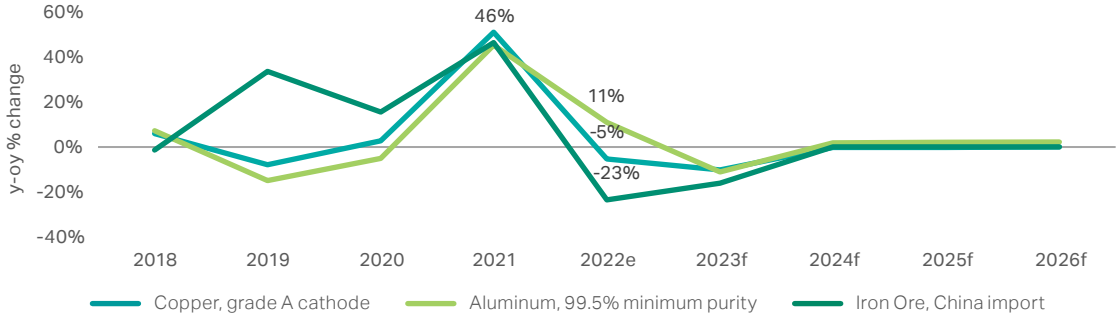
The graph below shows that prices are expected to fall circa 10 per cent in 2023, following an estimated decline of 5 per cent in 2022.

It can be seen that iron ore prices are estimated to drop 23 per cent from 2021 levels.

Again, this can be attributed to the declines in global economic activity. It is thought that the market for iron ore is currently oversupplied and as a result further declines in price are expected in 2023.

A similar pattern has emerged after a review of aluminum prices during 2022, which is estimated to decline 18 per cent in 2023. Similar to the market for copper and iron ore, the demand for aluminum has also weakened during 2022.

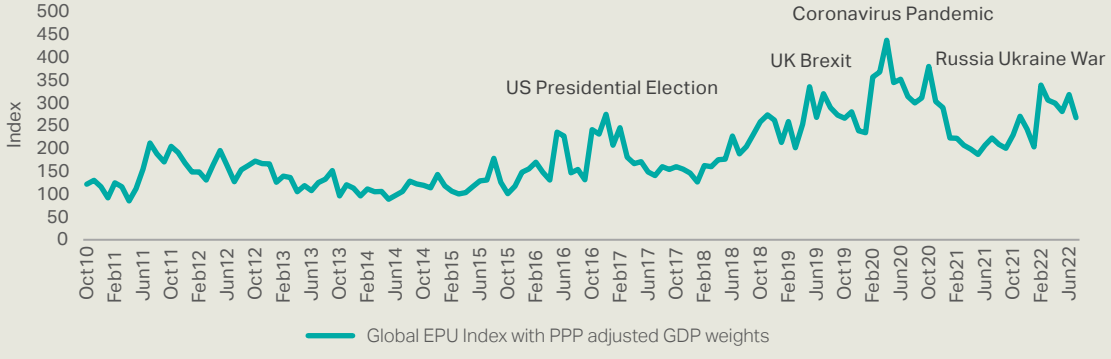
Changes in metal prices



Source: IMF, World Economic Outlook Database, October 2022

Global economic risks

Economic Policy Uncertainty



Source: Economic Policy Uncertainty

Key economic risks 2023

Global inflation - recession

Throughout 2022, inflation has surged and economies across the globe have seen a slump in projected growth levels following improvements seen in late 2021. Many believe that inflation will remain at elevated levels for several years, resulting in lower growth projections, but with the prospect of a deep recession becoming a real issue for many economies.

Russian–Ukrainian conflict

The ongoing conflict between Russia and Ukraine continues to be a significant risk, threatening the stability of a region which has not witnessed such a level of political uncertainty since World War II. There also remains a risk to global stability, if the conflict were to escalate beyond the region.

Coronavirus pandemic

With vaccine rollout differing significantly between countries, the threat of coronavirus and variant strains remains a risk to many countries. As northern hemisphere countries enter winter seasons there are deep concerns about the impact of further lockdowns, should new strains emerge, coupled with a sharp increase in other seasonal viruses.

US–China tension

Trade tension between the US and China continues to pose a risk and competition is expected to rise within the technology sector with restrictions placed on tech exports to and from China, leading to exposed supply chains.

European energy crisis

As a result of the ongoing conflict between Russia and Ukraine, many countries across the region are facing threats to energy supplies serving domestic power and heating markets. It is feared that several countries may face rolling blackouts should the region witness a prolonged winter of low temperatures and higher energy demands.

Digital cyberattacks

New technologies are set to reshape economies with a drive towards autonomous vehicles and the use of drones; the digital world will be vulnerable to cyberattacks, as already seen with critical infrastructure (energy, healthcare and transportation) and geopolitical and economic uncertainties due to a lack of governance.

Adverse weather and climate change

Extreme weather caused by climate change will urge governments to make commitments in reducing their countries emissions. Focus will be placed on oil, gas firms, airlines, car manufacturers and the food industry as this will remain a prevailing risk in 2023 and beyond.

Biodiversity loss

Biodiversity loss is caused by climate change, pollution, deforestation and habitat loss. This risk threatens global ecosystems, affects livelihoods, food supplies and income and may lead to disease outbreaks.

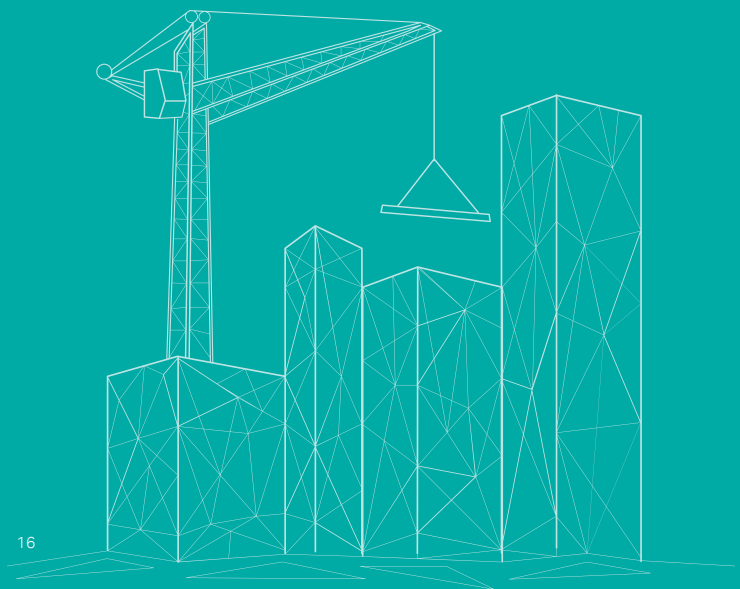
Natural disaster

Natural disasters can be a preventable risk, and solutions such as reforestation, education, technology governance and economic support could help mitigate and reduce the risks caused by global warming, pollution and mining.

Global construction prospects

This review is for the period covering 2022-2026, analyzing anticipated construction growth during this time.

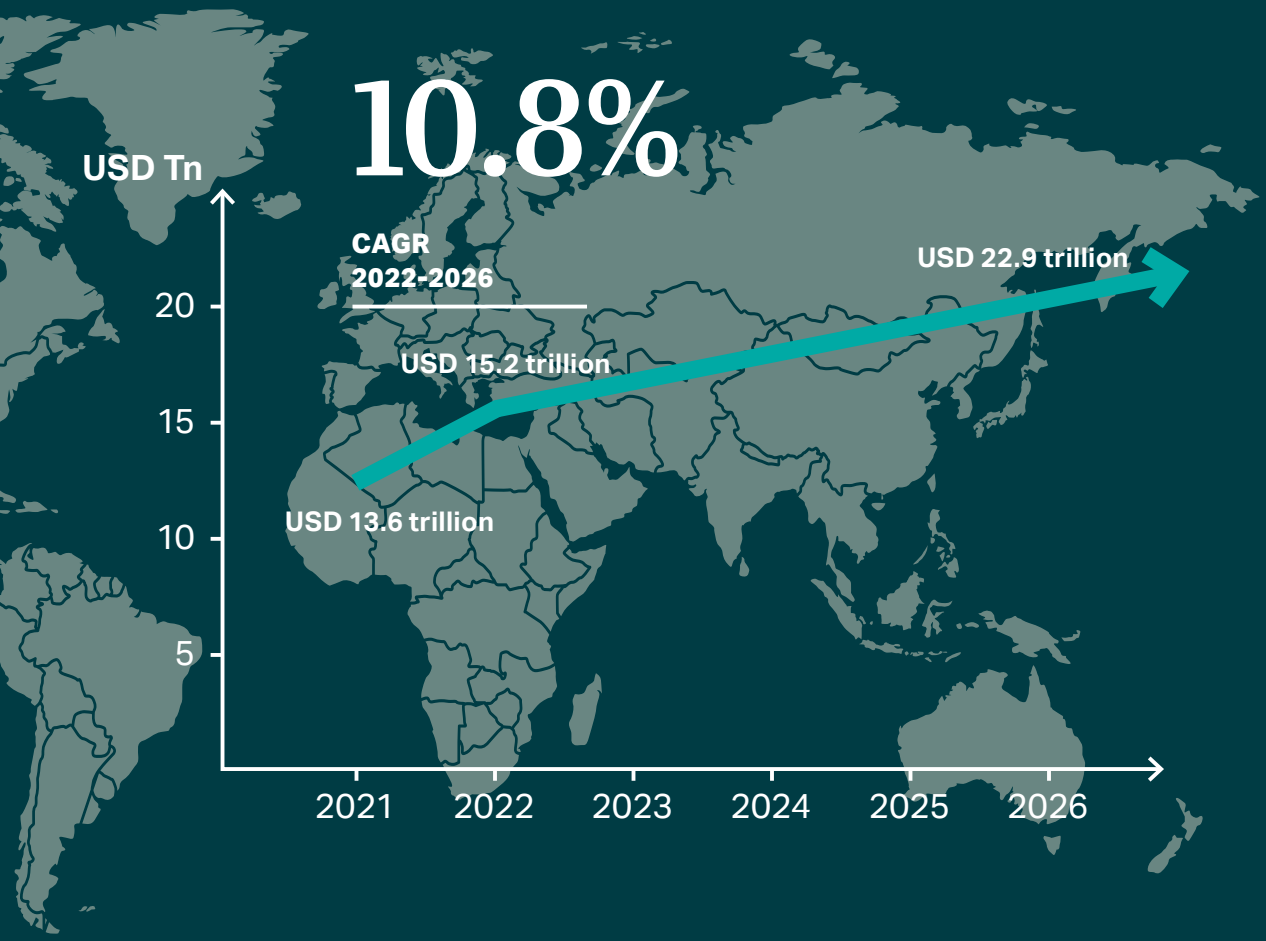
The global construction market is expected to increase by 11.8 per cent in 2022, reaching USD 15.20 trillion from USD 13.60 trillion in 2021. The market is expected to reach USD 22.87 trillion in 2026 at a compound annual growth rate (CAGR) of 10.8 per cent, according to Business Wire.

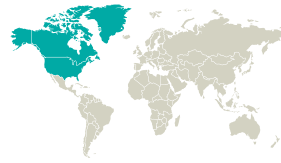


The RICS Global Construction Monitor outlines that activity across most markets continued to fall during Q3 2022 as concerns of a global recession widened. It is reported that the elevated cost of building materials proved to be the most pertinent issue restricting market activity.

However, the same report indicates that from a global perspective, construction employment levels are still rising and outlines that some regions, most notably the Middle East and Africa, are witnessing a rebound in activity during 2022 that has the potential for these regions to mitigate some of the effects of a global recession.

As reported by Oxford Economics, the global rebound in construction activity is set to continue over the coming years, supported by a wave of publicly funded infrastructure projects.





North America

GDP from construction is expected to reach USD 713 billion across North America with the US accounting for USD 602 billion. For the US market, this equates to circa 2.62 per cent of all GDP generated from within the US economy. The remaining output value of USD 112 billion relates to the Canadian market, which accounts for 5.63 per cent of total Canadian GDP.

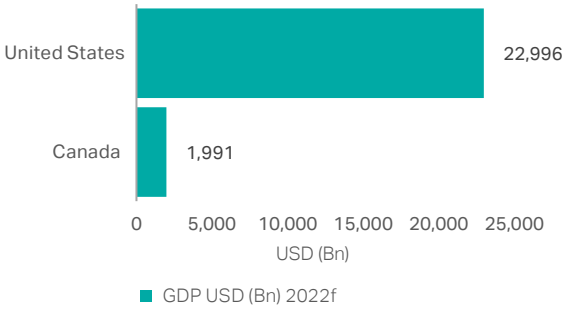
Emerging from coronavirus restrictions, the construction markets of the US and Canada have been hampered by rising commodity prices and interest costs, in addition to supply constraints during 2022. Consequently, there has been a rise in uncertainty and a decline in investor confidence across both regions amid widening fears of a global recession in 2023.

A recent publication by GlobalData reports that the US construction market was valued at USD 2 trillion in 2021 and is projected to achieve an AAGR of more than 3 per cent during 2023-2026.

Moving forward, the industry expects to see ongoing investment in infrastructure and energy markets as government-backed programs in the form of the Infrastructure Investment and Jobs Act (IIJA) gain momentum. Equally, it is expected that increased spending towards 'Net Zero' targets will create opportunity and growth during 2023 and beyond. During 2022, the US government put in place a USD 1.5 trillion support package for improvements across the infrastructure network.

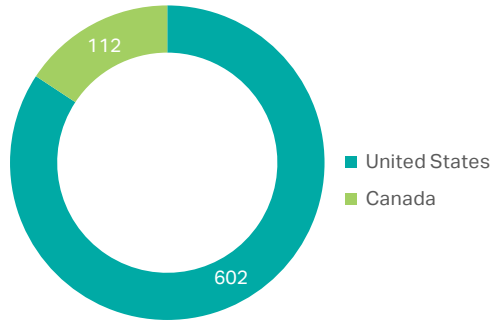
During 2022 the main areas of activity for the construction market were within the residential, transportation and oil/gas sectors, with an emphasis on green infrastructure projects and also the retrofitting of existing residential stock across the country. The Canadian government introduced the Growth Plan which is a USD 7.5 billion plan for the period 2020-2023 aimed towards the creation of green infrastructure and energy projects to generate economic growth. As a result, the Canadian construction industry is expected to grow by 4 per cent during 2022 and by an average of 2.2 per cent during 2023-2026, according to Business Wire.

North America GDP



Source: IMF, Trading Economics, World Bank

GDP from Construction USD Bn



Source: IMF, Trading Economics, World Bank

Latin and South America

GDP from construction is expected to reach USD 65.5 billion across Latin and South America with Mexico accounting for USD 55.7 billion. This equates to circa 4.31 per cent of all GDP generated from within the Mexican economy. Chile accounts for USD 3.4 billion of the overall construction market (1.07 per cent of GDP). Peru accounts for a further USD 2.5 billion (1.12 per cent of GDP) with Colombia contributing USD 2.3 billion (0.73 per cent of GDP). The construction markets of Brazil and Argentina make up the remaining output.

Economic growth across Latin and South America is expected to decline during 2022 and remain low for several years. Similar to other global regions the local economies of Latin and South America have been dampened by high inflation and increasing interest rates. It is projected that growth will decline to 2.5 per cent in 2022 with further reductions expected in 2023 to a level of 1.9 per cent, according to World Bank, Global Economic Prospects (2022).

The direct economic impact of the ongoing conflict in Ukraine has been limited within the region, however the contagion of global inflation and increasing interest rates has caused a ripple effect on the local economies.

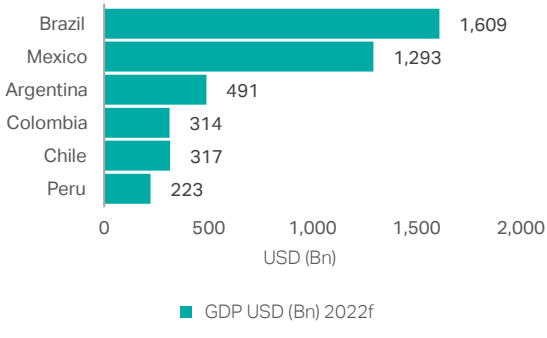
It is noted that weaker global demand will have an adverse effect on the region through reduced export potential. With local economies being highly dependent on fertilizers to aide agricultural production, and with the region being reliant on imports from both Ukraine and Russia, there are concerns that increasing prices or lower supply will have an impact on the agricultural sector across the region.

Against an economic back drop of lower growth projections and higher interest rates across the region, there is also a growing level of concern that economies with significant levels of public debt may struggle to contain costs and meet ongoing obligations.

Inflation within the region has risen sharply in recent times due to several global factors and given that long-term inflation issues have hampered growth in the past, inflation is seen as a significant ongoing risk within the region. This remains a challenge that will need to be monitored and managed carefully to navigate a passage towards sustainable and balanced growth.

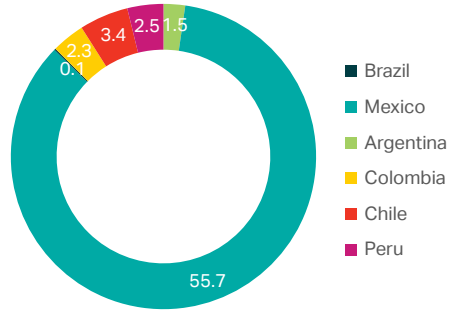
Economies within the Latin and South America region are expected to recover from 2024, with growth of 2.4 per cent projected by the World Bank.

Latin and South America GDP



Source: IMF, Trading Economics, World Bank

GDP from Construction USD Bn



Source: IMF, Trading Economics, World Bank

Europe

GDP from construction is expected to reach USD 201.9 billion across Europe with Germany accounting for USD 53.7 billion. This equates to circa 1.27 per cent of all GDP generated from within the German economy. Following Germany, the UK accounts for USD 38 billion of the overall construction market (1.19 per cent of GDP). France accounts for a further USD 28.6 billion (0.97 per cent of GDP) with Italy contributing USD 22.5 billion (1.07 per cent of GDP). The construction markets of Russia, Spain, Netherlands and Turkey make up the remaining output.

The economic growth rate within Europe is expected to decline by 3 per cent during 2022, according to World Bank, Global Economic Prospects (2022). Mirroring economic performance in other jurisdictions the economies of European countries have been impacted by events in Ukraine, turbulence within financial markets and post coronavirus recovery issues surrounding rising inflation and supply constraints.

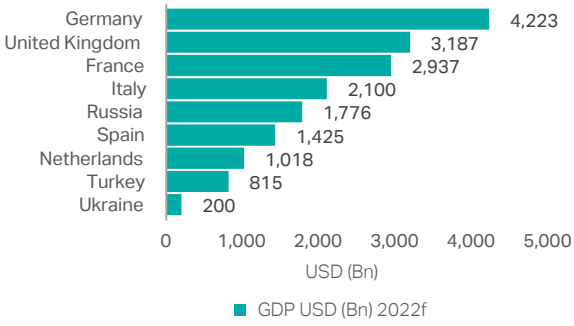
Most notably Europe and its economies have been heavily impacted by the ongoing conflict in Ukraine. From travel restrictions, disruptions to food supply and rising inflation, all of which have resulted in a decline of economic activity and growth during 2022. As a result, construction industries across Europe have seen projects being put on hold due to supply issues, inflation on commodities and shortages of labour, resulting in a weak market and low investor confidence. The ongoing conflict in Ukraine poses a significant risk to the general economic outlook across Europe for 2023 and further escalation could result in a widening recession across the region.

According to a recent RICS Global Construction Monitor publication, it is noted that all market segments across Europe have witnessed a degree of contraction during 2022, mostly as a result of higher energy prices, coupled with weakening market confidence. Upon closer review of the European market, Germany appears to have been impacted the most, followed by France, Italy, Spain and the Netherlands. On a positive note, there were indications that the markets of Romania, Switzerland, the UK and also Ireland are looking more positive in terms of infrastructure projects.

Building on the allocation from the EU's 2021-2023 long-term budget to the Next Generation EU (NGEU) in the form of loans and grants, most markets across Europe are focusing future growth on greener infrastructure projects, digital transformation, EV recharging networks and investments in renovation of older buildings to become more energy efficient.

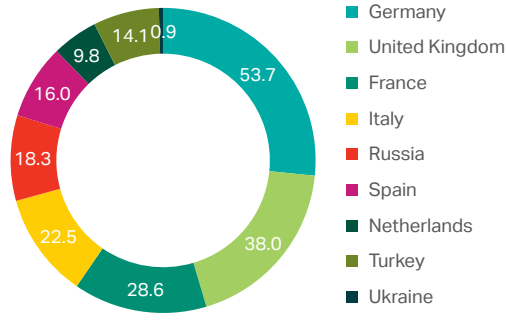
Economies within the region are projected to grow by 1.5 per cent in 2023, dependent on the ongoing conflict in Ukraine, as projected by the World Bank.

Europe GDP



Source: IMF, Trading Economics, World Bank

GDP from Construction USD Bn



Source: IMF, Trading Economics, World Bank

Africa

GDP from construction is expected to reach USD 11.3 billion across Africa with South Africa accounting for USD 6.1 billion. This equates to circa 1.45 per cent of all GDP generated from within the South African economy. Following South Africa, Tanzania accounts for USD 2.3 billion of the overall construction market (3.38 per cent of GDP). Nigeria accounts for a further USD 1.3 billion (0.29 per cent of GDP), with Kenya contributing USD 1.2 billion (1.09 per cent of GDP). The construction markets of Zambia and Ghana make up the remaining output.

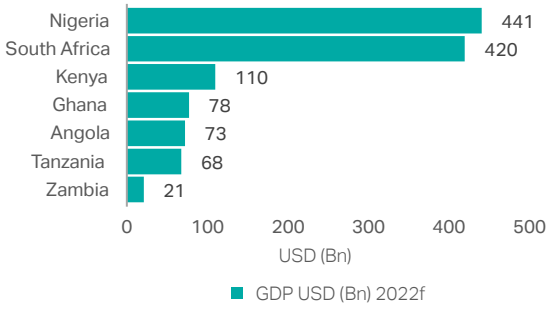
In recent years, Africa's economies have generally remained resilient. Sound macroeconomic policies have enabled the continent to remain close to expected growth projections, however, it is projected that growth will decline to 3.7 per cent in 2022, according to World Bank, Global Economic Prospects (2022).

Africa's overall economic performance remains one of the fastest growing continents. Ethiopia, Ghana and Côte d'Ivoire are three of the fastest growing economies globally in terms of increased GDP. Africa's growth is further helped by several East African countries contributing collectively through increased exports and cross-border trade to grow the region's economy.

There is an ever-growing need to finance infrastructure on the continent. Several countries are now prioritising this, recognizing the importance of industrialisation to not only maintain growth in their economies, but to also diversify through the exportation of goods and services. This has consequently created jobs that are needed for an increasing younger population. A developing industrial sector on the continent will require more infrastructure investment, particularly in power, water and transportation services that are already over stretched.

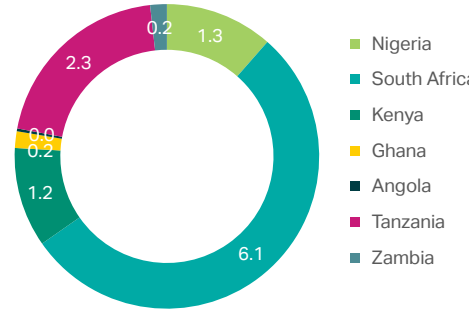
Economies within the region are projected to grow by an average of 3.9 per cent across 2023-2024, as predicted by the World Bank.

Africa GDP



Source: IMF, Trading Economics, World Bank

GDP from Construction USD Bn



Source: IMF, Trading Economics, World Bank

Asia

GDP from construction is expected to reach USD 111.3 trillion across Asia with China accounting for USD 823 billion. This equates to circa 4.64 per cent of all GDP generated from within the Chinese economy. Following China, Japan accounts for USD 215 billion of the overall construction market (4.35 per cent of GDP) and India accounts for a further USD 32 billion (1.01 per cent of GDP). Indonesia accounts for USD 18 billion (1.52 per cent of GDP), with South Korea contributing USD 16 billion (0.89 per cent of GDP). The construction markets of Malaysia, Kazakhstan and Cambodia make up the remaining output.

Like most regions across the globe, economic activity across Asia is expected to fall back during 2022, for similar reasons witnessed across other regions. Like Latin America, the Asian region has experienced a limited direct impact from the conflict in Ukraine due to the low levels of trade between the regions. However, the impact of rising food, energy and financing costs, together with the worsening fears of a global recession, has been seen across the continent. It is projected that growth will decline to 6.8 per cent in 2022, according to World Bank, Global Economic Prospects (2022).

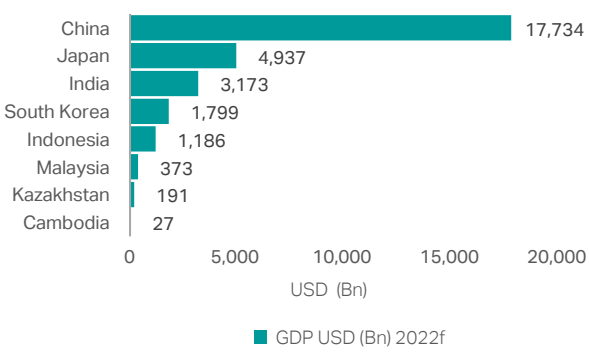
The region is facing downside risks in the form of job losses, resulting from the financial constraints impacting the wider economy, and more significantly, the impact of the rising cost of debt servicing, a consequence of rising interest rates. It is understood that further increases in commodities will add further to the increasing cost of food supply across Asia. Another specific risk within the region relates to energy dependency as many economies are reliant on importing energy from other economies that are facing the same challenges of rising prices and supply constraints.

As noted from a recent RICS Global Construction Monitor publication, the construction activity index for India remains strong.

General activity in Malaysia remains stagnant, however, of notable interest is that activity within the Malaysian infrastructure market is showing signs of double-digit growth, which would indicate that other market sectors in Malaysia are in decline. Looking closer at the Chinese market, which represents the largest market in the region, it is noted that market activity has fallen back significantly, mainly due to prolonged coronavirus lockdowns during 2022.

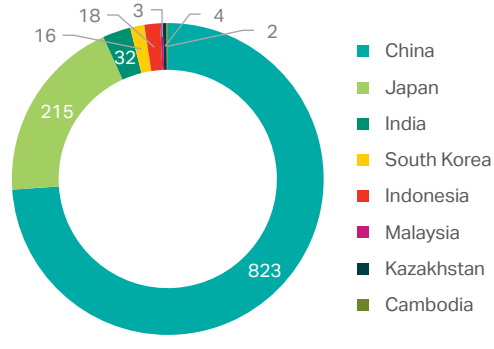
Despite, the persisting local and global challenges the economies within the region are projected to grow by 5.8 per cent in 2023, as projected by the World Bank.

Asia GDP



Source: IMF, Trading Economics, World Bank

GDP from Construction USD Bn



Source: IMF, Trading Economics, World Bank

Australasia

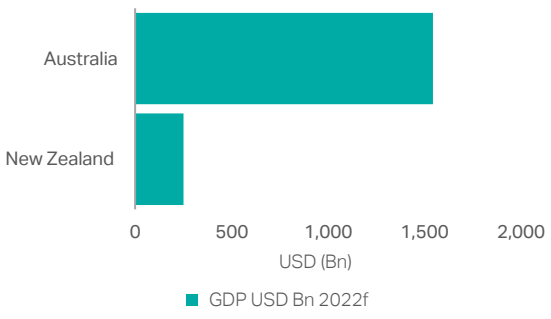
GDP from construction is expected to reach USD 28 billion across Australia and New Zealand, with Australia accounting for USD 25 billion. This equates to circa 1.62 per cent of all GDP generated from within the Australian economy. The remaining output value of USD 3 billion relates to the New Zealand market, which accounts for 1.20 per cent of total New Zealand GDP.

Following the establishment of a USD 11.2 billion National Reconstruction Fund, the Australian construction industry is expected to benefit from increased activity through the provision of finance. This is in the form of loans, equity investment or guarantees across various sectors with the aim of achieving sustainable growth. As a result, the Australian construction industry is expected to grow by 4.3 per cent during 2022 before moderating at 2.3 per cent from 2023-2026, according to Business Wire.

The government of New Zealand introduced the National Land Transport Programme which is a USD 24 billion plan for the period of 2021-2024. The programme is aimed towards the creation of an improved transportation system serving the country.

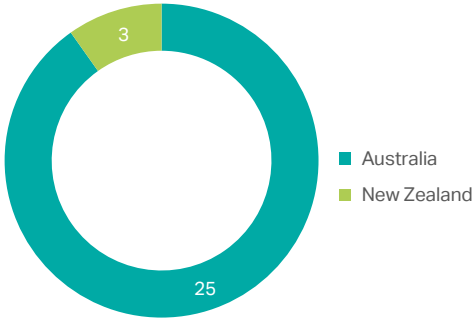
Included within the plan are public transport, road maintenance and improvements and walking/cycling routes. In addition, the market is active with on-going energy, infrastructure and residential projects. As a result, the New Zealand construction industry is expected to grow by 10.8 per cent during 2022, according to Business Wire.

Australasia GDP



Source: IMF, Trading Economics, World Bank

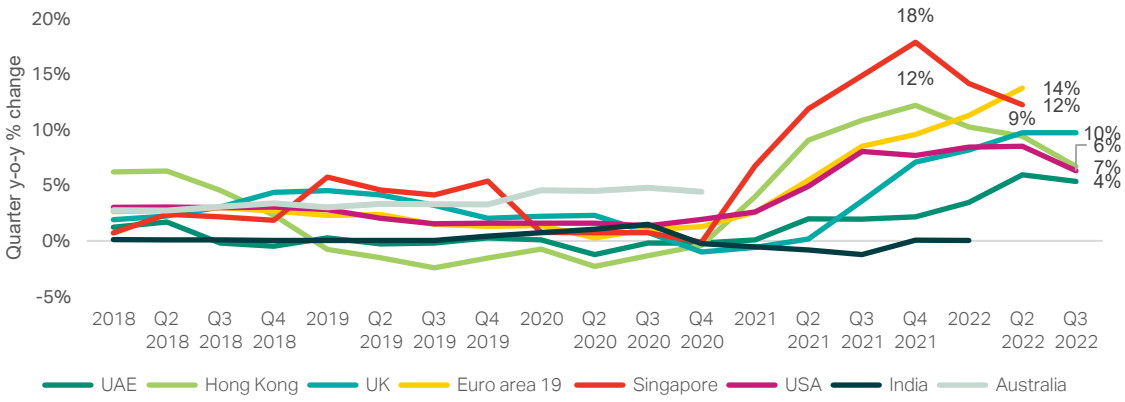
GDP from Construction USD Bn



Source: IMF, Trading Economics, World Bank

International construction cost inflation

International Construction Cost Indicators



Source: Based on AECOM Indices for UK, UAE; ENR USA Construction Cost Index; Singapore Building Construction Authority, Hong Kong Architectural Services Dept (Public Sector), Euroarea Eurostat Construction Output Index, India CIDC Construction Cost Index, AIQS Building Cost Index.

As building costs soar and economic uncertainty continues, double figure construction cost increases have been seen globally in 2022. The adjacent graph is a representation of quarter-on-quarter changes in construction costs across several construction cost indices in differing locations.

What this graph demonstrates is that the effect of construction inflation began to be felt internationally towards the beginning of 2021. This is around the time when the outfall of the pandemic induced economic and supply restrictions began to hit market pricing.

Surges in prices are expected to be subdued in 2023, and while construction output is still rising overall, the industry is seeing greater fragmentation in output and activity speeds across nations.

New and existing projects are feeling the effects of this new, higher cost of purchase environment. New projects are beginning to see viability and budget setting processes affected, especially those marginal projects already grappling with the high inflation landscape. Capital-intensive projects are likely to face greater hurdles given the risks associated with new-build projects and the ongoing pressures on budgets that are applicable to both public and private sectors. Projects that are more advanced are expected to be less affected as major purchases are typically in place and project viability established. However, funding and budget pressures in other aspects may lead to spill-overs into existing projects and their funding phases. Combined with the harmful effects of inflation on existing budgets and projects, the ripples flowing from this fiscal event is expected to continue in the construction industry for some time.

“As building costs soar and economic uncertainty continues, double figure construction cost increases have been seen globally in 2022.”

02 MENA market review

IN BRIEF

MENA economic review

As of Q3 2022, the International Monetary Fund (IMF) forecasted the Middle East and North Africa (MENA) regions' GDP to grow by 4.95 per cent for full year 2022. This represents an increase from 4.49 per cent reported in 2021, indicating a continued increase of economic activity and recovery post-coronavirus. Despite this, the overall MENA region continues to have an uneven recovery across its markets and countries, reinforced by the factors affecting global economies and by the disparity of available fiscal stimulus between oil importing and exporting countries.

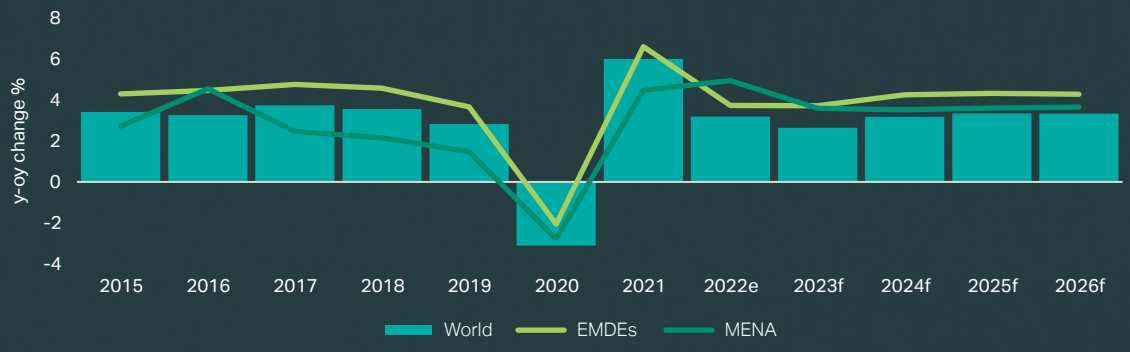
In the Middle East, Saudi Arabia, the United Arab Emirates (UAE), Qatar, Oman, Bahrain, Iran, Iraq, Syria, Kuwait and Yemen, account for approximately 48 per cent of the world's proven oil reserves and circa 38 per cent of natural gas reserves. These countries are known as oil exporting countries and during periods of high oil prices (e.g. 2021-2022) their economic outlook becomes bolstered as fiscal surpluses are created and they become somewhat sheltered from the economic risks attributed to the rest of the world. This fiscal surplus provides considerable easing in terms of economic recovery and with the current and continued high oil prices at the centre of the Middle East's growth, it is allowing for greater fiscal flexibility and confidence in investment and the funding of diversification efforts across the GCC member states.

In contrast, the Middle Eastern oil importing countries such as Egypt, Jordan and Lebanon are under substantial economic burden in comparison to their oil exporting counterparts. Despite this, Egypt's economic outlook has remained positive, largely due to structural and economic reforms made pre-coronavirus, as well as continued investments in its infrastructure and mega-projects. This is despite the concerns of food security, inflation and foreign exchange challenges.

The graph on the adjacent page shows the MENA GDP growth rate in comparison to emerging markets and developing economies. This is also tracked against the overall world economy from 2015 and forecasted to 2025. According to the IMF, the MENA region's GDP is expected to maintain its growth levels between 2022 and 2025.

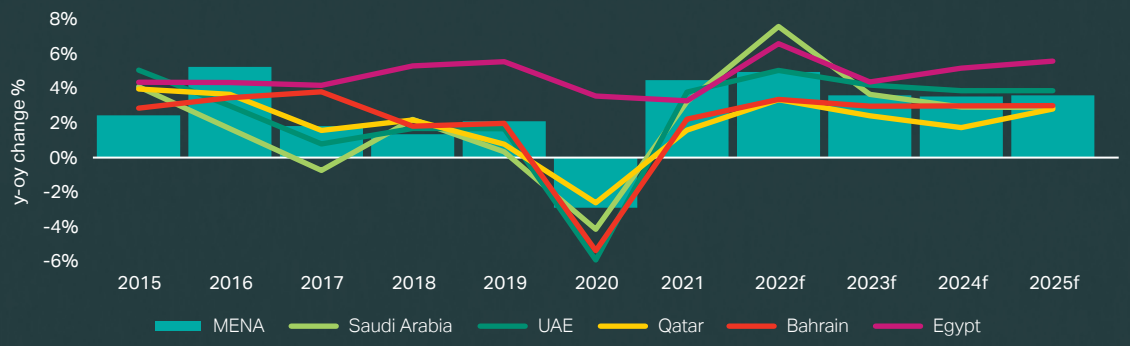
Although MENA's economic recovery has continued throughout 2022, the slowing global economy, increased commodity prices furthered by the war in Ukraine and the tightening of global financial conditions, has caused outlooks to remain subdued for 2023.

World, EMDEs and MENA, GDP growth at constant prices



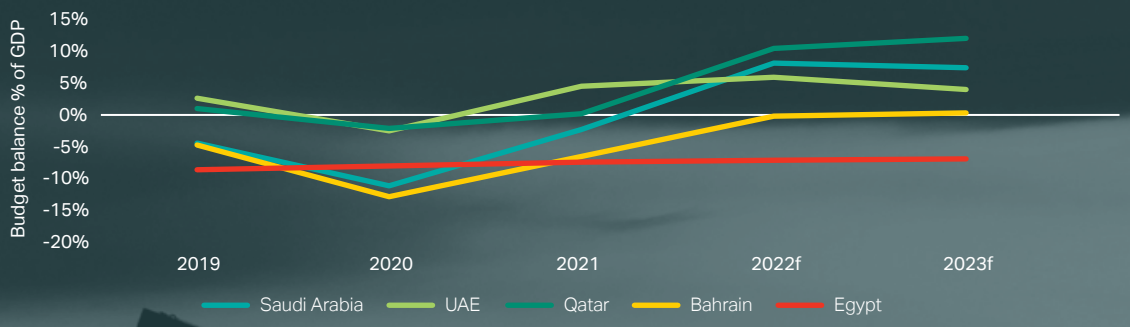
Source: IMF, World Economic Outlook Database, October 2022

Selected MENA countries, GDP growth at constant prices



Source: IMF, World Economic Outlook Database, October 2022

Budget balance % GDP for selected MENA countries



Source: Haver Analytics, National Sources, Emirates NBD Research July 2022

2022 MENA country statistics

Below is a reference to key data for MENA countries in 2022. It presents statistical growth and forecasts for 2022, and in some instances, through to the end of the review period 2027. The table identifies the country's GDP value, import and exports against GDP and population growth.

	Algeria	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Oman	Qatar	KSA	UAE
Land area, '000 km² (1)	2,381.7	0.8	995.5	1,628.8	434.1	88.8	17.8	309.5	11.6	2,149.7	71.0
Capital city	Algiers	Manama	Cairo	Tehran	Baghdad	Amman	Kuwait	Muscat	Doha	Riyadh	Abu Dhabi
Population, million, 2022f (2)	45.1	1.5	104.1	85.7	42.2	10.3	4.8	4.6	2.7	36.2	10.5
Population growth, CAGR 2022-2027 (CAGR %) (2)	1.4	2.1	2.0	1.0	2.6	0.2	1.7	3.2	-1.2	2.0	1.6
GDP, USD, billion, current, 2022f (2)	187.2	43.5	469.1	1,973.7	282.9	48.1	183.6	109.0	221.4	1,010.6	503.9
Real GDP growth (2021-2022), % (2)	3.7	2.4	5.6	2.0	8.3	1.4	7.7	3.4	2.4	6.6	4.1
Real GDP growth, 2021-2026 pa forecast (2)	0.9	2.0	4.8	1.0	1.3	2.3	1.6	1.5	1.7	1.9	3.0
GDP/ Capita (PPP), USD, 2022f (2)	4,151	28,692	4,504	23,034	6,696	4,666	38,123	23,542	82,887	27,941	47,793
Net lending/ borrowing, 2022f % of GDP (2)	-12.3	-4.7	-6.2	-4.2	11.1	-5.9	14.1	5.5	12.5	5.5	7.7
Volume of imports of goods & services, % of GDP (2)	-2.9	0.8	5.2	6.5	-	8.6	20.3	11.6	3.4	1.9	12.8
Volume of exports of goods & services, % of GDP (2)	-0.2	3.5	27.1	13.7	-	16.0	12.2	11.0	3.6	10.6	6.1
Account balance, USD, billion, current (2)	11.6	3.7	-17.0	32.0	46.1	-3.2	53.3	6.7	46.9	161.5	74.2
Unemployment rate, % of total labour force (2)	-	5.5	7.3	9.4	-	-	-	-	-	-	-

Source: (1) World Bank (2) IMF

MENA economic challenges and risks

The MENA region will continue to face specific challenges in 2023, especially as governments continue to manage economic recovery post-pandemic. Factors such as political instability, extreme unemployment, economic uncertainty, economic relief disparity and the ongoing conflicts in countries such as Ukraine, Syria and Yemen, all remain challenges to the stability and recovery of the region. The MENA region is noted as being especially vulnerable and it continues to require swift and effective reforms to prevent further financial economic impacts and to expedite recovery in 2023.

The key risks associated with the MENA region include:

MENA construction market review

The overall outlook for the MENA region's construction sector continues to remain optimistic, bolstered by the GCC's improving fiscal situation as oil prices remain buoyant.

Considerable prospects continue to be forecasted in KSA, the UAE and Egypt and are set to pave the way forward in the region.

The ongoing driving force behind the MENA region's construction resilience is the need to diversify and develop their economies to meet the demands of its rapidly growing population, and overall, lessen its economic reliance on finite and economically volatile fossil fuels.

The pipeline of projects across the Gulf is estimated at around USD 3.1 trillion, with the GCC equating to over 81 per cent (USD 2.5 trillion) of this market value. The largest segment of construction projects remains in transportation infrastructure and building real estate, including the development of schools, hospitals and social infrastructure to advance existing and growing populations.

According to MEED, Middle East project awards for 2022 is set to increase by another 20 per cent compared to awards in 2021 (based on Q3 2022 data). This indicates construction activity in the region is beginning to reach pre-pandemic levels of 2018/2019 and is a further positive increase from the 22 per cent experienced between 2020 to 2021.

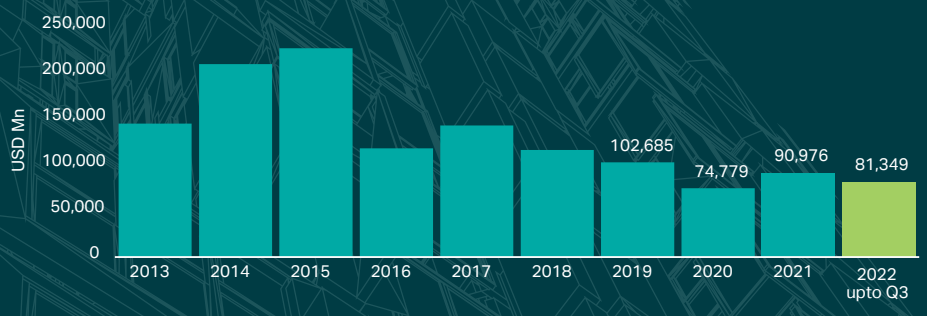
Considerable project awards in non-energy construction have begun to be seen this year, especially in KSA with an increase of 158 per cent compared to the same period the previous year (2021). Awards in Egypt are up 254 per cent, the UAE is up 62 per cent, and as anticipated, Qatar's market has softened, posting a decline of 49 per cent during 2022 whilst approaching the World Cup.

In KSA, development parties in the region are focused on the expansion of its infrastructure to support the development and expansion of its PIF led giga-project programs. The UAE has awarded 62 per cent more projects than in the same period last year, 2021, with a marked focus on the building sector and residential real estate.

This indicates an upward trend in project activity post the challenges faced during the pandemic and following on from the positive impact of Expo 2020. Although we are seeing a downturn in Qatar's project awards, the aviation sector is set to increase with ongoing Hamad International Airport terminal and cargo expansions set for 2023 and onwards.

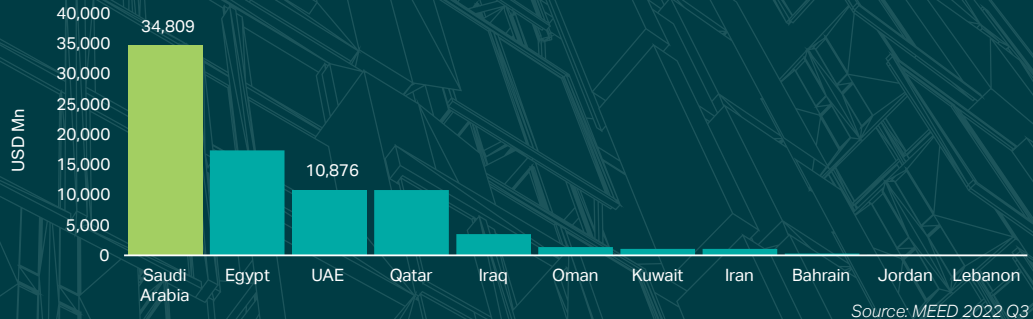
Project awards are expected to grow further looking to 2023. This is bolstered by Saudi Arabia's Vision 2030, Egypt's continued commitment to infrastructure, the increased business sentiment following Expo 2020, buoyant oil prices, and the overall effect of the global economic recovery.

MENA projects awarded yearly



Source: MEED 2022 Q3

MENA projects awarded 2022



Source: MEED 2022 Q3

MENA awarded contracts

The country with the highest value of awarded projects in 2022 was Saudi Arabia, with an approximate total of USD 35 billion (tracked to end Q3 2022). This equates to a 43 per cent market share (recorded by MEED). This was followed by Egypt with USD 17.4 billion — a 21 per cent market share. In third place was the United Arab Emirates with USD 10.8 billion, equating to a 13 per cent market share.

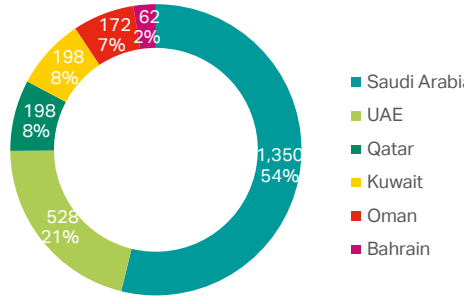
The busiest sector for project awards was transport infrastructure which saw a 28 per cent share, followed by building construction at 17 per cent. Oil projects came in third with 15 per cent, power projects were at 14 per cent and gas projects 12 per cent.

Of Saudi Arabia's USD 35 billion investments this year, USD 8.8 billion was committed to the commencement of infrastructure packages for the Government/PIF led NEOM giga-project, Diriyah Gate Development Authority (DGDA), Rus al-Madinah Holding (RMH), Royal Commission of Riyadh City (RCRC) and The Red Sea Development Company (TRSDC). This signals a continued commitment to their ambitious diversification plans and enabling works for major construction builds that lead into 2023 and beyond.

According to MEED, a further USD 16.5 billion was awarded for buildings (5bn), power (5.5bn), industrial (2bn), water (3bn) and chemical (1bn) projects. With key projects awarded for Qiddiya Water Park, King Salman International Park – Royal Art Complex, Phase 2 of ACWA's Renewable Energy Program, Saudi Water Partnership Company's (SWPC) Shuaibah reverse-osmosis desalination plant and LUCID's Electric Car Manufacturing Plant, further highlighting the extent of the Kingdom's diversification efforts.

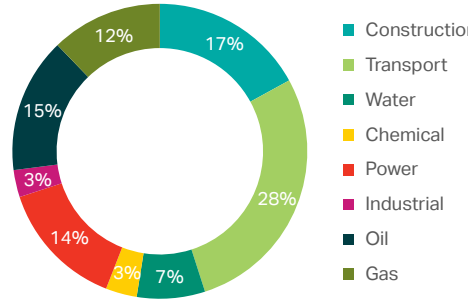
In Egypt, USD 10 billion of its USD 17.4 billion that was recorded in 2022, compromised projects relating to the expansion of its high-speed rail network. A consortium made up of Siemens Mobility, Orascom Construction and The Arab Contractors signed contracts with

GCC Construction Market Value 2022



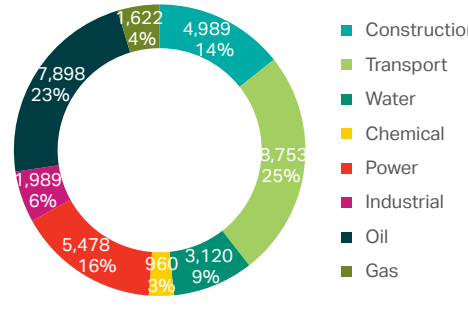
Source: Global Data/BMI Research

Gulf project awards % 2022



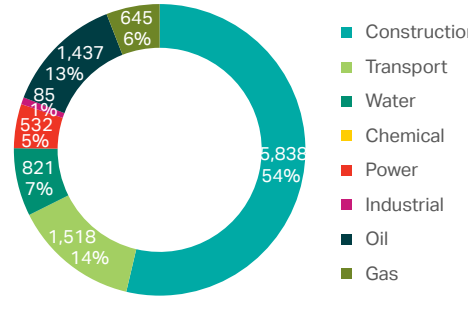
Source: MEED 2022 Q1-Q3

KSA project awards % 2022



Source: MEED 2022 Q1-Q3

UAE project awards % 2022



Source: MEED 2022 Q1-Q3

the Egyptian National Authority for Tunnels (NAT) to design, install, commission and maintain a 1,800 kilometre high-speed rail network. Other key awards were in the power sector with the USD 2.2 billion Atomstroyexport - El Dabaa 48000MW Nuclear Power Plant, Nuclear Island (Block 2) project awarded to Korea Hydro & Nuclear Power Co. and the award of the USD 1.5 billion Egyptian Electricity Transmission Company (EETC) - 1.1 GW Wind Independent Power Project (IPP). These projects signify Egypt's continued investment in strategically important projects to meet the Government's vision for 2030.

The UAE saw USD 7.4 billion of its USD 10.8 billion awarded to building and infrastructure works in Q3 2022. This mainly consisted of residential housing projects with key developers awarding the following values; Aldar USD 0.69 billion, Emaar USD 0.42 billion, Damac USD 0.41, Nakheel USD 0.4 billion, ARADA USD 0.34 billion. Other key projects were awarded for Abu Dhabi Ports - CMA Terminals Khalifa Port: Phase 2, Binghatti Developers - Burj Binghatti Jacob & Co Residences and Miral - Natural History Museum Saadiyat Island. The outlook for the UAE remains prosperous due to the boosted tourism and property purchases following the start of the Ukraine-Russia conflict, increased activity in upstream sour gas production, reworked metro and rail expansions and the reignition of shelved development projects. In addition, its commitment to the development of technology companies, also helps set the nation up for positive growth in acute juxtaposition to the many struggling economies across the globe.

As reported by MEED, of Qatar's USD 10.8 billion in awarded projects, circa USD 6.8 billion, was recorded for gas projects as they look to increase production as part of their long-term expansion strategy to boost LNG capacity by 64 per cent for 2027. Further investments were seen in Sewage Treatment Works in Al Wakrah and Al Wukair as part of Qatar's first Public Private Partnership in the field of sewage network projects.

Amidst political restrictions in Kuwait, the Public Authority for Industry (PAI) has awarded the infrastructure package for Shaddadiya Industrial Area Zone to United Gulf Construction and signals a step forward in providing 1,036 industrial plots, ranging from 1,000 to 10,000 square meters for food, chemical and industrial activities.

In Oman, improved oil prices have seen increased construction activity in 2022, for example the joint venture between Oman Tourism Development Company (OMRAN Group) and Diamond Developers, named Sustainable Development and Investment Company (SDIC). This group awarded packages for Phase 1 of the USD 1.0 billion Yiti Sustainable City project.

Key awards in Bahrain saw Al Sorouh award the Avenues Mall Phase 2 Expansion project to Nass Group, along with several other social apartments and infrastructure improvement projects. Looking across the pipeline of projects, the launch of Bahrain's USD 30 billion Strategic Projects Plan in late 2021, that is set to increase the total land area by more than 60 per cent, and the tendering of USD 3.5 billion King Hamad Causeway project as a public-private partnership, show considerable prospects in the country in the journey to realise its Economic Vision 2030. Furthermore, in conjunction with Bahrain being known as a gateway country for business in Saudi Arabia, the considerable uplift in business activity in Saudi Arabia means that the outlook for the country is expected to remain strong for years to come.

The busiest sector for project awards was the transport infrastructure sector which saw a 28 per cent share."

Top five awarded contracts in 2022

SAUDI ARABIA

Awarded project name	Contractor	Value USD Mn
NEOM – NEOM City: Backbone Infrastructure: Drill and Blast Running Tunnels	Shibh Al Jazira Contracting, FCC Construction, China State Construction Engineering Corporation	2,780
ACWA - Renewable Energy Program: Phase 2:2600 MW Shuaibah 2 Solar PV Power Plant	China Energy Engineering Corp	2,700
NEOM– NEOM City: Backbone Infrastructure: Cut and Cover Tunnel Section	Hyundai Engineering, Samsung Engineering, Archirodon	1,850
KSPF - King Salman International Park: Royal Art Complex	Modern Building Leaders	1,333
DGDA - Diriyah Gate Development: Super Basement	Webuild	1,070

EGYPT

Awarded project name	Contractor	Value USD Mn
NAT - High Speed Rail Network: Greater Cairo-Aswan Railway Line (Phase 2)	Siemens, The Arab Contractors, Orascom Construction	8,000
Atomstroyexport - El Dabaa Nuclear Power Plant 4800 MW: Nuclear Island (Block 2)	Korea Hydro & Nuclear Power Co	2,200
NAT - High Speed Rail Network: Luxor-Hurghada Railway Line (Phase 3)	Siemens, The Arab Contractors, Orascom Construction	2,000
EETC - 1.1 GW Wind Independent Power Project (IPP)		1,500
UC Developments - East Tower at New Administrative Capital	Dorra Contracting	330

UAE

Awarded project name	Contractor	Value USD Mn
Abu Dhabi Ports - CMA Terminals Khalifa Port: Phase 2	China Harbour Engineering Company	560
Aldar Properties - Alreeman 2 Mixed-Use Development: Fay Alreeman	United Engineering Construction	435
Miral - Saadiyat Island: Natural History Museum	ALEC	400
Binghatti Developers - Business Bay: Burj Binghatti Jacob & Co Residences	Granada Europe Engineering Contracting	400
EWEC - Al Mirfa Second IWP	Sidem	320

QATAR

Awarded project name	Contractor	Value USD Mn
ASHGHAL – Al Wakrah and Al Wukair STP	Metito - Mitsubishi (Japan) & UCC (local)	1,480
Chevron Phillips Chemical/Qatar Energy - RLPP: Early Site Works	Consolidated Contractors Company	280
Qatar Energy - 417MW Solar Power Plant in Mesaieed Industrial City	Samsung C&T	200
Qatar Energy - 458MW Solar PV in Ras Laffan Industrial City	Samsung C&T	200
ASHGHAL - Road Improvement Works Out of Greater Doha Phase 7	Al-Mohannadi for Leveling and Paving Roads	58

Source: MEED

MENA construction considerations

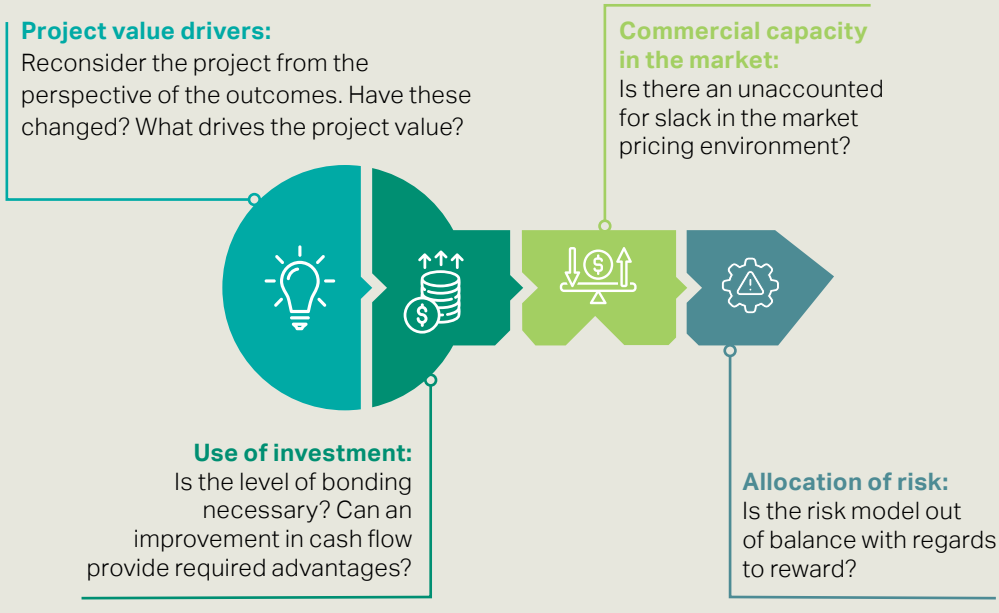
The growth of the construction market will continue to depend on MENA governments implementing stimulus packages for 2023 and beyond.

The pandemic caused many set backs in construction activity and has provided new focus and opportunities as businesses are now realigning to drive new efficiencies and help rebuild broken supply chains and seek more collaborative approaches.

An important lesson learned from 2021 and 2022 cautions that contractual parties need to diligently review and understand the relief provisions within construction contracts. In MENA (particularly the Middle East), it is common to see standard contract terms and conditions adapted and amended; this will be an important consideration with certain provisions, like Force Majeure (which typically does not explicitly list pandemics and epidemics), to be amended to ensure a balance of risk between the parties.

There are revised mindsets across construction markets as clients and construction organizations battle with market price volatility and delays to project execution and delivery, specifically over the last two years. This is encouraging certain developers and contractors to renegotiate existing prices (as contracts allow) and focus on commercial considerations during contract renegotiation. Overall, there is a focus to improve transparency, encourage healthier agreements between client and contractors, and enhance the procurement stance of projects in the region. However, the RICS emphasizes that during negotiations certain considerations should be made, such as reviewing project value drivers, assessing capacity within the construction market and allocating risk. The allocation of risk and overall security should be key considerations during the review and decision-making process.

Key considerations:



MENA construction—strengths, weaknesses, opportunities and threats

Post-pandemic, and leading into 2023, a new normal is expected in the region with an opportunity for transparency, trust and a collaborative approach within supply chains and between stakeholders.

The change is anticipated to see greater cashflow management and improvements to contractual terms and conditions.

Looking at the key strengths, weaknesses, opportunities and threats for construction in the region, it is clear there are many strengths and opportunities set to support the buoyancy and growth of the MENA construction market moving into 2023. However, this is expected to be disproportionate across countries.

Strengths

- Capability of delivering complex and bespoke structures.
- Diversification and government incentive to invest.
- Creating and providing employment opportunities.
- Supporting local talent and industries.
- Economic value creation.
- International input/ supply/location/ability to import.
- Construction speed.
- Reduced bureaucracy.
- Cheaper cost of labour.

Opportunities

- Sustainable construction processes.
- New business markets.
- Collaboration among industry stakeholders.
- Digital transformation.
- New materials/ construction techniques.
- Encouraging career opportunities for young graduates.
- International investment.
- ESG funding.
- Public Private Partnerships.
- Modular construction.

Weaknesses

- Payment delays.
- Procurement timescales and awarding contracts before design completion.
- Carbon emission and environmental impact.
- Missed opportunities for lessons learnt from project to project.
- Resources, transient population/talent gap.
- Safety issues.
- Cyber security.
- Quality issues.
- Lack of skilled labour.

Threats

- Continued coronavirus restrictions.
- Supply chain disruptions.
- New pandemic variants.
- Delay of adopting new technology and missed innovation opportunities.
- Communication.
- Precedence of contract awards to lowest price.
- Mis-use of value engineering with a risk to quality.
- Inflation/escalation.

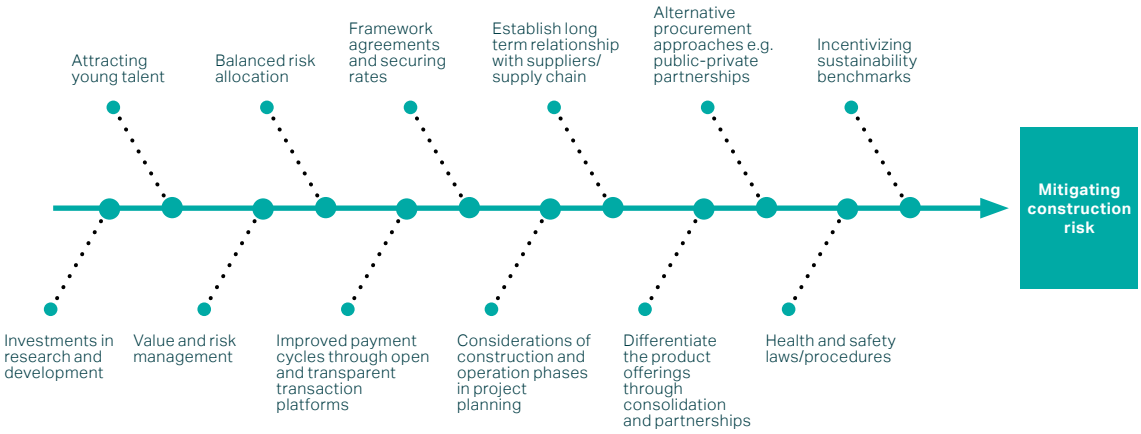
MENA construction risk mitigation

In terms of weaknesses and threats, significant challenges remain to the construction market and its successful delivery and recovery.

One of the key challenges to be faced in 2023 is the pandemic-induced escalation of commodity prices. Notably, since the start of 2021, average prices for steel (structures and reinforcements), aluminium, copper and chemicals remain elevated regionally and across the globe.

According to a MEED report, 'as the construction industry grapples with higher costs, clear communication and consensual project adjustments are key to addressing stakeholder interests'.

Some of the key topics leading into 2023, in terms of recovery and mitigating risk in the MENA region, are:



MENA construction trends and prospects

Key trends and opportunities seen in the region include:

Green environment and technology
In parallel to other regions, carbon footprints and fighting climate change will present new opportunities on the horizon. Especially as the overall construction industry is a key benefactor in the matter of environmental conservation.

Innovation and modernization
This is a rising trend focusing on the manufacturing of construction building equipment and materials, with a drive for greater quality of work and cost-effective solutions. New innovative IT delivery will look at evolving the construction industry; improving general service delivery and modernizing buildings, with a fresh safety viewpoint.

Safety
Safety is a focal point on all projects for both construction workers and the public. Revised safety regulations will soon be applied to construction equipment and machinery on future construction projects by contractors and developers alike. With the focus on reducing the spread of coronavirus still present as we head into 2023, maintaining newly adopted safety protocols are essential in ensuring construction sites remain operational.

Infrastructure
This will remain in the spotlight across the MENA region, with countries highlighting the service market through stimulus packages, which will also aid the construction recovery in 2023.

Living materials
There is a new trend around the development of living materials being applied to construction, such as when biological materials are used to support concrete construction, insulation and flooring such as 'bacteria' and 'fungi' in replacement for far less sustainable materials.

Remote technology
As a rising trend through 2022, assisted by the issue of remote working, remote technologies help to mitigate problems with administrative and building construction works. An example of this is how the use of drones within the construction industry is on the rise, assisting in the quantification process and identifying and mitigating safety hazards.

3D printing
This has already taken off within the construction industry and looks to grow at a record pace in 2023.

Supply chain diversification
As a lesson learned from the pandemic, contractors had little choice but to pay premium prices for materials and alternative suppliers due to the disruptions caused. 2023 will further see stakeholders in the construction industry re-evaluating and streamlining current procurement relationships. This may come with a risk in coordination, however, the industry envisages cost efficiencies through diversification.

KSA review

The Kingdom of Saudi Arabia's (KSA) spending budget for 2023 has been approved at USD 295 billion (circa 16 per cent increase on 2022's spend of USD 255 billion) and is expected to post another budget surplus as it continues to stabilize public spending amidst boosted revenues from higher oil prices.

After posting its first fiscal surplus in nearly a decade in 2022 (preliminary estimate USD 27 billion, 2.6 per cent of GDP), the Kingdom's finance ministry forecasts to achieve a surplus of USD 4.25 billion or 0.4 per cent of GDP in 2023.

This is considered somewhat subdued compared to the previous year's surplus, but as analysts suggest, the expected revenues are considered modest and based on oil prices that are much lower than what is forecast for the year ahead.

The IMF recognises Saudi Arabia as one of the world's fastest-growing economies in 2022, with sweeping pro-business reforms, a sharp rise in oil prices and recovery of oil production power. GDP is expected to expand by 7.6 per cent 2022, the fastest growth in almost a decade and forecasts growth at 3.6 per cent for 2023.

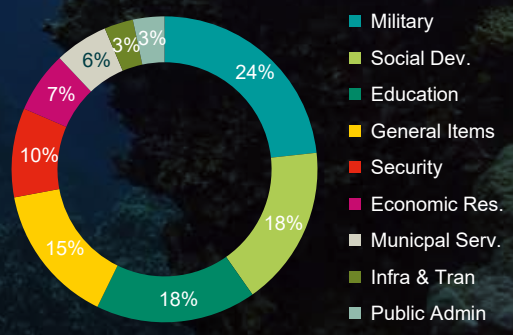
Oil prices play a pivotal role in the country's economy with around 40 per cent of Saudi Arabia's GDP attributed to oil. In 2022, oil prices were expected to stabilize and somewhat reduce from peaks seen in 2021, but as the Russia-Ukraine conflict unfolded, brent crude moved above USD 139 per barrel in March 2022 amongst fears of supply shortages. In addition, as the demand for fuels depressed, largely due to China's reduced industrial and economic output from strict lockdowns, oil prices began to subside. With Saudi Arabia playing a leading role in OPEC as it makes up around one-third of the organisations oil reserves, it is pivotal in decision-making for production policy.

As oil prices reduced in 2022, this was when the decision was made by OPEC members to cut production, despite the pressures from the US to keep oil prices buoyant. Although the gains in oil prices in 2022 are now at around levels seen at the beginning of the year, the outlook for oil remains positive for 2023 as the global demand is expected to increase alongside the lifting restrictions in China.

In construction, KSA will continue to contribute the largest volume of new construction project opportunities in the MENA region in 2023. The major catalyst for this investment is KSA's Vision 2030 that fronts the estimated USD 1,350 billion of construction projects currently planned in the Kingdom.

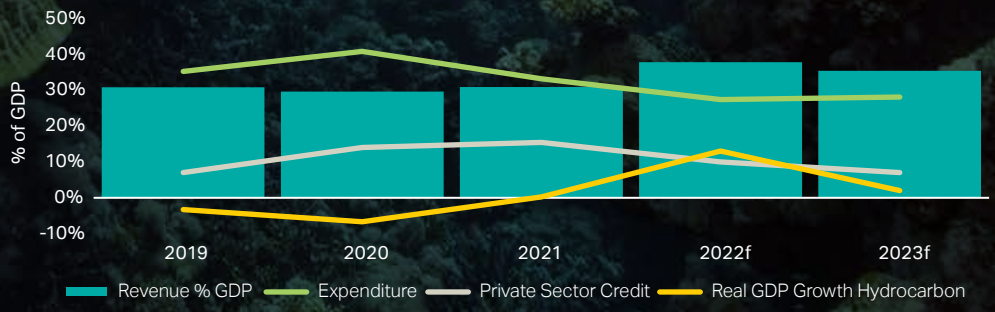
Saudi's Crown Prince, His Royal Highness Mohammed bin Salman, launched Vision 2030 in 2016 with the aim of dramatically transforming and modernizing Saudi Arabia and reducing its economic reliance on oil revenues. This strategy outlines economic and financial reforms and looks to utilise the country's investment power to create a thriving, diverse and sustainable economy for its population. Leading this drive is the Public Investment Fund, the Kingdom's sovereign wealth fund, which has disclosed plans to invest up to USD 266 billion into new projects by 2025.

Saudi Arabia Budget Expenditure 2023



Source: Saudi Arabia MoF

Saudi Arabia key economic forecasts



Source: Haver Analytics, Emirates NBD Research July 2022

KSA key developments overview

Key projects that are paving the way for the Kingdom's Vision 2030 are:

NEOM: At the center of Saudi Arabia's Vision 2030 program, NEOM is a new futuristic mega-city located in northwest Saudi Arabia, on the Red Sea coast. It has a total estimated value of USD 500 billion. NEOM is expected to host a population of more than one million and is set to be a hub for innovation and a sustainable ecosystem for working and living.

The Red Sea Project: Set across 28,000km^2 and nine islands, this giga-project is underway. Consisting of 50 hotels (circa 8,000 keys), a new airport and leisure and lifestyle facilities served by 75km of new roads.

AMAALA: An ultra-luxury tourism project, spanning over 4,100km^2 and will include 2,500 hotel rooms, estate homes and 800 villas. The target is for an operational zero-carbon footprint with the project tracking more than 15 sustainability criteria.

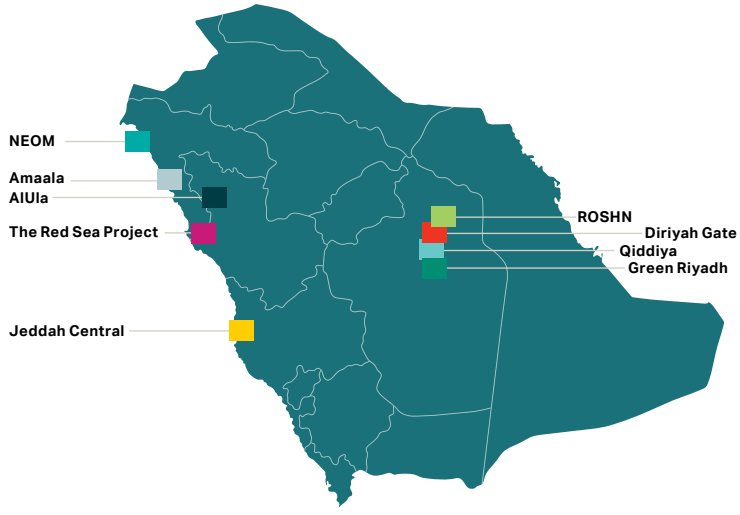
Diriyah Gate: A USD 50 billion mixed-use historic, cultural and lifestyle destination west of Riyadh. The project's intent is to showcase Saudi Arabia's 300+ year history through a set of heritage, hospitality, education, retail and dining experiences for residents, tourists and frequent visitors.

Qiddiya: An entertainment, sports and arts hub, located in southwest Riyadh. Qiddiya is set to include a Six Flags theme park, FIA grade-one racetrack, a Jack Nicolas golf course and several arts and cultural centers.

ROSHN: Around USD 90 billion has been assigned to create large-scale modern and integrated communities for Saudi nationals in nine cities across four regions in KSA. The project has a goal to increase the rate of home ownership to 70 per cent. The first contract to be signed is a 3,000-home community, including associated infrastructure, in North Riyadh close to King Khalid International Airport.

AlUla: As a cornerstone of the Kingdom's cultural and touristic ambitions, the AlUla project looks to develop one of country's most important archaeological and cultural destinations and prepare it to welcome visitors from around the world. This major investment aims to make the AlUla region the Kingdom's cultural capital and another key tourist destination.

Green Riyadh: A large-scale urban forestation project across Riyadh city to plant circa 7.5 million trees in 3,330 neighbourhoods, 43 parks, 9,000 mosques, 6,000 schools, 64 universities, 390 healthcare facilities and 1,670 public facilities. Trees will also line 16,400 kilometres of streets, roads, utility lines (pylons, oil pipelines, etc.) and 272 kilometres of valleys.



KSA schemes

	NEOM	ROSHN	King Salman International Park	Jeddah Central	Diriyah Gate	TRSDC	AlUla	Rua Al Madinah	Qiddiya	AMAALA	Saudi Entertainment Ventures	Asir Project	Boutique
Value USD Bn	500.0	90.0	23.0	20.0	20.0	16.0	15.0	10.0	8.8	5.1	5.0	3.0	1.5
Awarded USD Bn	13.4	0.7	0.0	0.3	2.9	6.6	0.4	1.0	2.3	1.7	0.2	0.3	0.0

KSA schemes value USDbn

Source: MEED

KSA schemes awarded value USDbn

Source: MEED

Kingdom of Saudi Arabia

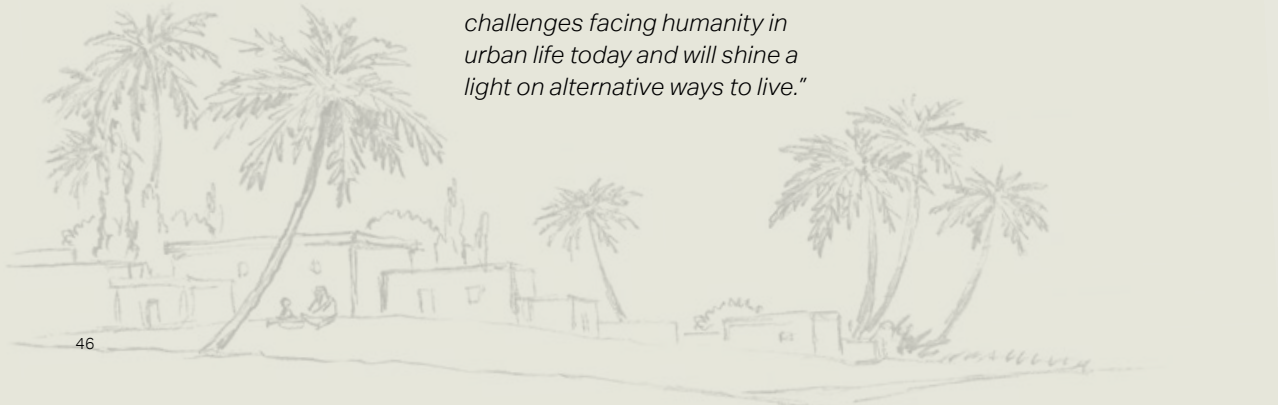
Highlights 2022

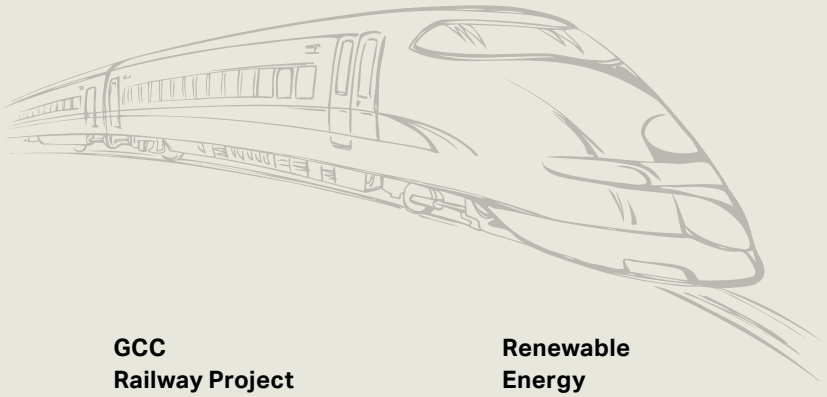
NEOM The Line

In July 2022, His Royal Highness Mohammed bin Salman, Crown Prince and Chairman of the NEOM Board of Directors, announced the designs of The Line, its city of the future in NEOM. HRH Crown Prince Mohammed bin Salman said: *"At The Line's launch last year, we committed to a civilizational revolution that puts humans first based on a radical change in urban planning. The designs revealed today for the city's vertically layered communities will challenge the traditional flat, horizontal cities and create a model for nature preservation and enhanced human liveability. The Line will tackle the challenges facing humanity in urban life today and will shine a light on alternative ways to live."*

NEOM Trojena Asian Winter Games 2029

At the 41st OCA General Assembly on 4 October 2022 in Phnom Penh, Cambodia, Saudi Arabia won the bid to host the 2029 Asian Winter Games. This is planned to be held at the Trojena Development as part of the NEOM giga-project and is expected to be completed by 2027. The year-round destination is expected to comprise a ski village, nature reserves, luxury hotels, wellness resorts, retail stores and restaurants. In addition it will host various sporting activities, including skiing, water sports and mountain biking.





GCC Railway Project

In December 2021, the GCC supreme council approved the establishment of the GCC Rail Authority, which began activity in June 2022 to oversee and manage the implementation and integration of the region's railway network. The network is expected to run from Kuwait City through to Saudi Arabia via Jubail and Dammam, and then on to linking the major cities of Manama in Bahrain, Doha in Qatar and the UAE cities of Abu Dhabi, Dubai and Fujairah before reaching Muscat, Oman. Other countries in the Middle East, such as the UAE and Qatar, have also taken steps to develop their domestics rail networks in 2022.

Renewable Energy

In November 2022, Saudi Arabia's Energy Minister, Prince Abdulaziz bin Salman, as part of the Saudi Green Initiative at COP27, announced that Saudi Arabia will host the MENA Climate Week in 2023. As Saudi Arabia looks to finalise plans for developing 10 more new renewable energy projects and connect an additional 840 megawatts of solar PV to its power grid, the Minister called for action in the form of practical solutions and creating more opportunities to pool resources and collaborate to overcome challenges together. As part of Saudi Arabia's Vision 2030, renewable energy is a central subject as plans have been announced for more than USD 100 billion investments in renewable energy projects with the strategic aim to produce 50 per cent of its electricity from renewables by 2030.

NEOM Green Hydrogen Project

Hydrogen is considered to be a renewable or "green" fuel, especially if its electricity comes from renewable sources, because it is able to be produced without CO_2 emissions. In March 2022, Saudi Arabia commenced construction on a USD 5 billion wind and solar powered hydrogen plant at NEOM. The facility is planned to be on stream by 2026 and is expected to produce up to 600 tonnes of green hydrogen per day, making it one of the largest hydrogen plants in the world. At the end of 2021, Saudi Arabia's Energy Minister, Prince Abdulaziz bin Salman Al-Saud, said the Kingdom has plans to be the biggest producer of hydrogen in the world as it aims to produce 2.9 million tonnes per annum (tpa) by 2030 and 4m tpa by 2035.

KSA: Key challenges in 2023

Inflation

- Oil/energy prices
- Metal prices
- Timber prices
- Cost of living
- Salaries
- Supply/transportation costs
- Pricing of risk
- Readiness of supply chains

Resourcing

- Mobilisation
- Staff retention/attrition
- Resource capacity
- Availability in the market
- Unknown contracting capacity
- Accommodation

Competition

- Unviable award prices
- Tendering rates at historic norms
- Contractor liquidity
- Focus of contractors on securing works over delivery
- Risk adverse pricing

The major challenges for the KSA construction market are centred around inflation, readiness of supply chains to meet local cities and remote location demands, and the ability to attract private sector and foreign investment.

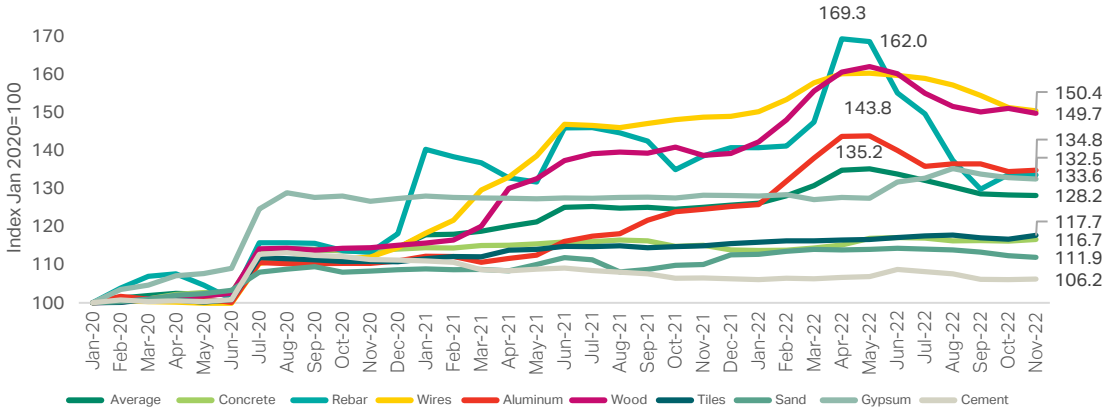
As Saudi Arabia's ambitious plans begin to move from inception and design phases to construction, the market is expected to further experience some of the following challenges:

- Ability and willingness of contractors to fix prices and fluctuation clauses. This will need more collaborative procurement and sharing of risk.
- Impacts on lead times and therefore schedule, as the industry adapts to find alternative markets for materials e.g. aluminium, steel, rebar, timber.
- Works that are considered competitive bids are routinely being undercut, raising further concerns about financial stability. This means a higher risk of insolvencies.
- Global supply disruptions put further pressures on supply certainty and pricing. Sea freight capacity and costs are currently lower than the peak reached in September 2021, but costs remain considerably higher than industry norms due to inflationary pressures and ongoing pandemic restrictions in China.
- Securing of supply: Considerations should be given to potentially placing advanced orders/payments for specific materials up front where there is enough certainty on scope and specification to be able to do so with confidence, as ongoing price escalations continue to be an issue.
- Industry draw and focus on giga-project growth, leading to difficulties in staff retention and therefore project continuity as schemes become under-resourced and leading to potential negligent contracts.

KSA construction material price inflation

Highlighting the impacts of material price inflation during 2022, data from the General Authority for Statistics Kingdom of Saudi Arabia allows us to demonstrate the extent to which the global economic volatility has had on local and regional markets.

KSA Construction Material Price Index



Source: General Authority for Statistics Kingdom of Saudi Arabia

Indexing construction material prices from January 2020, it can be seen that the average increase in material prices between January 2020 and November 2022 is estimated to be around 28 per cent. The initial rise seen in July 2020 can be attributed to the impact of supply chain disruptions caused by the initial phase of coronavirus and adjustments made to prices as Saudi Arabia implemented its VAT increase from 5 to 15 per cent. As we continue looking into 2021, notable spikes and drops were experienced as global cases of coronavirus surged and lockdowns continued to further disrupt supply chains and exacerbated price volatility.

As we reach February 2022, the Russia-Ukraine conflict began and China begun to implement further strict lockdowns that resulted in further supply and demand disruptions. This is seen with how metal prices escalated to nearly 70 per cent in April 2022. As we move towards the end of 2022, it is evident that material prices have begun to soften. For example rebar prices have eased from peaks of 70 per cent in April 2022 to 33 percent October 2022. With less volatile materials, like concrete, these remained relatively subdued since adjustments experienced in June 2020, but still at a notable 15 per cent increase.

Evaluating material prices against overall construction costs in 2020-2022, the current material price escalation has the potential to impact CAPEX costs in the region of +8 per cent and -12 per cent over the last two years. Many existing construction contracts do not address material escalation or purposely exclude change orders for material escalation, resulting in the risk being firmly left with contractors, subcontractors and suppliers to mitigate.

Note: The average index is unweighted, therefore wood plays a considerable role in the calculation of the average (an increase from 100 to 150 (+50 per cent)). The amount typically used in Middle Eastern construction is limited. This factor would reduce the overall average increase.

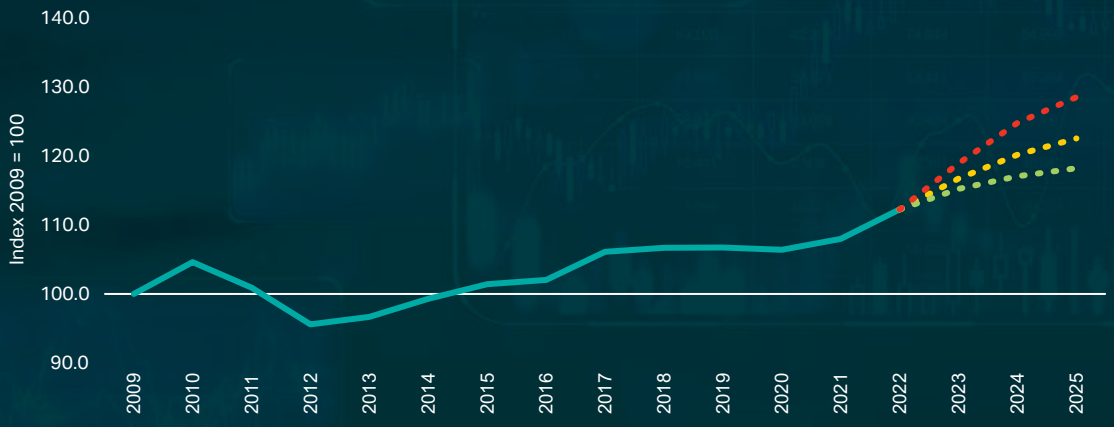
Tender Price Index (TPI)

The TPI is AECOM's assessment of construction tender prices in the market. It is compiled by AECOM's Middle East Business Intelligence team and is based on actual returns of projects.

The Index is a measure of average price increases across differing markets, project types and locations. It should be regarded as a guide only when looking at any specific project, as the pricing of individual projects will vary depending on factors such as their scope, complexity, location, timescale and end user requirements.

Received tender returns have been noted as considerably irregular between parties, with increases being considerably higher than expected as contractors extrapolate high inflation across multi-year contracts and price in excessive risk. In stark contrast, there have been cases where the decreases are lower than benchmarked norms in a bid to oust competition and utilise dormant resources/stock. It has also been evident that construction organizations are operating at lower margins across the region. These are seen to be hedging markets and will subside once economic volatility eases.

UAE Tender Price Index



Source: AECOM

Annual percentage change (average)													
2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
-17.1	2.4	-3.5	-5.3	1.1	2.7	2.1	0.6	4.0	0.6	0.0	-0.4	1.5	4.0

AECOM's TPI for the UAE in 2022 has been adjusted from the previously forecasted high of 3.5 per cent to 4.0 per cent for the full year 2022. This upward adjustment is a reflection of the higher-than-expected inflation pressures and considerable commodity price hikes. According to the IMF, the UAE's economic growth has been robust this year, led by a strong rebound in tourism, construction and activity related to the Dubai Expo 2020, as well as higher oil production in line with the OPEC+ production agreements.

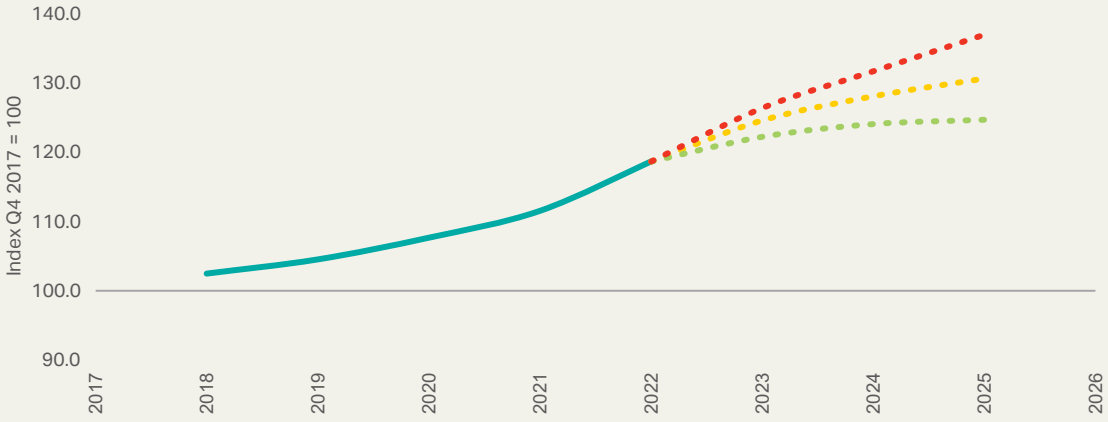
Although the UAE's market is somewhat sheltered from the double-digit inflation factors experienced in other nations, there is still a cause for concern as we enter 2023.

Historically, tender returns are sluggish to reflect price increases as tender periods can be prolonged across price hike cycles and tenderers look to keep historic norms in a bid to be more competitive. Taking a look at the economic forecasts for 2023, price increases are anticipated to become more prevalent in the first half of the year as ongoing market volatility continues. In addition, as top tier contractors focus attention on the intensifying and potentially lucrative KSA market, the UAE's construction sector is likely to see less competitive and risk adverse pricing for larger scale works. This may require tendering entities to re-evaluate tender scoring mechanisms away from traditionally skewed lowest price awarding of contracts.

As global inflation and fiscal burdens continue their journey at rates greater than those experienced in the UAE, further pricing pressures are likely to emerge. For example, imported construction materials, goods and equipment, such as MEP equipment, and systems from Europe, which are facing far greater pricing stresses than what is experienced locally, are likely to continue to push project prices up further.

In consideration, AECOM forecasts that the UAE TPI has the potential to increase to between 2.0-5.0 per cent in 2023, as global market volatility continues to be sustained.

KSA Tender Price Index



Source: AECOM

Annual percentage change (average)				
2018	**2019**	**2020**	**2021**	**2022**
2.5	**2.0**	**3.0**	**3.6**	**6.4**

Note: KSA TPI represents a national average.

In 2021, AECOM's TPI for Saudi Arabia reflected an uplift of 3.6 per cent as the market began to experience considerable commodity price hikes and pricing pressures. During this time, construction inflation was expected to be higher, but this was somewhat offset by delayed construction demand as coronavirus restrictions hindered progress and mobilisation capability. Organisations also continued to implement prudent business costs revisions to mitigate the induced impact of the pandemic and increase market competitiveness as organisations looked to establish footholds with key clients for long-term growing pipelines.

As we entered 2022, sentiment for KSA's construction market gained momentum with numerous construction tenders on the table and sizable packages reaching award stages. The effects and demands of the sizeable giga-projects and large-scale city projects are starting to become a reality and the risks associated with these projects, under existing market volatility, are becoming more widely understood. According to the analysis of tender returns, commodity prices and market testing see AECOM's TPI growth for 2022 estimated at 6.4 per cent.

Looking to 2023, KSA is set to face all the same challenges as their counterpart in the UAE in terms of increased input costs, 'push inflation' (labour, plant, materials etc.), but with the added potential of its large-scale project pipeline to cause 'pull inflation' via increased demand for products or services. Considering this, the TPI for KSA in 2023 is forecasted to be in the region of 3.0-6.5 per cent.

As a cautionary note and a lesson learned from 2008, our businesses must be prepared and more responsive to the risks connected with market conditions. As KSA awards numerous new projects to meet the country's objectives, through fast-track delivery routes, the resultant rubber band effect has the potential to strain the region's supply and demand stability, resulting in hyperinflation, peak demands and undersupply. In a worst-case scenario, this could result in project costs escalating beyond economically viable levels.

03 Delivering a better world

IN BRIEF

City wellbeing
"Dubai city as a gym"

In the 2022 report, *Dubai City As A Gym*, AECOM's Urbanism and Planning team for the MEA region share their vision of how we can enhance community wellness through city and urban planning.

The 100-page report includes a collection of articles aiming to investigate the impact of the health and fitness initiatives deployed in Dubai since the early 2000s, to review plans under Dubai's evolving 2040 Urban Masterplan. It then concludes with 13 key physical policy recommendations to assist planning and policymakers in creating a healthy and active city.

With early health indicators placing cardiovascular disease, cancer and diabetes at the top of the UAE's health concerns, the report emphasizes that Dubai's structure and environment should be re-oriented to make a proactive contribution to public heath - making it easier to walk, cycle and run, for example.

The recommendations provide initiatives and interventions for the policymakers, planners and designers involved in the development of the city to further refine and pursue. Some of the recommendations are supported by benchmarking examples of which Dubai could assess the feasibility of implementation.

One of these examples is the growing endorsement of the residential urban concept of time-based cities, such as the '15-minute City' concept popularised in Paris. There is an increasing demand to improve the quality of life of urban dwellers by creating cities where residents can access everything they need within 15 minutes. The 15-minute concept aims to meet basic needs within a short walk or bike ride from home.


2040 دبي DUBAI
Dubai Marathon
مجلس دبي الرياضي
DUBAI
SPORTS COUNCIL
25
Sunday
SHAWARMA
DUBAI
85

Key recommendations

1. 15-minute cities
To create a 15-minute districts network within the city, that harnesses sustainability through the provision of civic amenities that promote healthy lifestyles and fitness. Examples include sports venues and adequate active public realm, within a 15-minute walk or cycle ride of residential areas.

2. Connecting communities
To provide an east-west connection between the sea and the desert, providing an easily facilitated access to sea and sand sports, and creating more efficient connections between communities along the Sheikh Zayed Road corridor to additional fitness facilities and services.

3. Sheikh Zayed Road as a boulevard
To upgrade the main transportation connection; Sheikh Zayed Road to a boulevard.

4. Activating underutilised open spaces
To maximise the use of inactive open spaces, whether this is within intersections along Sheikh Zayed Road, or highly populated public areas.

5. Upgrading community right of ways
To upgrade key community connections across the city, to promote the usage of sustainable transportation methods, such as walking and cycling.

6. Street design interventions
To activate spaces that encourage physical activity and a healthier lifestyle, it is suggested that design interventions such as temporary art, plantings and removal benches are installed across the city.

7. Prioritise pedestrian safety
To encourage residents and visitors to stay active in the city, it is vital that pedestrian routes are safe with no dangerous risks. It is therefore essential that all pedestrian pathways are upgraded to provide the ultimate safety measures.

8. City-wide fitness requirements
To ensure fitness facilities are available and accessible to all, it is suggested that the provision of fitness facilities and services are inherent in the planning of new developments.

9. Climate control in urban areas
To use climate control mechanisms to ensure comfortability for city dwellers and users to safely engage in physical activity.

10. Digital health tools
To develop digital tools and gather user data to help monitor and track the outbreak of diseases and viruses or hotspots that are detrimental to public health.

11. First-mile, last-mile strategies
To pedestrianize communities and enable first-mile, last-mile pedestrian transit systems. Pedestrian transit systems should be available everywhere and accessible to the wider public.

12. Sports-based community calendars
To update the existing city sports calendar to include community based organisations and events. It would be great to have an interactive calendar outlining the types of events and which communities they are based within.

13. Promoting healthy lifestyles
To encourage healthy living through tax reductions on healthy lifestyle brands and advertisements. While increasing taxes on fast food establishments and advertisements.

We continue to seek feedback in everything we do. Please contact the document leads Amer Mneimneh (amer.mneimneh@aecom.com) or Katy Adubi (katy.adubi@aecom.com) for further information.

Embedding ESG across the project lifecycle

The ESG journey through an asset lifecycle

The emergence of ESG

Environmental, Social and Governance (ESG) is a term that has become more commonly used within the business world, particularly when sustainability is being discussed. At its basic level, it refers to a set of standards or actions to which an organisation can measure itself to show how sustainable, ethical and socially responsible they are. If we delve a little deeper, we see a framework for which multiple initiatives can be undertaken to reduce negative environmental impacts and help promote positive social outcomes.

Looking to the built environment for solutions

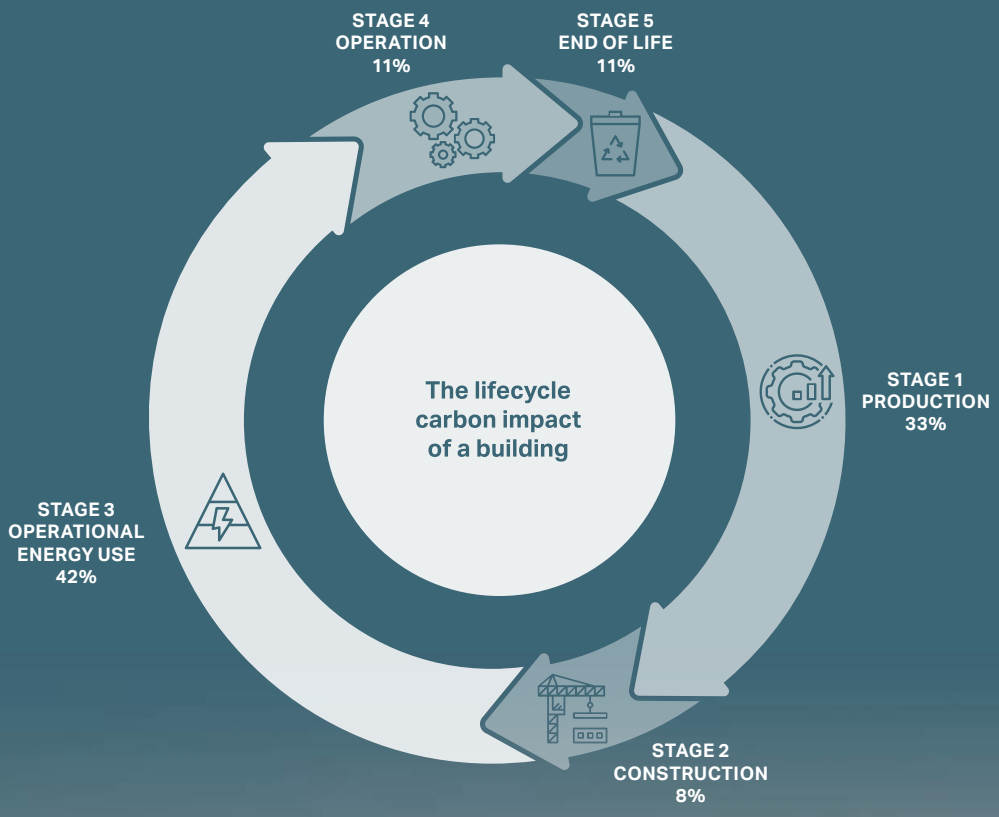
From an environmental and social perspective, significant efforts are currently being made to address the causes of climate change. Nations are generally focusing on reducing energy demands and looking to switch to less carbon intensive energy supplies to lessen greenhouse gas emissions that are an attributable factor behind temperature rises around the world. Recent United Nations Climate Change Conferences, or Conferences of the Parties (COPs), have been at the forefront of global media coverage in recent years as they have taken place at a point in time when multiple countries are experiencing extreme weather events and record temperatures.

As more people become directly affected by the issue, it is imperative that countries collectively try to formulate solutions that have a meaningful impact, but the dilemma lies in that there is no single answer or action that can be applied which encompasses the complexity of the problem. In broad terms, if coordinated action is to be successful, commonalities need to be identified, which when addressed, have a meaningful, proportional impact. One such commonality is urbanization and how we manage our built environment, as all nations seek to develop and satisfy the needs of their growing populations.

Notably, 40 per cent of the total global emissions is attributable to the property and construction sector. This typically comes from activities such as the sourcing, manufacturing and supply of materials and goods, the energy used to heat and cool them, all the way through to demolition and disposal. All solutions must ultimately consider the needs of people and that the functional value of the built assets are not eroded and won't negatively impact the social outcomes of providing the assets in the first place. Looking at how we design, construct, use and dispose of built assets is therefore something that all property and construction professionals, and those who develop and maintain assets, can action and make significant and measurable progress in the fight against rising temperatures, whilst still addressing the needs of the population.

The role of organisations

How the decisions are made to explore and adopt solutions that decrease negative environmental impacts and promote social outcomes will rely on having a solid distribution of rights and responsibilities across an organisation. These decisions can then be made within an adequate governance structure that shows transparency and accountability.



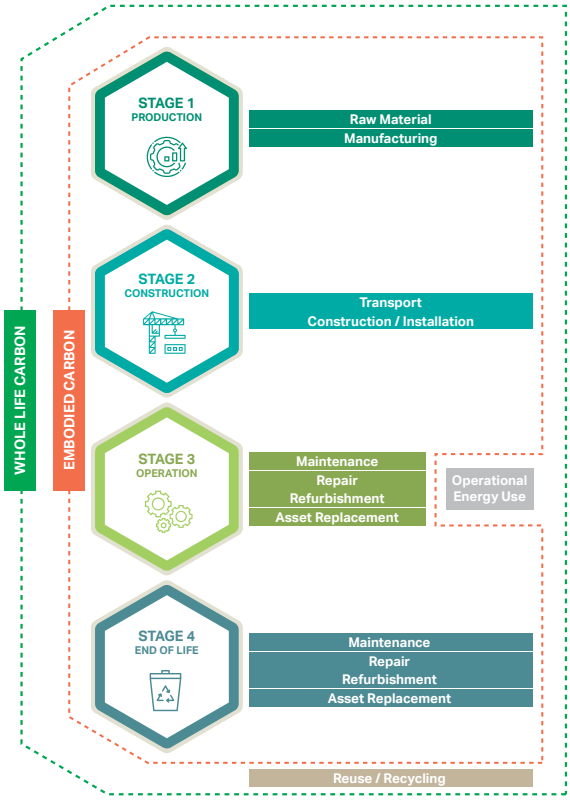
The development of governance structures is largely applicable to organisations. They then act as facilitation to the environmental and social initiatives.

As a leading engineering and design consultancy with projects that impact millions of people worldwide, AECOM recognises not only their responsibility to have a meaningful ESG policy, but also the multiple ways in which different areas of their business can contribute to making it a success and have a real impact on projects and communities around the world. Involvement in projects throughout an asset's lifecycle provides multiple opportunities to implement positive ESG initiatives and help to create a more sustainable built-environment.

"Notably, 40 per cent of the total global emissions is attributable to the property and construction sector."

ESG in the early stages of the asset lifecycle

A typical asset lifecycle begins at conceptualization, where the need for a built asset is identified and it's intended purpose, location, scale and budgetary costs are considered. The biggest impact from a sustainability perspective can be made at this stage, as it should be questioned as to whether the asset is needed at all, or if an alternative, such as refurbishing or reusing an existing asset, can be used instead.



If the need is confirmed, feasibility can begin and conceptual designs can be considered according to project briefs that are well defined with a focus on its environmental and social parameters. Again, there are numerous opportunities at this stage and throughout the design stages to ensure that the asset has the most minimal impact on the environment while delivering positive social outcomes for its intended use. Examples of this could be through the installation of green spaces, cycling infrastructure, or community facilities that have a larger reach than the primary function of the asset, while the design also considers material choices and careful specifications. The need for increased operational design reviews will also allow a look ahead into the practicality of use and maintenance post-construction, identifying opportunities to implement efficiencies in the design.

It is at this point that costs are examined and the need to comply with certain minimum requirements of any relevant legislation, which in the Middle East could be the Estidama Pearl Rating scheme in Abu Dhabi or the Green Building Regulations in Dubai. Decisions to implement any other initiatives over

and above these minimum requirements may be linked to perceived increased asset value from obtaining relevant certifications, such as LEED. This is where the analysis of cost becomes crucial to facilitate meaningful change. In balancing project budgets at early stages, the capital cost of construction tends to take precedence over rudimental forecasted operational expenditure for running and maintaining assets throughout its useful life, yet holistically, this is where the majority of an assets cost and emissions are realised. Greater consideration and analysis of an asset's operational impact, during these stages, has the potential to reap some of the largest rewards in the field of ESG through consideration of overall lifecycle cost efficiencies, where greater investment in capital expenditure can considerably reduce operational cost, environmental impact and deliver better social outcomes. The quantification and analysis of lifecycle costs and lifecycle carbon emissions from each dollar invested is where AECOM's environmental, advisory and cost management teams work closely with design teams to actively explore creative and innovative options and provide analysis that allows for client decision-making based on the most affordable and impactful outcomes to their projects.

ESG during an asset's operational life

When an asset enters its operational stage, the opportunity to enact large-scale ESG initiatives becomes largely hindered by barriers to change the cost of implementation to a fully-functioning and newly built asset that is expected to commence its return on investment. In the case of new build assets, the most effective time to have an impact will always be during the design stages. However, this does not mean that there is nothing owners, operators or occupiers can do to have a meaningful impact during its operational life.

ESG, in the asset management process, is a relatively new concept, but only in regards to bringing together numerous activities that may have existed independently before. Sustainable asset management practices typically only adapt to changes in legislative requirements and have always been focused on optimisation, usually with the intention to reduce cost and enhance value. In the field of asset management, data is key and establishing data management and reporting strategies that align to ESG measures alongside structured review and risk assessment governance frameworks that provide an asset manager with the tools to make strategic business decisions during an asset's operational life.

Implementations and improvements in technology and artificial intelligence has led to the emergence of smart buildings, where energy use is not only monitored to identify trends and opportunities, but occupational use and associated energy systems are adjusted in real time according to the needs of the asset user.

End of life considerations

The way in which an asset is disposed of, and the amount to which it can be recycled, is often not considered until the time comes to do exactly that. However, asset disposal can be made simpler and re-purposing, rather than recycling wherever possible, can be part of legacy planning for some assets that have time limited uses below the usual life expectancy of the buildings themselves.

The 2022 FIFA World Cup is a current example of a significant amount of development in the region that could be considered time limited. While individual stadiums, such as Stadium 974, is largely built from recycled shipping containers, it will be dismantled. Several other assets, such as an expanded metro system and improved public realm, will form part of legacy planning that ensures they provide a positive impact on the communities in which they are located long after the final whistle is blown.

Refurbishment of existing assets is perhaps the largest opportunity to reduce emissions from existing assets as they enter the end of their operational life, as they effectively reduce the need to build new.

Refurbished and reused assets can also reimagine community spaces as use classes change. One excellent example of this is the relaxation of permitted development clauses within the UK Building Regulations that allowed the conversion of commercial space to residential units, creating much needed living space by re-purposing excess office space created from a generational change in working patterns (General Permitted Development Order, 2015). It may be that such refurbishments are now considered more broadly as we have emerged from the coronavirus pandemic and flexible working practices form part of corporate ESG policies to reduce the need for office space.

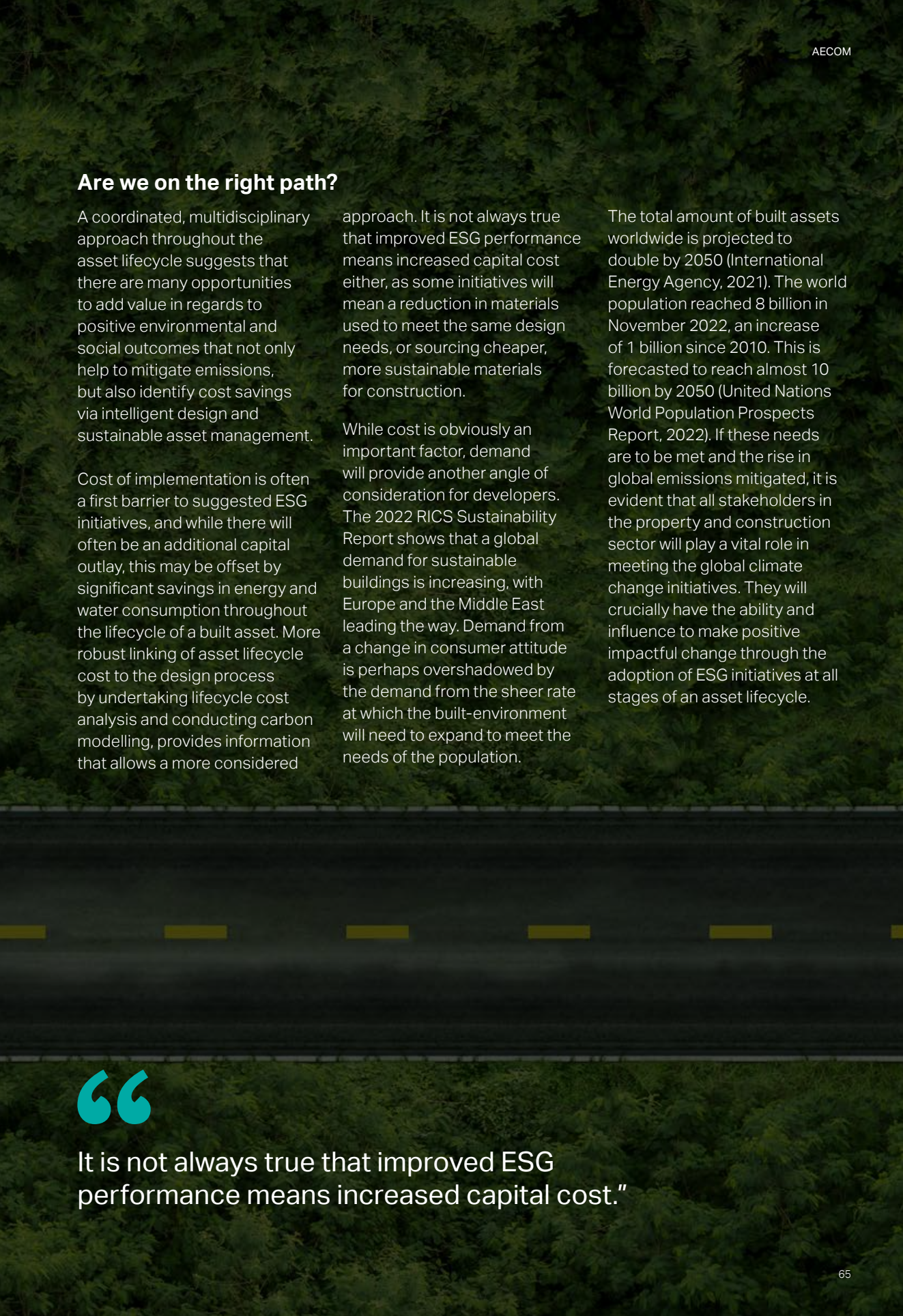
Are we on the right path?

A coordinated, multidisciplinary approach throughout the asset lifecycle suggests that there are many opportunities to add value in regards to positive environmental and social outcomes that not only help to mitigate emissions, but also identify cost savings via intelligent design and sustainable asset management.

Cost of implementation is often a first barrier to suggested ESG initiatives, and while there will often be an additional capital outlay, this may be offset by significant savings in energy and water consumption throughout the lifecycle of a built asset. More robust linking of asset lifecycle cost to the design process by undertaking lifecycle cost analysis and conducting carbon modelling, provides information that allows a more considered approach. It is not always true that improved ESG performance means increased capital cost either, as some initiatives will mean a reduction in materials used to meet the same design needs, or sourcing cheaper, more sustainable materials for construction.

While cost is obviously an important factor, demand will provide another angle of consideration for developers. The 2022 RICS Sustainability Report shows that a global demand for sustainable buildings is increasing, with Europe and the Middle East leading the way. Demand from a change in consumer attitude is perhaps overshadowed by the demand from the sheer rate at which the built-environment will need to expand to meet the needs of the population.

The total amount of built assets worldwide is projected to double by 2050 (International Energy Agency, 2021). The world population reached 8 billion in November 2022, an increase of 1 billion since 2010. This is forecasted to reach almost 10 billion by 2050 (United Nations World Population Prospects Report, 2022). If these needs are to be met and the rise in global emissions mitigated, it is evident that all stakeholders in the property and construction sector will play a vital role in meeting the global climate change initiatives. They will crucially have the ability and influence to make positive impactful change through the adoption of ESG initiatives at all stages of an asset lifecycle.



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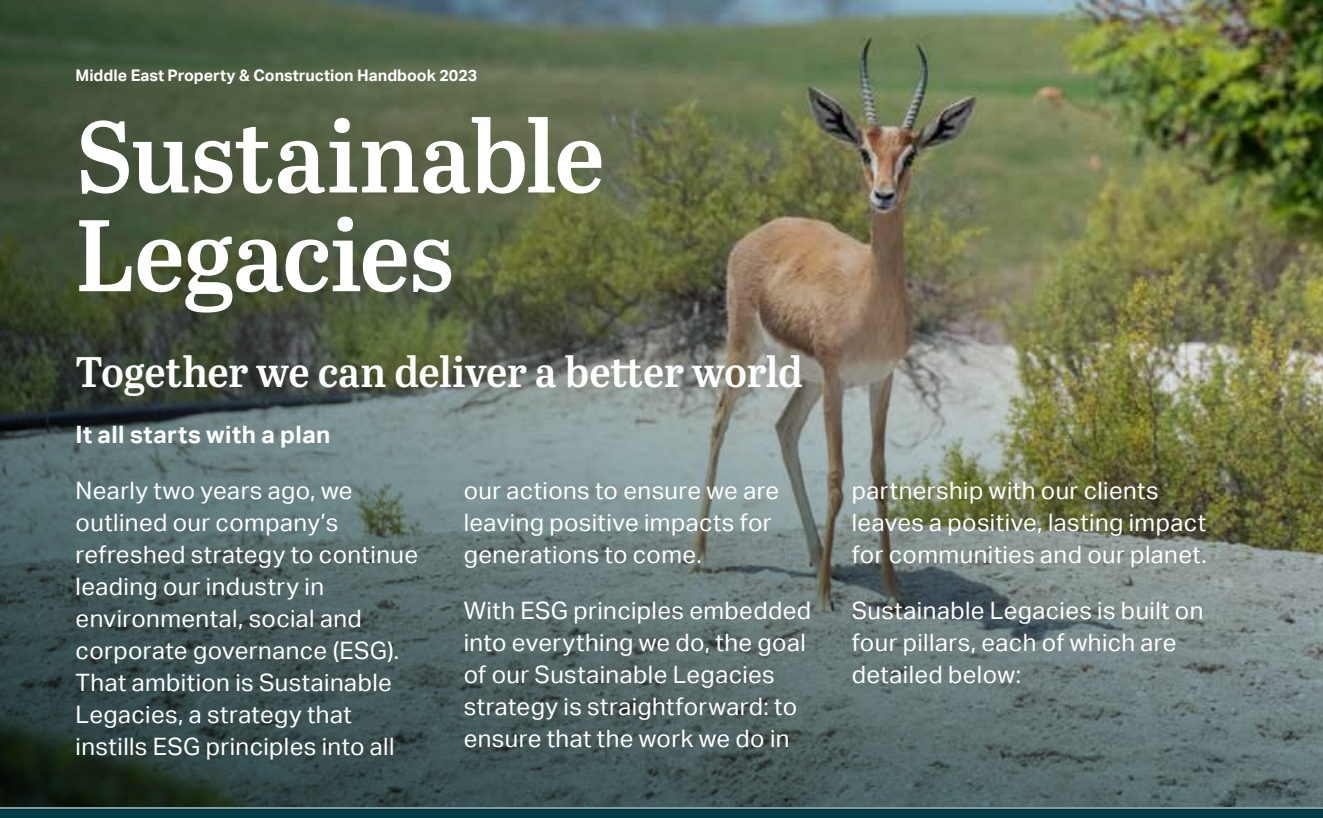
Sustainable Legacies



Together we can deliver a better world

It all starts with a plan

Nearly two years ago, we outlined our company's refreshed strategy to continue leading our industry in environmental, social and corporate governance (ESG). That ambition is Sustainable Legacies, a strategy that instills ESG principles into all our actions to ensure we are leaving positive impacts for generations to come.

With ESG principles embedded into everything we do, the goal of our Sustainable Legacies strategy is straightforward: to ensure that the work we do in partnership with our clients leaves a positive, lasting impact for communities and our planet.

Sustainable Legacies is built on four pillars, each of which are detailed below:

Embed sustainable development and resilience across our work
Increasingly severe climate events and the pandemic have shown that achieving resilience is an urgent and strategic imperative for cities, governments and organizations - including our own. Climate science also makes it clear that for development to be viable, it must be sustainable. That's why we're embedding net zero, resilience and social value targets into all our work - and why we developed ScopeX™ to reduce carbon impacts by at least 50 per cent on major projects.

Improve social outcomes
To improve social outcomes, our focus is on empowering our teams to deliver projects that bring real, measurable value for individuals, communities and society in general. In addition, our teams must reflect the diversity of our clients and the communities we serve.

Achieve net zero carbon emissions
As the world's most trusted infrastructure firm, we understand both the magnitude of the climate crisis and our responsibility to help fix it. We achieved operational net zero last year and are one of the first companies to have science-based net zero targets approved by the best practice organization, the Science Based Targets initiative. This experience is supporting our advice to clients on setting and reaching their own targets.

Enhance governance
Governance is the foundation for how our leaders ensure effective corporate and business ESG management. Through enhancing our governance, we're achieving our ESG goals faster and setting more ambitious targets for the future.

#2
In Engineering News Record's 2022 top environmental firms

Scopex™

ScopeX™ is AECOM's platform to reduce carbon across our planning, design and construction projects. It considers embodied and operational carbon across the entire lifecycle with the aim of reducing carbon impact by at least 50 per cent compared to industry norms on major projects.

To decarbonize the built-environment and support our clients to achieve their net zero agendas, we're improving the cities and communities we serve. Whether its reducing Scope 1, 2 and 3 emissions, or supporting the development of clients' carbon strategy, ScopeX™ considers materials, site locations, logistics and construction methods to reduce and eliminate the impact of projects on the natural environment. We minimize energy use and optimize sources of renewable power to eliminate carbon emissions and meet clients' carbon goals.

The foundation of ScopeX™ is early engagement with clients. By determining what is critical for their project, we then deploy the best design solutions and digital tools to design the optimal solution for carbon reduction, all while tracking our total impact over time.

ScopeX™ includes an evolving digital platform, informed by the ongoing collection and analysis of client and project data to inform the development of future tools, and refinement of our services.

Taken together, we estimate that our ScopeX™ platform has the capability to design out at least 84 million tons of carbon dioxide emissions from the built-environment per year.

We anticipate that the following six decision points will have the most impact, and as such they form key steps in the ScopeX™ process:

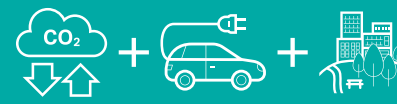
1. Linking cost and carbon in early design optioneering

By quantifying carbon and cost together, comparing options and selecting low carbon options from day one, we support clients to achieve the **best balance** between cost and carbon load.

2. The carbon and business case for choosing refurbishment over new build

Where feasible, refurbishment should be proposed as an alternative over new build if it reduces the carbon footprint while meeting the client's brief. Using **Scopex™**, the carbon and business case will be immediately visible.

3. Re-using existing materials



As part of the process, materials that may already be on site, including equipment, foundations, construction materials and **considering green or nature-based infrastructure**, will be considered, along with their carbon and monetary impact.

4. Low carbon materials and technologies

These will be considered, along with **local** availability and sourcing local where possible.

5. Future flexibility

To reduce expensive retrofitting, designs that consider the next life of the asset will be detailed, with approaches that lend to modular fabrication and disassembly.

6. Low carbon materials and technologies

Design and build-out will be optimized to reduce redundancy and waste generation.

UN Climate Change Conference - COP27

Lara Poloni
President of AECOM

AECOM's President, Lara Poloni, reflects on a mixed outcome at the UN climate conference in Egypt.

The recent COP27 meeting in Sharm El-Sheik did not achieve the progress we had hoped to see.

Although there was definite progress in the accord to provide those countries most vulnerable to climate change with "loss and damage" funding, most of the final COP27 headlines rightly focused on failure to find an agreement that would accelerate the phasing out of fossil fuels.

All is far from lost, though; what Egypt highlighted is the potential for leadership in decarbonization, particularly driven at the level of sub-national entities, such as cities, and focused on the built-environment. These are areas where AECOM has made substantial progress in recent years and working with our partners we will continue to drive a positive and innovative agenda, taking a leadership position on action wherever we can.

After COP27, there's scope for more leadership from cities and business in the built-environment.

Reducing carbon in the built environment

The built-environment generates approximately 40 per cent of global carbon dioxide emissions, with roughly two-thirds of that in operations and the remainder in embodied carbon in materials and construction. This arena clearly offers huge opportunities to bring down emissions—not to mention energy costs—and we welcomed the Breakthrough 2030 announcement made in Egypt.

Breakthrough 2030, which is one of a number of initiatives in the UN's Race to Zero campaigns, holds that all new buildings projects completed from 2030 should be net zero in their operations and see a reduction of more than 40 per cent in their embodied carbon.

AECOM has set itself a more ambitious target of a 50 per cent reduction in carbon impact on major projects through our ScopeX program. With ScopeX, our engineers and designers work with clients through the entire lifecycle of a project, from design and planning to construction using digital tools and data to identify all potential options for carbon reduction across buildings and infrastructure. By reducing waste, using existing and low carbon materials and technologies, as well as choosing refurbishment over new build, we can achieve significant impact.

Cities can lead the way

The great majority of built infrastructure work will take place in cities. Here, the World Bank estimates that more than two-thirds of the 2050 global population of 10 billion will live. So, it was encouraging that civic leaders were active and vocal at COP in insisting that cities will press forward with initiatives to address the climate crisis at that level, while continuing to call for more support from national governments.

At AECOM, we work closely with our partners and have supported the ambitions of the C40 group, a network of mayors representing 100 major cities, with the development of an inclusive tool to help address climate impacts through an equality and diversity lens, creating more just climate action plans.

In the context of cities, business and finance taking a leadership role, valuable new guidance published by the UN's High-Level Expert Group on the net zero commitments of non-state actors, sets a robust new framework for climate commitment. Those, including AECOM, adhering to the ten recommendations will find comfort in the comprehensive approach that drives radical transparency on data and progress, science-based and third-party accountability, and renewed focus on near term and medium targets on the path to net zero.

Last, but by no means least, and in a departure from previous COPs and in the run up to the biodiversity COP in Montreal, nature featured prominently in the COP27 discussions. This was most notably on the financial sector's commitments to halting biodiversity and forestry loss. Indeed, nature-based solutions were included in the COP27 text for the first time, with forests, oceans and agriculture each having their own section. For AECOM, this provides further impetus to our efforts to prioritize nature-based and natural climate solutions into all our infrastructure and buildings projects.

Where international politics is inevitably complicated and might limit the climate response, there is scope for decisive action at the non-state level. This can range from local government, finance or industry. AECOM will continue to pursue opportunities to work with all stakeholders and partners at every level to provide technical skills and expertise that bring about positive action for climate and biodiversity.

With COP28 to be held in Dubai in November 2023, the Arabian Gulf region is set to witness an increasing commitment to a net zero transition. The UAE has already announced its Net Zero by 2050 Strategic Initiative, with an investment of over AED600 billion in renewable energy. Saudi Arabia, a traditional key player in the global energy market, is not far behind, with an official target to reach net zero by 2060. Qatar, the world's largest supplier of liquefied gas, is set on reducing its greenhouse gas emissions by 25 per cent by 2030.

At AECOM, our Middle East business is focused on accelerating ideas and innovations to support this region in meeting its energy transition commitments, leading the world in infrastructures that delivers sustainable legacies for generations to come.

> "AECOM has set itself a more ambitious target of a 50 per cent reduction in carbon impact on major projects through the ScopeX™ program."

digital AECOM pipe·insights plan·engage

Our digital transformation

Digital AECOM

Digital AECOM brings together the potential of AECOM's digital technologies to deliver a better world.

Working across the program and project lifecycle, Digital AECOM combines our leading industry knowledge with digital consulting services and products to define, develop and implement personalized – and even disruptive – solutions that accelerate our clients' digital journey and achieve better outcomes. We exist within AECOM's sphere of innovation, and expanding ecosystem of tools, systems and processes – with a team of over 2,500 digital practitioners who understand both the urgency of the challenges facing the infrastructure industry, and our responsibility to respond in an impactful and enduring way.

As one of our core values, innovation drives our embrace and development of digital technologies.

From **PlanEngage**, our online platform that streamlines the planning stakeholder engagement process, to **PipeInsights**, our AI/ML platform that improves the speed and accuracy of pipe inspections, we have developed user-friendly software-as-a-service (SaaS) products that provide greater connectivity between data, projects and communities.

We constantly invest in our digital capabilities to deliver faster, smarter and better. Working with agile specialists, as well as some of the world's largest software providers, our extensive technology alliances allow us to select the right options to meet our clients' needs.

Budgets and timescales involved in infrastructure projects mean few can afford to gamble when it comes to digital adoption. Achieving net zero carbon targets and circular economy ambitions add further impetus and complexity.

As digital experts and trusted advisers to the architecture, engineering and construction industries, Digital AECOM is the bridge between the digital and infrastructure worlds, equipped to create a more sustainable and equitable future, and to deliver a better world.

To learn more about Digital AECOM please visit: **digital.aecom.com**

Spotlight on solutions

Selected digital solutions we've developed to solve today's pressing challenges:

Digital Twin - there's never been a better time for asset owners to adopt digital twins to unlock significant value and provide benefits for themselves, their customers and safeguard their staff.

SWIFT (Sustainable Ways of Integrating Future Transportation) – examines future scenarios for regional development considering transportation's role in sustainable development patterns and the role of emerging transportation technologies, such as automated vehicles and Mobility as a Service (MaaS).

OCEAN (Operational Carbon & Energy Analysis) – gathers data for holders of large asset portfolios to understand their portfolio level performance and compare building performance against industry norms.

Transforming project delivery

Our clients count on us to think without limits. By harnessing the power of digital technology and innovation, and connecting our technical experts and visionaries around the world, we deliver tailored solutions and transformative outcomes for our clients and the communities they serve.

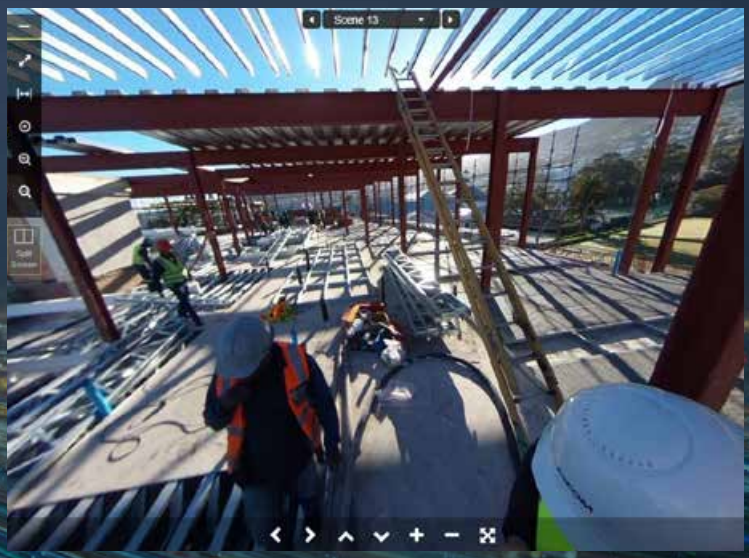
Using a bespoke AECOM-developed Reality Capture tool, comprising a mobile phone, 360-degree camera and cloud application, we're able to take 360-degree images of projects that are automatically uploaded and stored on a secure cloud server quickly and easily, visually documenting construction-site progress throughout a project's lifecycle.

The tool allows us to document site progress faster, with stakeholders able to view and assess the information at any time and from anywhere. The images can be easily retrieved as the application logs their location and capture times, which is in stark contrast to traditional photograph repositories that either rely on extensive tagging or renaming.

The 360-degree images provide a more ubiquitous view of projects, which would traditionally involve taking dozens of photographs at multiple locations.

- Project stakeholders to assess site progress remotely anytime and from anywhere by taking a virtual walkthrough.
- Dedicated microsite for stakeholder access to an immersive virtual site walkthrough.
- Visually documenting construction site progress through the use of 360-degree images.
- Promoting transparency across projects and enhancing trust.
- Quicker documentation of site progress.
- All information is stored on one platform, in one place.
- Health and safety concerns can be picked up and shared with the SH&E team.
- Efficient claims handling due to the ability to view an archive of project images tagged with the same GIS data.

Reality Capture



Global Unite

AECOM's Global Unite is a data warehouse for our international data capture, benchmarking and project performance indicators. This data, which we have gathered from our involvement in thousands of projects, helps us to efficiently benchmark project costs and establish project cost plans.

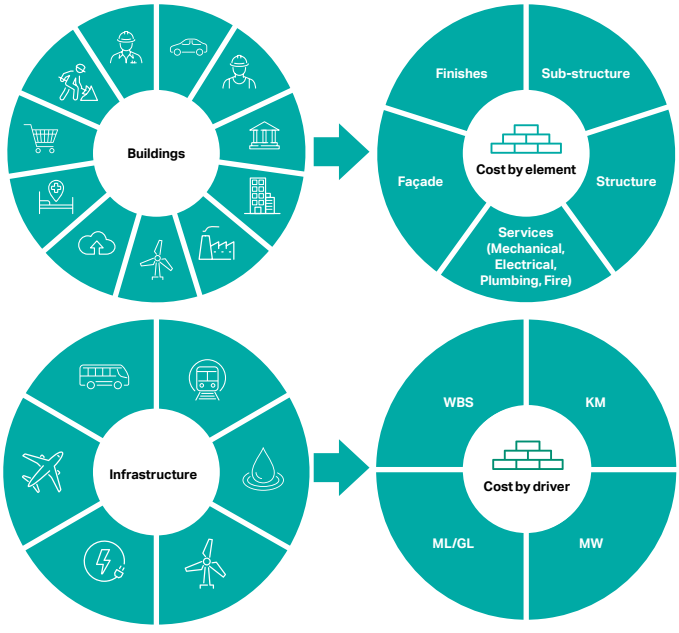
In this era of data, we are facing a growing number of requests that require rapid solutions based on evidence and data. Instead of relying on locally stored and constrained sources of cost and benchmarking data, our cost managers can now access a vast and growing pool of data generated from real projects.

Using GUIDE – our mobile version of Global Unite – we can now instantly analyze parameters that define how effective or efficient a building is (or is not) against local or global standards for all buildings types, and produce indicative cost estimates in the early phases of a project.

Global Unite can help our approach to deliver projects in the following ways:

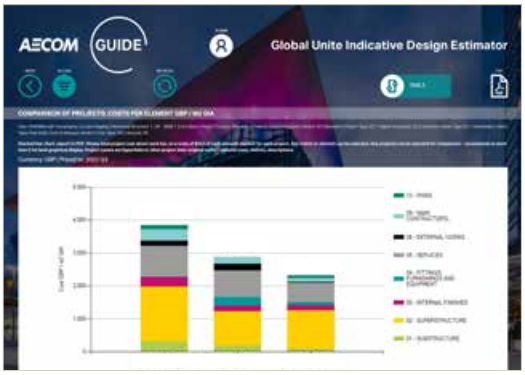
- It gives our clients unparalleled access to quality global and local knowledge that adds value to their project.
- Through direct comparison of our clients' project with global data, we can show clients what best practice is and how their project compares.
- It gives us the ability to collect and share project performance data from across the whole of AECOM.
- It centrally gathers the wealth of untapped data that we generate as we do our daily quantity surveying/ cost consultancy work within our individual geographies.
- It takes knowledge from our cost planning and measurement systems, and applies data mapping rules to manage differences in geographic definitions.
- It captures data at its source and allows us to deliver local and global knowledge in a consistent way.

What information can Global Unite hold?



The system works by drawing on our personal experiences and the benchmarking data to generate an initial view of the likely project cost and update the cost plan moving through the design stages. Building on the available design information, while leaving room for potential site or project specific elements, Global Unite produces a cost plan that accurately reflects project requirements.

Our key global clients see the value of the tool too. We recently used GUIDE to complete a benchmarking study for a global healthcare provider. Using data from over 500 healthcare/ healthcare-allied schemes around the world, we identified high level costs per m^2 for several project typologies similar in scale and complexity to the schemes undertaken by the client. A major manufacturer is also now using GUIDE to manage their own project cost data around the world, in their own format, by using the benchmark reports and generating indicative costs from their historical and current data across any geography. Several USA State Education Departments are utilising GUIDE to forecast costs on proposed new projects similar in nature to others, and have converted their Excel benchmarking worksheets into Global Unite.



Lusail Bus Depot, Qatar

5D Building Information Modelling

Building Information Modelling (BIM) is used to describe the process of designing, constructing and managing a building (or other design asset) in collaboration with the entire team. BIM develops throughout the asset's lifecycle and represents a single source of truth by using the same system or model as compared to using separate packs of conventional drawings and information sets. BIM is used to plan, design, construct, operate and maintain diverse physical infrastructures.

Whether designing or constructing bridges and roads, office towers and apartment blocks, pipelines, factories or schools, an information model or a database can be created that contains information about what will be built, how it will be built and how it will perform. Enabled by technology, we can create a synchronised, collaborative, digital representation of assets to virtually construct and test a project before we do so in reality.

A BIM model usually includes the 3D shape of the objects, but it can also include their cost, installation date, or operating parameters.

We can attach practically infinite additional data to any object or category of objects in a BIM database, and then use that data to manage information flow across multiple lifecycle phases and between multiple parties.

By creating a single source of project information, and by making this available across the design, construction and operation teams, we can increase our accuracy and efficiency. We can also realise significant savings on the lifecycle cost of operating an asset.

The 5D BIM process

For the cost management team, our focus is on 5D BIM. This refers to the linking of cost information to a 3D model. The number "3, 4 or 5", in connection with BIM, relates to the type of information associated with the model. It refers to other dimensions, such as time (4D) or cost (5D). 2D and 3D essentially refer to CAD 2D plans and 3D models, while 5D BIM entails the intelligent linking of individual 3D CAD components to cost-related information.

Understanding the process

Moving over to the 5D BIM process is an enhancement to our current systems and implementation. The process aims to automate much of the measuring, estimating and bill production stages. The value lies in the fact that it will enable

cost managers to be more proactive and to spend more time on cost engineering and management, as compared to measurement and cost reporting only.

In brief, shifting our focus towards the 5D BIM process requires the following:

- Cost manager contribution and buy-in to the development of the BIM execution plan.
- Involvement with the design team prior to the start of design work to communicate our cost extraction design requirements.
- The application of a cost database as a parameter to the objects contained in the 3D model.
- Base our measures primarily on 3D design information.
- Creating a unified link between the design information, our measures and our costs

The possible benefits of BIM from a cost management perspective are:

- Fast, reliable, and accurate quantity take-off and cost estimation.
- Auto computation of calculations, hence reduced calculation mistakes.
- Categorized cost reporting and estimation via the use of zones/locations.
- Improved visualization of the elements for measurement and costing purposes.
- Enhanced communication and collaboration amongst the professional and project team.

Our PCC team have developed a thorough leadership document that is an essential guide for quantity surveyors, cost managers and cost estimators looking to be involved within a project utilising BIM.

The document further acts as guidance notes to the design team about modelling best practices and requirements for the quantity surveyor to be able to rely on the object data within the 3D model. The document makes recommendations based upon 5D-friendly modelling practice to standardise the output of 3D models in a format that is 5D compatible.

By applying the guidance within the document, the need for manual take-off will be greatly reduced. The ultimate goal is that the development of consistent modelling best practice improves the quality and usability of model data.

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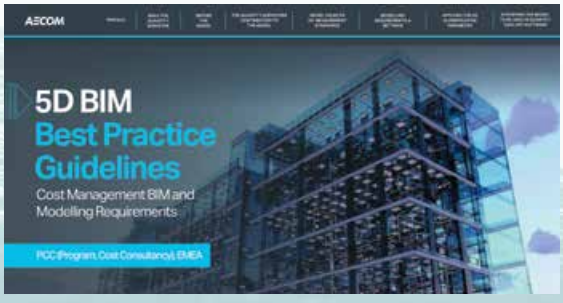


Digital Project Delivery (DPD) and research support

AECOM promotes a collaborative working environment underpinned by digital technologies. Our focus is on implementing more efficient methods to design, procure, construct, operate and maintain built assets and infrastructure.

Our cost managers and consultants are fully aligned to standard DPD protocols and procedures. This ensures consistency and successful outcomes in our daily working practices. Our teams are committed to the development of 5D BIM through a collaborative workflow that aims to improve BIM data quality and facilitate improved digital outcomes.

These include the ongoing development of the following:

- BIM execution plan.
- Design and measurement coordination.
- Risk/change management.
- E-tendering.
- Global collaborative tools.
- Construction progress reporting.
- 5D BIM.
- Mobile connectivity to monitor site progress.
- Paperless communications.

Research is a key part of AECOM's aspirations to embrace complex challenges and deliver innovative outcomes.

Through our research and knowledge creation activities, we aim to stimulate beneficial cultural and business changes, resolve industry-specific problems, support our knowledge database and deliver cost-effective, high-quality and relevant services.

We also undertake contract research on assignment for clients.

Globally, we have a tradition of supporting research collaborations, and we are currently pursuing a wide range of research studies with academic and research institutions, professional bodies and governments.

Current research nationally and internationally centers around:

- Local, regional and international influences on construction costs and prices.
- BIM cost models.
- Sustainability and green buildings - drivers of green design, construction, and operations within different building types.
- Improving infrastructure project delivery in the Middle East.
- Tall, large and complex buildings - efficiencies in construction and lifecycle costing.
- The triple bottom line in construction and property development.
- The soft landings process for buildings.

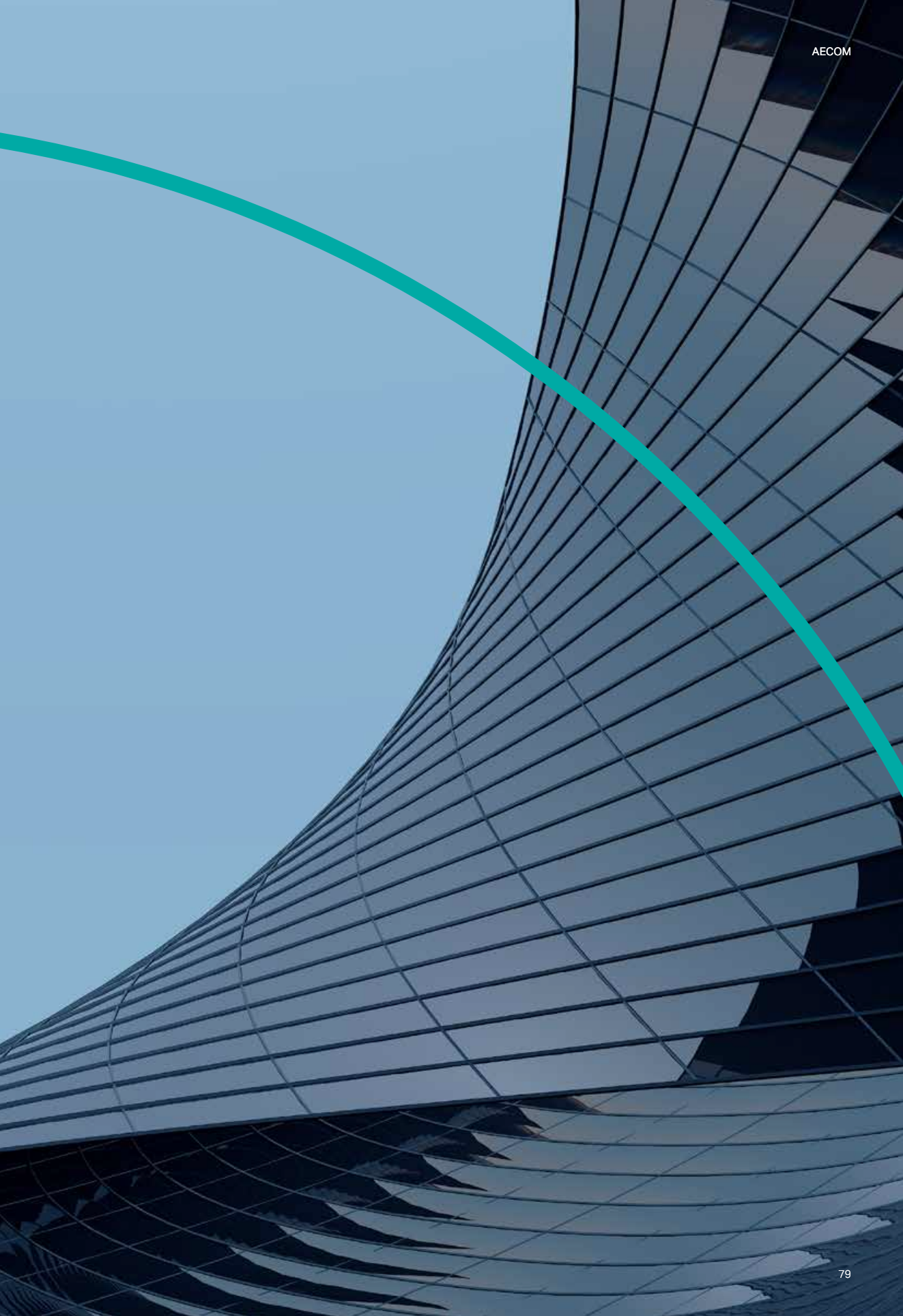
We have ongoing collaborations across our international offices with specific regards to global infrastructure sentiment surveys, sector-specific research and developing global project-cost databases.

Finally, we aim to work closely with the industry on continuing educational workshops and in developing relevant industry reports and publications.

“Research is a key part of AECOM’s aspirations to embrace complex challenges and deliver innovative outcomes.”

04 Reference data

IN BRIEF



Global building cost comparison

The international cost data shown is a comparison of local construction costs converted to US Dollars to enable differentiation.

The building costs, for their respective asset types, are averages based on local specifications. The actual cost of a building will depend on among other things, such as unique site conditions, design attributes and applicable tariffs.

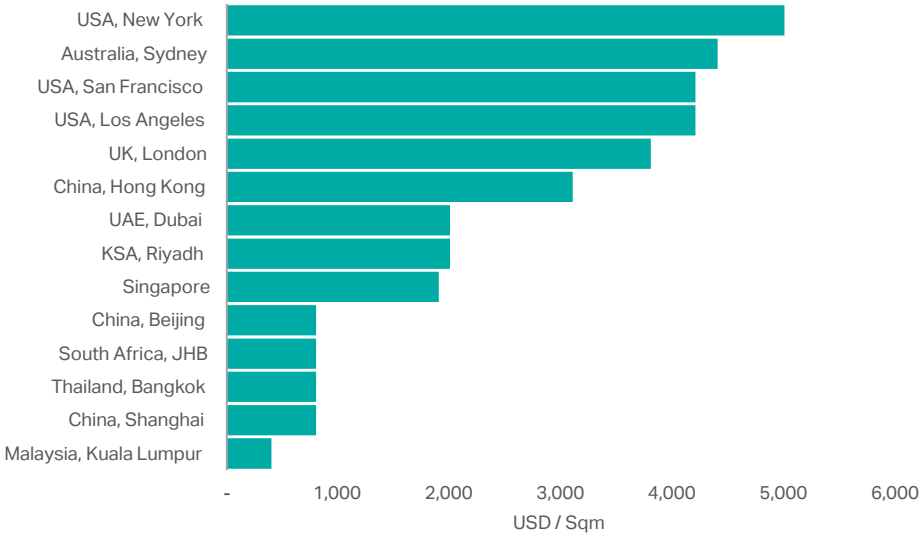
In addition, the standard for each building varies from region to region, which may have a significant impact on cost.

Costs are subject to considerable variations due to factors such as:

- Local market conditions.
- Complexity of project.
- Commodity price movements.
- Building specifications.
- Exchange rates.
- Contractors appetite for securing work.
- Contractual risk apportionment.

Residential

Average building cost for a standard residential high-rise



Source: AECOM

Average building costs (USD/sqm)

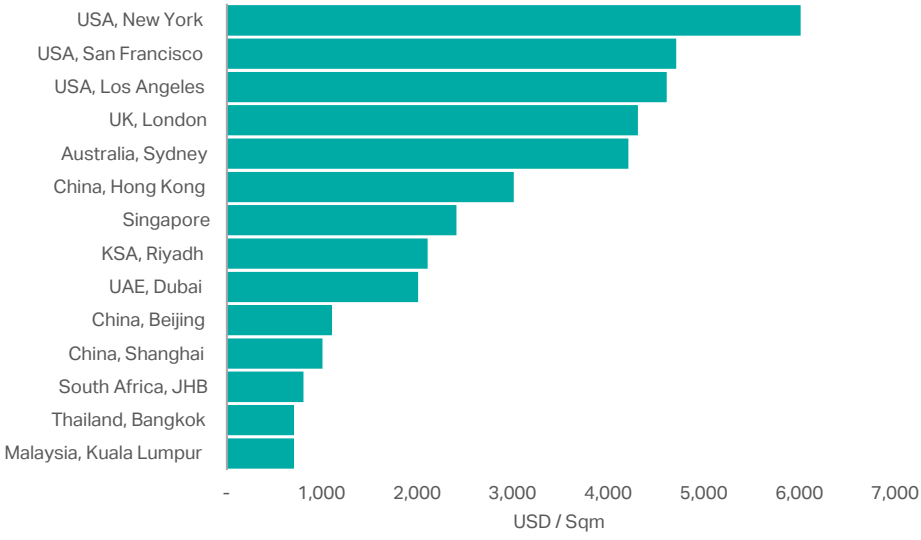
Building type	**Sydney** Australia	**Hong Kong** China	**Beijing** China	**Shanghai** China	**Kuala Lumpur** Malaysia	**Singapore** Singapore	**Johannesburg** South Africa	**Bangkok** Thailand	**Dubai** UAE	**Los Angeles** USA	**San Francisco** USA	**New York** USA	**London** UK	**Riyadh** KSA
Average multi-unit high-rise	**4,400**	**3,100**	**800**	**800**	**400**	**1,900**	**800**	**800**	**2,000**	**4,200**	**4,200**	**5,000**	**3,800**	**2,000**
Luxury unit high-rise	6,100	4,200	1,600	1,500	800	3,300	1,000	1,200	2,400	5,400	5,300	6,300	5,400	2,400
Individual prestige houses	6,300	5,900	900	900	1,000	3,200	1,100	1,300	-	5,100	5,400	5,900	5,300	-
(As of Q3 2022)	**AUD**	**HKD**	**CNY**	**CNY**	**MYR**	**SGD**	**ZAR**	**THB**	**AED**	**USD**	**USD**	**USD**	**GBP**	**SAR**
US $1 =	1.50	7.85	7.00	7.00	4.57	1.41	17.45	36.91	3.67	1.00	1.00	1.00	0.87	3.75

Source: AECOM

Note: Prices exclude land, site works, professional fees, tenant fitout and equipment. Rates exclude GST/VAT.
International costs based on Q3 2021 and exchange rates to USD as of Q3 2022.
UAE/KSA costs based on Q3 2022 and exchange rate to USD as of Q32022.

Commercial

Average building cost for a standard office high-rise



Source: AECOM

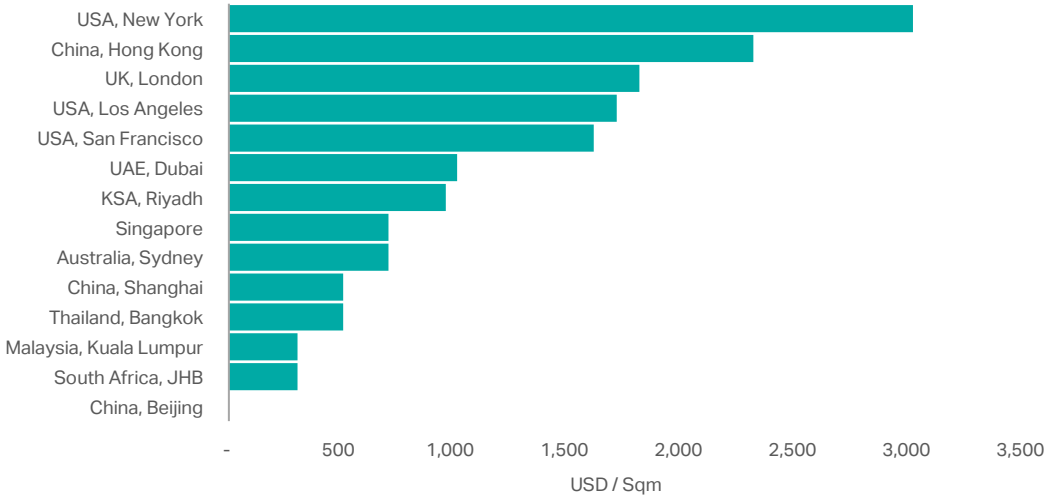
Average building costs (USD/sqm)

Building type	Sydney Australia	Hong Kong China	Beijing China	Shanghai China	Kuala Lumpur Malaysia	Singapore Singapore	Johannesburg South Africa	Bangkok Thailand	Dubai UAE	Los Angeles USA	San Francisco USA	New York USA	London UK	Riyadh KSA
Average standard offices high-rise	**4,200**	**3,000**	**1,100**	**1,000**	**700**	**2,400**	**800**	**700**	**2,000**	**4,600**	**4,700**	**6,000**	**4,300**	**2,100**
Prestige offices high-rise	6,100	3,700	1,500	1,600	1,100	3,000	1,000	900	2,400	5,100	5,000	6,500	5,300	2,700
Major shopping center (CBD)	4,200	4,200	1,300	-	800	3,300	800	700	1,800	3,800	4,000	4,400	4,700	1,900
(Ave Q3 2022)	**AUD**	**HKD**	**CNY**	**CNY**	**MYR**	**SGD**	**ZAR**	**THB**	**AED**	**USD**	**USD**	**USD**	**GBP**	**SAR**
US $1 =	1.50	7.85	7.00	7.00	4.57	1.41	17.45	36.91	3.67	1.00	1.00	1.00	0.87	3.75

Source: AECOM

Note: Prices exclude land, site works, professional fees, tenant fitout and equipment. Rates exclude GST/VAT.
International costs based on Q3 2021 and exchange rates to USD as of Q3 2022.
UAE and KSA costs based on Q3 2022 and exchange rate to USD as of Q32022.

Industrial and Other
Average building cost for a light duty factory



Source: AECOM

Average building costs (USD/sqm)

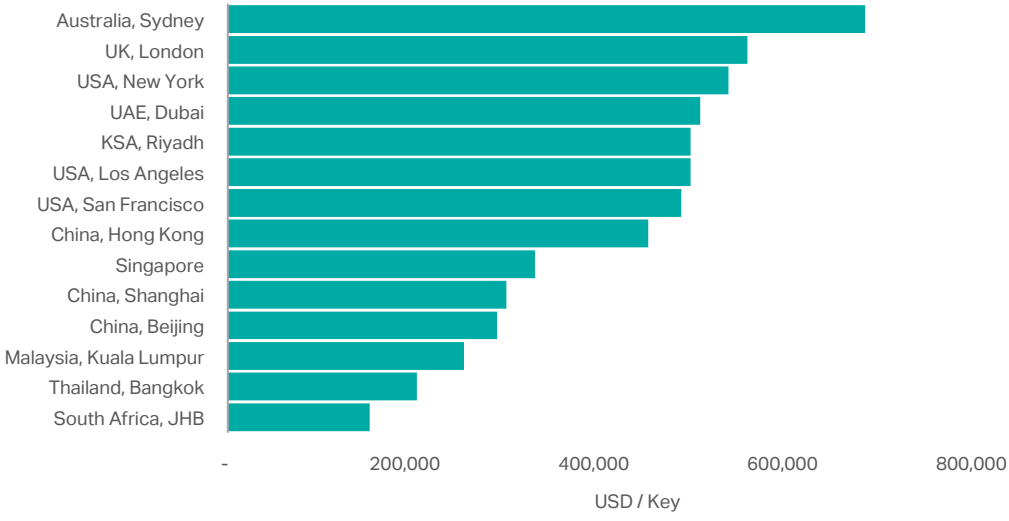
Building type	Sydney Australia	Hong Kong China	Beijing China	Shanghai China	Kuala Lumpur Malaysia	Singapore Singapore	Johannesburg South Africa	Bangkok Thailand	Dubai UAE	Los Angeles USA	San Francisco USA	New York USA	London UK	Riyadh KSA
Light duty factory	**700**	**2,300**	**-**	**500**	**300**	**700**	**300**	**500**	**1,000**	**1,700**	**1,600**	**3,000**	**1,800**	**950**
Heavy duty factory	-	-	-	-	500	900	300	700	1,550	2,100	2,100	3,900	3,000	1,350
Multi-storey car park	1,000	1,600	-	400	300	-	200	500	750	1,700	1,600	1,600	900	-
District hospital	6,700	5,400	-	1,500	800	-	1,600	-	3,100	7,800	7,500	9,100	4,300	2,500
Primary and secondary schools	2,600	2,600	-	1,000	300	-	400	-	1,800	4,800	4,700	4,900	2,800	-
(As of Sept 2021)	**AUD**	**HKD**	**CNY**	**CNY**	**MYR**	**SGD**	**ZAR**	**THB**	**AED**	**USD**	**USD**	**USD**	**GBP**	**SAR**
US $1 =	1.50	7.85	7.00	7.00	4.57	1.41	17.45	36.91	3.67	1.00	1.00	1.00	0.87	3.75

Source: AECOM

Note: Prices exclude land, site works, professional fees, tenant fitout and equipment. Rates exclude GST/VAT.
International costs based on Q3 2021 and exchange rates to USD as of Q3 2022.
UAE and KSA costs based on Q3 2022 and exchange rate to USD as of Q32022.

Tourism

Average building cost for a five-star luxury hotel



Source: AECOM

Average building costs (USD/key)

Building type	**Sydney** Australia	**Hong Kong** China	**Beijing** China	**Shanghai** China	**Kuala Lumpur** Malaysia	**Singapore** Singapore	**Johannesburg** South Africa	**Bangkok** Thailand	**Dubai** UAE	**Los Angeles** USA	**San Francisco** USA	**New York** USA	**London** UK	**Riyadh** KSA
Three-star budget	350,000	205,000	-	-	140,000	60,000	75,000	50,000	120,000	85,000	85,000	85,000	90,000	115,000
Five-star luxury	**675,000**	**445,000**	**285,000**	**295,000**	**250,000**	**325,000**	**150,000**	**200,000**	**500,000**	**490,000**	**480,000**	**530,000**	**550,000**	**490,000**
Resort style	-	-	470,000	-	195,000	215,000	-	240,000	650,000	305,000	300,000	300,000	335,000	630,000
(Ave Q3 2022)	**AUD**	**HKD**	**CNY**	**CNY**	**MYR**	**SGD**	**ZAR**	**THB**	**AED**	**USD**	**USD**	**USD**	**GBP**	**SAR**
US $1 =	1.50	7.85	7.00	7.00	4.57	1.41	17.45	36.91	3.67	1.00	1.00	1.00	0.87	3.75

Source: AECOM

Note: Prices exclude land, site works, professional fees, loose FF&E and OS&E. Rates exclude GST/VAT.
International costs based on Q3 2021 and exchange rates to USD as of Q3 2022.
UAE and KSA costs based on Q3 2022 and exchange rate to USD as of Q3 2022.

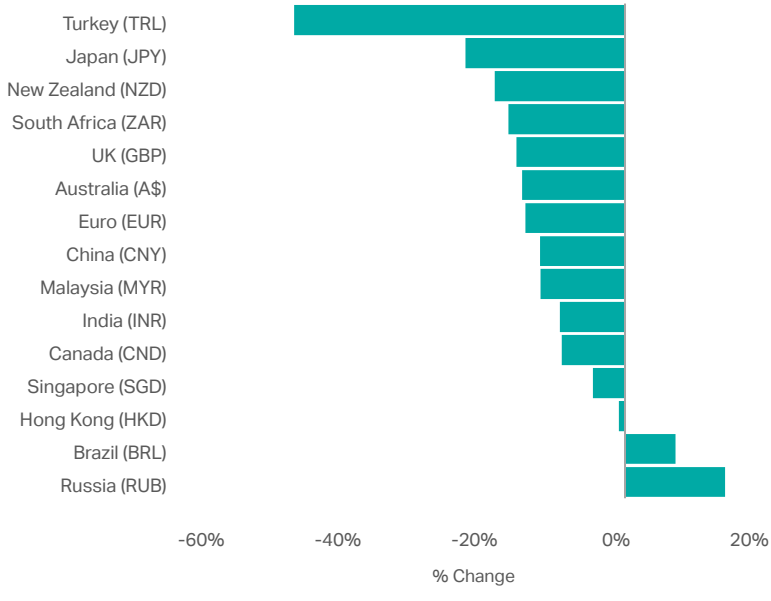
International exchange rate trends

In recent years, exchange rate movements have been significant as diverging economic performance has led to many major currencies experiencing significant shifts against the US Dollar. The Forex rate illustrates a country's economic stability with leading factors that can influence fluctuations and those that are constantly analyzed, including:

- Interest rates.
- A country's current account balance.
- Government debt.
- Political stability (Brexit, trade uncertainty and shifts, elections).
- Recessions.
- Commodity markets.
- International trade.

Currency depreciation against the US Dollar translates into a relative drop in building costs when expressed in US Dollars, making these locations/regions relatively cheaper in US Dollar terms.

Exchange rate trends
Currency movements of the US Dollar against major currencies Q3 2022 compared to Q3 2021.



Source: www.xe.com

GCC building cost comparison

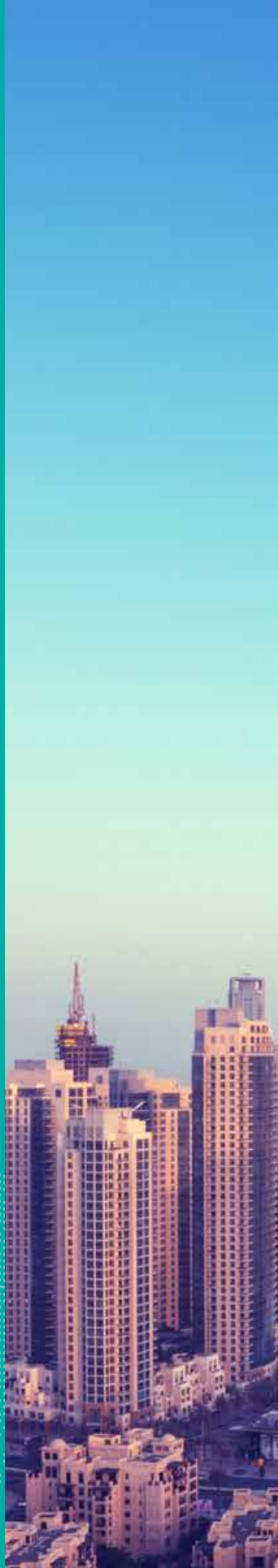
The Middle East cost data shown is a comparison of local construction costs converted to US Dollars to enable differentiation.

The building costs, for their respective asset types, are averages based on local specifications. The actual cost of a building will depend on among other things, such as unique site conditions, design attributes and applicable tariffs.

In addition, the standard for each building varies from region to region, which may have a significant impact on costs.

Costs are subject to considerable variations due to factors such as:

- Local market conditions.
- Complexity of project.
- Commodity price movements.
- Building specifications.
- Exchange rates.
- Contractors appetite for securing work.
- Contractual risk apportionment.



Average building cost by asset type

Building cost (USD/sqm)	UAE (Dubai)		KSA (Riyadh)		Qatar (Doha)		Bahrain (Manama)	
Typology	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**
Residential								
Low-rise	1,000	1,600	800	1,300	1,100	1,600	800	1,400
Medium-rise	1,100	1,700	1,100	1,600	1,200	1,800	1,100	1,700
High-rise	1,600	2,400	1,600	2,400	1,800	2,500	1,500	2,100
Villas	1,200	2,400	1,000	2,200	1,300	2,500	700	1,400
Commercial								
Low-rise office (shell & core)	1,200	1,500	1,000	1,400	1,300	1,600	1,100	1,500
Mid-rise office (shell & core)	1,300	1,900	1,200	1,600	1,500	1,900	1,300	1,700
High-rise office (shell & core)	1,600	2,400	1,500	2,700	1,700	2,500	1,500	2,200
Fit out-basic	1,000	1,600	700	1,000	1,200	1,800	700	1,000
Fit out-medium	1,600	2,000	1,300	2,000	1,700	2,200	1,000	1,300
Fit out-high	2,000	2,700	2,000	2,500	2,300	2,900	1,300	1,700
Retail								
Community	1,400	1,700	1,000	1,300	1,500	1,800	1,100	1,400
Regional mall	1,400	1,800	1,300	1,800	1,500	1,900	1,300	1,700
Super regional mall	1,600	2,000	1,500	2,300	1,700	2,100	1,500	1,900
Industrial								
Light duty factory	800	1,200	800	1,100	900	1,000	800	1,100
Heavy duty factory	1,200	1,900	1,100	1,600	1,300	1,900	1,000	1,300
Light industrial unit	600	900	700	900	700	900	700	1,000
Data Centers								
<10Mw Tier 3 (*Based on AED/kW(IT)	10,000	14,000	11,000	15,000	12,100	16,500	10,500	14,200
>10Mw Tier 3 (*Based on AED/kW(IT)	7,500	11,500	8,000	11,500	8,800	12,700	7,200	11,000
Hotel								
Budget	1,800	2,000	1,600	1,800	1,900	2,200	1,600	1,900
Mid-market	2,100	2,800	1,900	2,500	2,400	3,200	1,700	2,400
Up-market	2,800	3,700	2,500	4,100	3,300	4,300	2,200	2,800
Resort	3,400	3,900	3,000	5,000	3,900	4,600	2,600	3,500
Car parks								
Multi-storey	600	900	600	900	700	900	500	700
Basement	900	1,200	700	1,100	1,000	1,300	700	1,000
Other								
Schools — primary, secondary, academy	1,400	2,200	1,200	1,600	1,600	2,200	1,500	1,900
Healthcare — district hospital	2,300	3,900	2,100	2,900	2,600	4,100	2,600	3,200
Exchange rate to 1 USD	AED	3.67	SAR	3.75	QAR	3.64	BHD	0.37

Source: AECOM

Note:
1. All costs are based on Q3 2022.
2. Relative costs of construction are based on typical build costs in USD. Influence of exchange fluctuations, unique site conditions, design attributes and applicable tariffs must be considered when comparing actual projects.
3. Relative costs are based on an average across all sectors.
4. For typology definitions, inclusions and exclusions see page 85.
5. No investment or other business decision should incorporate the rates in the above table without first contacting AECOM for further information/clarification.
6. KSA (Riyadh) building costs are not representative of current or future assets associated with 'giga projects' under development.
7. Villas topology represent typical master plan community developments.
8. KSA Resort topology refers to coastal projects.

Asset type: basis, inclusions and exclusions

Asset class	Cost inclusions	Cost exclusions
Residential	– Fit out works – MEP services installations – Lift services installations	
Commercial offices	– Internal finishes — lobby and core areas only – Fit out works — lobby and core areas only – MEP services installations — lobby and core areas only – Lift services installations	– Internal finishes to offices – MEP services installations to offices – Active IT and phone equipment
Fit out (commercial offices)	– Works to fit out area only – Fit out works — architectural – Fit out works — MEP services – Specialist installations (AV, IT, security) – FF&E	– Active IT and phone equipment
Retail	– Front of house fit out – Kitchen and laundry equipment – Active IT equipment	– Tenant fit out – Strip retail developments
Industrial (light duty factory)	– Warehouse/distribution type factory – Internal services – FF&E	– Storage/racking systems – IT and CCTV active equipment – OS&E – Production, process and laboratory equipment – Waste water treatment plant, compressed air plant – Process water and drainage systems – N+1/2 redundancy – Humidity/environmental control/conditioning other than standard air conditioning – Ultra flat slabs
Data centers		– Active equipment – FF&E – Utilities outside the building outline – Modular construction (based on one complete data center)
Hotel	– Fit out – Kitchen and laundry equipment – Active IT equipment	– Pre-operating expenses – Client soft costs – OSE
Healthcare, education	– Fixed fit out works only	– All loose fit out and ICT – All medical equipment

Note: All costs are based on Q3 2022

General notes	General cost inclusions	General cost exclusions
– The building costs for the respective asset types are averages based on competitive tenders analysed by AECOM. It must be understood that the actual cost of a building will depend on the design and many other factors and may vary from the figures shown. – Due to the volatile nature of the current market, it is possible that tenders will be received outside these ranges. Professional advice should be sought for specific projects. – The standard for each building varies from region to region. – General and specific cost inclusions and exclusions are listed below. – Relative costs of construction are based on typical build costs in USD. Influence of foreign exchange fluctuations, unique site conditions, design attributes and applicable tariffs must be considered when comparing actual projects.	– Construction works – Main contractor preliminaries and OH&P	– External works and landscaping – Site infrastructure – Enabling works – Swimming pools – Basements podiums and car parks – Contingencies – Undefined provisional sums – Utility connection charges – Statutory fees and charges – Professional fees – Client direct costs – Land acquisition – Finance charges – LEED silver or above – Staff accommodation – Pre-opening expenses – Mock ups – VAT

Source: AECOM

Average MEP cost by asset type

MEP cost (USD/sqm)	UAE (Dubai)		KSA (Riyadh)		Qatar (Doha)		Bahrain (Manama)	
Typology	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**
Residential								
Low-rise	240	390	190	310	260	390	190	330
Medium-rise	260	430	270	410	290	450	260	430
High-rise	410	650	410	650	450	670	370	570
Villas	340	770	250	600	360	800	190	450
Commercial								
Low-rise office (shell & core)	340	450	280	420	370	480	300	460
Mid-rise office (shell & core)	400	630	370	530	450	630	390	560
High-rise office (shell & core)	500	840	470	950	530	880	470	770
Fit out - basic	310	520	210	320	370	570	220	320
Fit out - medium	510	690	420	680	540	740	320	440
Fit out - high	680	950	680	880	780	1,020	440	600
Retail								
Community	360	570	275	445	420	640	360	450
Regional mall	380	600	340	610	410	650	410	500
Super regional mall	420	690	395	755	480	750	450	590
Industrial								
Light Duty Factory	260	430	260	390	280	350	260	390
Heavy Duty Factory	430	760	400	640	460	760	350	520
Light Industrial Unit (LIU)	180	270	210	280	210	270	220	310
Data Centers								
<10Mw Tier 3 (*Based on AED/kW(IT)	6,000	8,400	6,600	9,000	7,260	9,900	6,300	8,520
>10Mw Tier 3 (*Based on AED/kW(IT)	4,500	6,900	4,800	6,900	5,280	7,620	4,320	6,600
Hotel								
Budget	510	600	450	550	530	660	440	570
Mid-market	630	880	580	780	720	1,000	520	750
Up-market	840	1,190	750	1,310	990	1,380	660	900
Resort	1,020	1,290	910	1,650	1,170	1,510	780	1,160
Car parks								
Multi-storey	130	220	130	230	160	210	110	170
Basement	240	330	190	300	270	350	190	280
Other								
Schools - primary, secondary, academy	450	710	390	510	510	700	480	610
Healthcare — district hospital	940	1,640	860	1,220	1,070	1,720	1,070	1,340
Exchange rate to 1 USD	AED	3.67	SAR	3.75	QAR	3.64	BHD	0.37

Note: All costs are based on Q3 2022.

Source: AECOM

Typical building services standards for offices

Subject	BCO (UK) specification 2014	Bahrain specification	UAE specification	Qatar specification	Oman specification
Net : Gross ratio - typical	80 - 85%	70 - 80%	75 - 80%	70 - 80%	70 - 80%
Occupancy standards — typical	1:8 - 1:13/m²	1:10 - 1:14/m²	1:10 - 1:15/m²	1:10 - 1:14/m²	1:10 - 1:15/m²
Occupancy standards — toilets	Single sex one person to 10m² using 60/60 male/female ratio based on 120% ratio.	Single sex one person to 12m² using 50/50 male/female ratio based on 100% population.	Single sex one person to 12m² using 50/50 male/female ratio based on 100% population.	Single sex one person to 12m² using 50/50 male/female ratio based on 100% population.	Single sex one person to 12m² using 50/50 male/female ratio based on 100% population.
Heating and air conditioning internal criteria	24°C, +/- 2°C (Summer) 20°C, +/- 2°C (Winter)	24°C, +/- 2°C	24°C, +/- 2°C	24°C, +/- 2°C	24°C, +/- 2°C
Fresh air supplies	12 - 15 L/s per person	8.5 - 10 L/s per person	8.5 - 10 L/s per person	8.5 - 10 L/s per person	8.5 - 10 L/s per person
Ventilation - WCs (extract)	none stated	10 Air changes per hour	10 Air changes per hour	10 Air changes per hour	10 Air changes per hour
Lighting load allowance	10 W/m²	10 W/m²	10 W/m²	10 W/m²	10 W/m²
Small power load allowance (based upon one workspace every 10m2)	20-25 W/m²	12 - 25 W/m²	12 - 25 W/m²	12 - 25 W/m²	12 - 25 W/m²
Acoustics - open plan	NR 40	NR 40	NR 40	NR 40	NR 40
Acoustics - cellular offices	NR 35	NR 35	NR 35	NR 35	NR 35
Lighting - VDU use	300 - 500 lux	400 - 500 lux	400 - 500 lux	400 - 500 lux	400 - 500 lux
Passenger lifts - capacity	0.8	0.8	0.8	0.8	0.8
Passenger lifts - waiting time (up-peak)	< 25 seconds	< 30 seconds	< 30 seconds	< 30 seconds	< 30 seconds

Source: AECOM

Asset type: basic specification

Asset type	Residential		
Typology	Low-rise	Mid-rise	High-rise
Specification	Basic, medium and high	Basic, medium and high	Basic, medium and high
Key design characteristics			
Building height	G+1 to G+3	G+4/5 to G+20	G+20 and above
GIA	80,000 - 140,000	50,000 - 80,000	90.000 - 120,000
BUA	85,000 - 155,000	55,000 - 90,000	105,000 - 135,000
Efficiency (%)	85 - 100%	80 - 85%	70 - 80%
Units per core	1 - 2	10 - 20	4 - 6
Wall: floor ratio	0.50 - 0.80	0.45 - 0.65	0.45 - 0.55
Net to gross	80 - 100%	75 - 85%	65 - 75%
GIA per unit	200 - 450m²	90 - 200m²	145 - 165m²

Asset type	Offices		
Typology	Low-rise (shell and core)	Mid-rise (shell and core)	High-rise (shell and core)
Specification	Basic, medium and high	Basic, medium and high	Basic, medium and high
Key design characteristics			
Building height	G+1 to G+5	G+5 to G+20	G+20 and above
GIA	10,000 - 25,000	25,000 - 75,000	100,000 - 250,000
BUA	13,000 - 30,000	30,000 - 100,000	130,000 - 280,000
Efficiency (%)	70 - 85%	70 - 85%	70 - 85%
Wall: floor ratio	0.40 - 0.70	0.40 - 0.60	0.40 - 0.50
Net to gross	50 - 60%	50 - 60%	50 - 70%
Slab to slab height	4.0 - 5.0m	4.0 - 4.5m	4.0 - 4.5m
Grid spans	7 - 12m	9 - 12m	9 - 12m

Asset type	Retail		
Typology	Community	Regional	Super regional
Key design characteristics			
Finishes	Mid range	High	High
GFA (m²)	Not exceeding 30,000	30,000 - 100,000	> 100,000

Asset type	Industrial			
Typology	Light duty factory	Heavy duty factory	Light industrial unit	Data center — Tier 3
Specification	Basic	Basic	Basic	Basic
Key design characteristics				
Building height (m)	8	10	6	6
GIA	10,000	20,000	6,000	4,000
Wall : floor ratio	0.33	0.30	0.38	0.35

Asset type	Hotel			
Typology	Budget	Mid-market	Up-market	Resort
Specification	Basic	Mid range	Luxury	High end
Key design characteristics				
Building height	G+10	G+10	G+15	G+6
GIA	16,000 - 18,000	13,500 - 15,500	56,000 - 60,000	39,000 - 41,000
Wall: floor ratio	70%	75%	75%	55%
Functional units	350	200	350	200

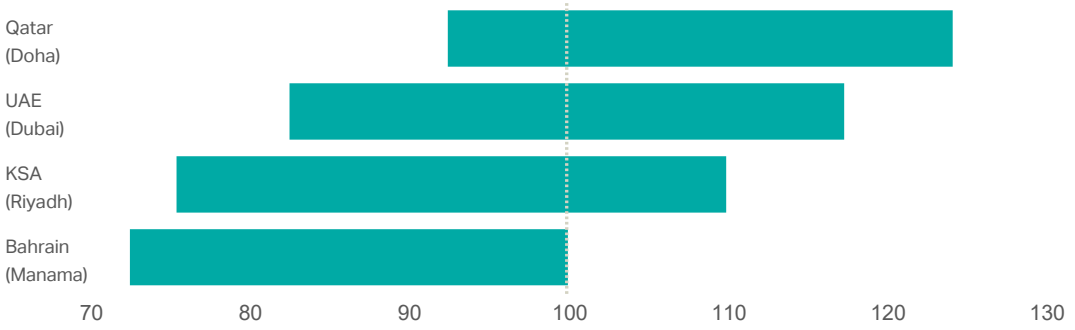
Asset type	School	Healthcare
Typology	Primary/secondary academy	District hospital
Specification	Mid-range	Mid-range
Key design characteristics		
Building height (m)	10	24
GIA (m²)	21,000 - 22,000	50,000
No. of lift core	1	4
No. of stair core	9	6

Source: AECOM

Middle East relative cost of construction

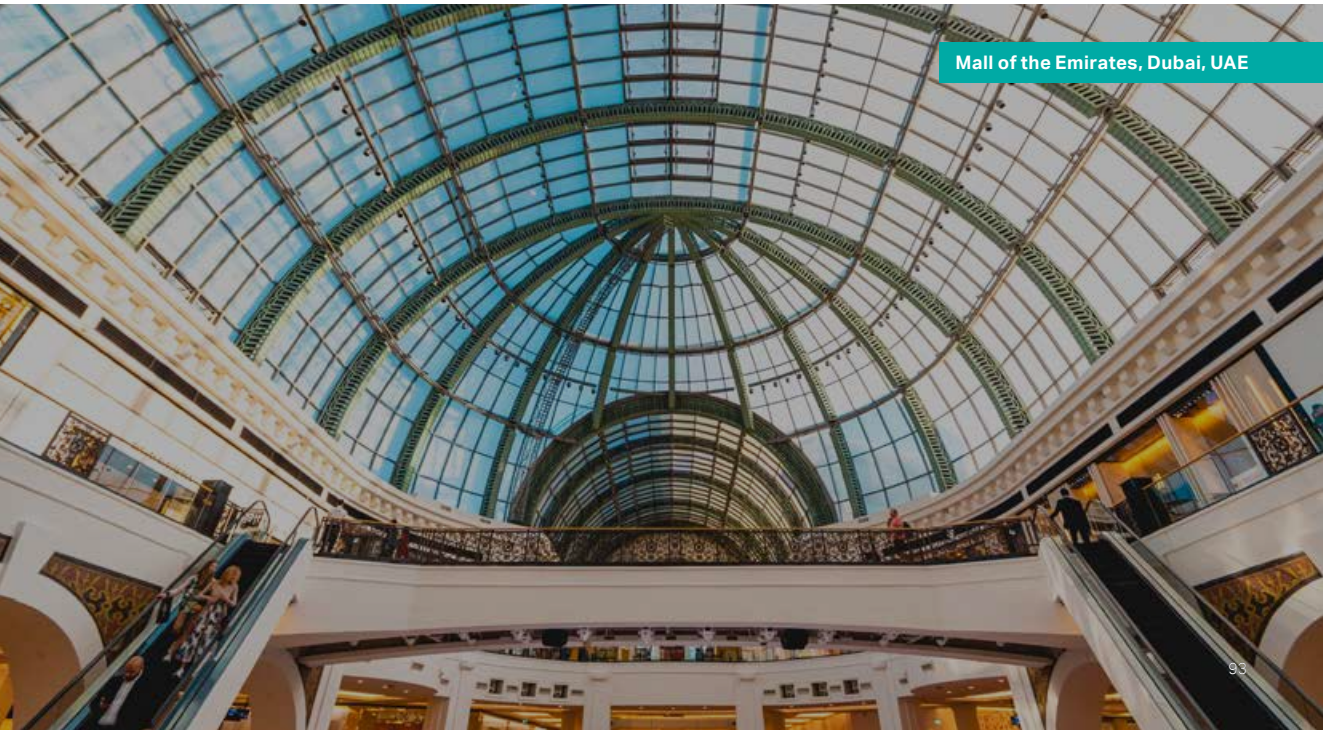
The relative cost of construction is based on typical building costs in US Dollars. The influence of foreign exchange fluctuations, unique site conditions, design attributes and applicable tariffs must be considered when comparing actual projects. Relative costs are based on an average across all sectors.

Middle East relative cost of construction



Source: AECOM

Note: Relative cost of construction are based on typical build costs in USD. High and low cost factors for each building type have been calculated relative to the UAE (Dubai), where average costs equal 100. The relative cost bars plotted in the chart represent the average high and low cost factor for each country, based on the costs of the buildings included in the sample (excluding commercial fit-outs).



Mall of the Emirates, Dubai, UAE

Major measured unit rates

Item (Unit rates in USD)	Unit	Description	UAE (Dubai)	KSA (Riyadh)	Qatar (Doha)	Bahrain (Manama)
Excavation	m^3	"Standard/minimum specification excavation for trench foundation; depth not excessive, i.e. no greater than 1-2 m"	7	9	7	11
Disposal of excavated material	m^3	"Standard/minimum specification disposal away from site"	7	6	5	4
Filling	m^3	Imported fill	14	18	17	20
Poured concrete, reinforced	m^3	"Standard/minimum specification grade 20 or 30; superstructure, walls or slabs; reinforced "	130	156	149	167
Reinforcement	tn	"Standard/minimum specification 20mm bars"	1,200	1,560	1,100	1,030
Formwork/shuttering	m^2	"Standard/minimum specification superstructure standard; fair face finish to walls"	46	49	38	20
Blockwork	m^2	"Standard/minimum specification 200mm solid blockwork, usually internal walls"	38	48	38	25
Doors	no.	"Standard/minimum specification single leaf door, fire rated, timber, basic finish, usually 900mm wide, generally excluding ironmongery"	1,130	1,200	1,470	890
Tiling to floors	m^2	"Standard/minimum specification 300 x 300mm ceramic tiles"	35	60	51	28
Plaster to internal walls and ceilings	m^2	12.5mm thickness	16	17	13	10
Painting to internal walls and ceilings	m^2	"Standard/minimum specification Emulsion"	7	14	6	5
Exchange rate to 1 USD			AED 3.67	SAR 3.75	QAR 3.64	BHD 0.37

Note: All costs are based on Q3 2022.

Source: AECOM

Major material prices

Item (Unit rates in USD)	Description	Unit	UAE (Dubai)	KSA (Riyadh)	Qatar (Doha)	Bahrain (Manama)
			USD	USD	USD	USD
Cement	Ordinary Portland cement	Tonne	81	105	99	89
Sand	Sand for concreting	m³	11	14	18	24
Aggregate	19mm aggregate	m³	17	17	36	40
Ready-mixed concrete	Grade 50 (OPC)	m³	76	88	137	106
	Grade 40 (OPC)	m³	64	77	127	100
	Grade 20 (OPC)	m³	65	67	120	94
Reinforcing steel	High tensile	tn	870	1,060	1,050	720
	Mild steel	tn	840	1,020	870	690
Hollow concrete blockwork	100mm thick	m²	11	9	10	10
	200mm thick	m²	14	11	17	12
Structural steelwork	Mild steel grade 50 to BS 4360	tn	1,290	1,880	1,330	1,110
Timber	Hardwood	m³	890	950	960	980
	Softwood	m³	340	480	370	350
Fuel	Diesel	Litre	1.02	0.18	0.56	0.48
	Petrol Premium 95	Litre	0.87	0.62	0.58	0.56
Exchange rate to 1 USD			AED 3.67	SAR 3.75	QAR 3.64	BHD 0.37

Source: AECOM

Note: All costs are based on Q3 2022. Cost rates are indicative and represent supply only costs of the materials listed. Location factors should be applied to address geographic variations in each country. The rates are exclusive of VAT or similar, where applicable.

Hamad International Airport, Qatar

Labour costs

Description	Unit	UAE (Dubai) USD	KSA (Riyadh) USD	Qatar (Doha) USD	Bahrain (Manama) USD
Skilled operatives					
Concreter	Hour	6.0	8.8	6.3	6.9
Steel Fixer	Hour	6.0	9.3	6.3	6.4
Bricklayer	Hour	6.5	9.9	8.0	6.9
Carpenter	Hour	6.5	9.9	8.0	6.4
Mechanical Installer	Hour	8.4	10.6	7.1	7.6
Electrician	Hour	9.0	11.7	9.3	6.9
Laborer (skilled)	Hour	5.7	7.6	6.3	4.7
Supervision					
Foreman	Hour	11.2	13.0	13.2	9.8
MEP Foreman	Hour	12.5	15.5	13.2	9.8
Site Engineer	Month	7,010	7,130	5,750	5,790
Construction Manager	Month	11,220	12,400	12,950	12,270
Exchange rate to 1 USD		AED 3.67	SAR 3.75	QAR 3.64	BHD 0.37

Source: AECOM

Note: All costs are based on Q3 2022.
These rates (USD) are indicative and represent an all-in unit cost for each of the disciplines listed; and are
- Inclusive of: wages, salaries and other remunerations prescribed by local labour legislation; average allowances for costs of employment; recruitment; visas/permits; paid leave; travel; accommodation; health and welfare
- Exclusive of: overtime working; contractor mark-up for overheads and profit; VAT (Value Added Tax) or similar where applicable.

These rates should not be misinterpreted as contractors' day work rates.

MENA exchange rate comparison

	Euro zone	UK	India	China	Japan	UAE	KSA	Qatar	Oman	Bahrain	Kuwait	Egypt	Lebanon	Jordan
1 USD =	EUR	GBP	INR	RMB	JPY	AED	SAR	QAR	OMR	BHD	KWD	EGP	LBP	JOD
H1 2012	0.77	0.63	52.1	6.3	79.7	3.67	3.75	3.64	0.38	0.376	0.278	6.0	1,490	0.707
H2 2012	0.79	0.63	54.6	6.3	79.8	3.67	3.75	3.64	0.38	0.376	0.281	6.1	1,483	0.707
H1 2013	0.76	0.65	55.0	6.2	95.5	3.67	3.75	3.64	0.38	0.376	0.284	6.9	1,486	0.707
H2 2013	0.75	0.63	62.0	6.1	99.6	3.67	3.75	3.64	0.38	0.376	0.283	6.9	1,489	0.707
H1 2014	0.73	0.60	60.8	6.2	102.4	3.67	3.75	3.64	0.38	0.376	0.282	7.0	1,489	0.707
H2 2014	0.78	0.62	61.2	6.2	109.2	3.67	3.75	3.64	0.38	0.376	0.287	7.2	1,492	0.707
H1 2015	0.90	0.66	62.8	6.2	120.3	3.67	3.75	3.64	0.38	0.376	0.299	7.5	1,491	0.707
H2 2015	0.91	0.65	65.4	6.3	121.8	3.67	3.75	3.64	0.38	0.376	0.302	7.8	1,488	0.707
H1 2016	0.90	0.70	67.2	6.5	112.8	3.67	3.75	3.64	0.38	0.376	0.302	8.4	1,508	0.709
H2 2016	0.91	0.78	67.2	6.7	105.9	3.67	3.75	3.64	0.38	0.376	0.303	11.6	1,508	0.709
H1 2017	0.92	0.79	65.7	6.9	112.4	3.67	3.75	3.64	0.38	0.376	0.305	18.0	1,508	0.709
H2 2017	0.85	0.76	64.5	6.6	111.9	3.67	3.75	3.64	0.38	0.376	0.302	17.8	1,508	0.709
H1 2018	0.83	0.73	65.7	6.4	108.7	3.67	3.75	3.64	0.38	0.376	0.301	17.7	1,508	0.709
H2 2018	0.87	0.77	70.7	6.8	111.9	3.67	3.75	3.64	0.38	0.376	0.303	17.9	1,508	0.709
H1 2019	0.88	0.77	70.1	6.8	110.4	3.67	3.75	3.64	0.38	0.376	0.304	17.4	1,508	0.709
H2 2020	0.89	0.75	73.2	6.5	103.0	3.67	3.75	3.64	0.38	0.38	0.300	15.7	1,508	0.710
H1 2021	0.86	0.74	74.3	6.5	112.0	3.67	3.75	3.64	0.38	0.38	0.300	15.7	1,508	0.710
H2 2021	0.90	0.76	75.8	6.4	121.8	3.67	3.75	3.64	0.38	0.38	0.305	18.3	1,508	0.709
H1 2022	1.03	0.91	81.5	7.1	144.7	3.67	3.75	3.64	0.38	0.38	0.311	19.6	1,508	0.709

Source: Bank of England, www.fxtop.com

Weights and measures

Metric measures and equivalents

Length

1 millimeter (mm)	=	1 mm	=	0.0394 in
1 centimeter (cm)	=	10 mm	=	0.3937 in
1 meter (m)	=	100 cm	=	1.0936 yd
1 kilometer (km)	=	1000 m	=	0.6214 mile

Area

1 square centimeter (cm^2)	=	100 mm^2	=	0.1550 in^2
1 square meter (m^2)	=	10 000 cm^2	=	1.1960 yd^2
1 hectare (ha)	=	10 000 m^2	=	2.4711 acres
1 square kilometer (km^2)	=	100 ha	=	0.3861 $mile^2$

Capacity/volume

1 cubic centimeter (cm^3)	=	1 cm^3	=	0.0610 in^3
1 cubic decimeter (dm^3)	=	1000 cm^3	=	0.0353 ft^3
1 cubic metre (m^3)	=	1000 dm^3	=	1.3080 yd^3
1 liter (l)	=	1 dm^3	=	1.76 pt
1 hectolitre (hl)	=	100 litre	=	21.997 gal

Mass (weight)

1 milligram (mg)			=	0.0154 grain
1 gram (g)	=	1000 mg	=	0.0353 oz
1 kilogram (kg)	=	1000 g	=	2.2046 lb
1 tonne (t)	=	1000 kg	=	0.9842 ton

USA measures and equivalents

U.S. dry measure equivalents

1 pint	=	0.9689 UK pint	=	0.5506 liter

U.S. liquid measure equivalents

1 fluid ounce	=	1.0408 UK fl oz	=	29.574 ml
1 pint (16 fl oz)	=	0.8327 UK pt	=	0.4723 liter
1 gallon	=	0.8327 UK gal	=	3.7854 liter

Imperial measures and equivalents

Length

1 inch (in)			=	2.54 cm
1 foot (ft)	=	12 in	=	0.3048 m
1 yard (yd)	=	3 ft	=	0.9144 m
1 mile	=	1760 yd	=	1.6093 km
1 int. nautical mile	=	2025.4 yd	=	1.853 km

Area

1 square inch (in2)			=	6.4516 cm^2
1 square foot (ft2)	=	144 in^2	=	0.0929 m^2
1 square yard (yd2)	=	9 ft^2	=	0.8361 m^2
1 acre	=	4840 yd^2	=	4046.9 m^2
1 sq mile (mile2)	=	640 acres	=	2.59 km^2

Capacity/volume

1 cubic centimeter (cm^3)	=	1 cm^3	=	0.0610 in^3
1 cubic decimeter (dm^3)	=	1000 cm^3	=	0.0353 ft^3
1 cubic meter (m^3)	=	1000 dm^3	=	1.3080 yd^3
1 litre (l)	=	1 dm^3	=	1.76 pt
1 hectolitre (hl)	=	100 litre	=	21.997 gal

Mass (weight)

1 ounce (oz)	=	437.5 grains	=	28.35 g
1 pound (lb)	=	16 oz	=	0.4536 kg
1 stone	=	14 lb	=	6.3503 kg
1 hundredweight (cwt)	=	112 lb	=	50.802 kg
1 ton	=	20 cwt	=	1.016 tonne

Temperature conversion

C = 5/9 (F – 32) F = (9/5 C) + 32

05 Reference articles

IN BRIEF

Procurement routes

All clients expect projects to be delivered on time and within budget, with an agreed level of quality and with risk professionally managed by their management and consultant teams.

However, most clients and construction professionals have experience of at least one project that was not delivered to the budget, time or quality levels expected. This is why the right procurement strategy, one that is considered robust, efficient, value-based and balances risk and control against the competing project objectives of cost, time and quality, is key to a successful project outcome.

AECOM has developed strategies for the delivery of projects that we know work, successfully delivering hundreds of projects over our long history. New and existing developers have the opportunity to learn from this knowledge and maximize the value from their time, cost and quality mix, whilst adhering to a process that increases the likelihood of their projects being successfully procured by the team involved.

Studies conducted with our key clients who regularly undertake development work have shown that projects can be delivered for 5-10 per cent less cost when procured correctly with no impact on quality or time.

So what is the right procurement approach for your projects?

Which funding strategy, funding partner, team behaviours, attitudes, communication channels, budget and program delivers the best approach, and how can we best combine these to lead our clients to ultimate success?

> “The right procurement strategy, one that balances risk and control against the competing project objectives of cost, time and quality, is key to a successful project outcome.”

AECOM's management of the procurement process

AECOM offers important early advice to help determine the right procurement approach, adding value throughout the building process. This understanding of our clients' time, cost and quality requirements maximizes the value we can offer. Some of the procurement strategies followed in the industry are listed below, but the real challenge is selecting the right approach when considering an individual client and/or project need.

Traditional lump sum

The design by the client's consultants is completed before contractors tender for and then carry out the construction. The contractor commits to a lump sum price and a completion date prior to appointment. The contractor assumes responsibility for the financial and program risks for the carrying out of the building works, whilst the client takes responsibility and accepts the risk for the quality of the design and the design team's performance. The client's consultant administers the contract and advises on aspects associated with design, progress and stage payments, which must be paid by the client. A variant on this is a traditional re-measured contract, where the tendered BOQ quantities are re-measured (either periodically or at the end of construction) and the contract price is adjusted accordingly based on the contractual rates for the revised quantities.

Accelerated traditional

As per traditional lump sum, but procured in the market place before being fully designed (normally 80-85 per cent designed), and leaving more simple elements of the building to be procured once the contractor has been appointed. It is important to understand how a client procures the remaining elements of work with a contractor under this approach, and to design out those areas that carry inherent risk early in the process. It may also involve the procurement of an early works package for enabling and/or piling works.

Two stage

A contractor is invited to become part of the project team in stage one, usually by way of a pre-construction fee or commitment to preliminaries and mark-up percentage. They jointly procure the project with the client, until such time that a second stage lump sum offer can be agreed, which should be before construction begins on site. An understanding of the original appointment and the subsequent framework, under which the second stage is agreed, are the important aspects of this approach, as well as working with transparency and trust preventing an early commitment to a full scheme that a client cannot afford.

Design and build

Detailed design and construction are both undertaken by a single contractor in return for a lump sum price. There are variants on this option depending on the degree to which initial design is included in the client's requirements. Where a concept design is prepared by a design team employed directly by the client before the contractor is appointed (as is normally the case), the strategy is called develop and construct. The contractor commits to a lump sum price, for completion of the design and the construction and to a completion date, prior to their appointment. The contractor can either use the client's concept design to complete the design or use their own scheme to finalize it within the employers requirements set. With design and build it is important to design out or specify in detail those parts of the building the client wants to see perform a particular function or provide a particular visual impact.

Management contract

Design by the client's consultants generally overlaps with the construction. A management contractor is appointed early to tender and let elements of work progressively to subcontractors and specialists work packages. The contracts are between the management contractor and the trade contractors, rather than between the client and sub-contractors. The management contractor will not carry out construction work, but is employed to manage the process. The management contractor, in theory, assumes responsibility for the financial (and program) risks for the works, but in reality this is normally diluted by the terms of the contract so their liability is similar to that of a construction manager.

Design, manage and construct

Similar to the management contract, with the contractor also being responsible for the production of the detailed design or for managing the detailed design process.

Turnkey contract

A form of a design and build contract in which a single contractor or developer is responsible for all services, possibly also including finance. Under a turnkey project, the client enters into a contract with one party to deliver the entire project. The project is handed over once it is complete and fully operational. The client is normally not involved in any of the decisions throughout the building process. There are several variations of 'turnkey' contracts, including Engineer-Procure-Construct (EPC), Build-Own-Lease-Transfer (BOLR), Design-Build-Operate-Transfer (DBOT), or PFI.

Engineer, Procure and Construct (EPC)

EPC is a form of "turnkey" contract. This form of procurement places risk in the right hands and offers solutions to clients' engineering requirements from those specialized to meet the performance requirements set by a client team. Many of the large utility companies procure work in this way, bringing high levels of certainty from the supply chain which helps to achieve business critical benefits over the long-term.

Public Private Partnerships (PPP)

A detailed and complicated form of procurement used predominantly for public services when the private sector feels it is advantageous to design, build, finance and operate a particular service or building type. It is becoming more popular in the Middle East as a way to limit public sector spending, whilst meeting the demands of a growing population. AECOM has been involved with PPPs for over 20 years. We have successfully completed many projects worldwide and use this global knowledge to benefit clients locally.

Middle East forms of contract

This section considers the different forms of contract used in construction across the region.

Bahrain

Government work in the Kingdom of Bahrain is undertaken using a bespoke suite of contract forms that were issued in 2009.

Private developers predominantly use the FIDIC Conditions of Contract for Construction, the 1999 edition of the 'red book', which is well understood in the local market, but often heavily amended for specific use.

Most of the work completed in Bahrain is under a traditional lump sum form of contract, where the design is completed upfront and price agreed with a contractor before work begins on site.

Design and build and two-stage procurement are in use across the Kingdom but are not considered to be the industry norm. As more international private developers have started working in Bahrain, with time constraints as their main driver, the market has adjusted to accommodate this demand. Design and build contracts, however, are not routine. This is largely due to the Council for Regulating the Practice of Engineering Professions (CRPEP) restrictions on contractors undertaking in-house design which necessitates the novation of the client's architect or a subconsultant appointment.

Kingdom of Saudi Arabia

Construction contracts in the private sector are generally based on FIDIC forms of contract, and are amended to suit the particular conditions for each project.

Employers prefer lump sum versus remeasured contracts, and normally exercise great control in the administration of the construction process by imposing various restrictions on the engineer's (consultant) authorities under the contract. All contracts are subject to Saudi laws where Islamic Sharia law is the prime source of legislation. Litigation and arbitration are both available for resolution of disputes in the private sector.

Within the public sector, however, construction contracts are based on the Standard Conditions for Public Works, which are amended to suit particular projects. These conditions are generally based on those given in the 4th edition of the FIDIC Conditions of Contract for Works of Civil Engineering Construction, the FIDIC 4 'red book', but with greater control given to the employer for the administration of the contract.

All public work contracts are let on a remeasured basis and are subject to the Saudi Government Tendering and Procurement Regulations, as issued by royal decree. It is also noted that several of the large scale developments planned have aggressive schedule targets, and as such there is also a growing appetite for the design and build form of contract, with these developments.

King Khalid International Airport, KSA

Qatar

In Qatar, the most common forms for building works are those used by the PublicWorks Authority (PWA) departments through the Ministry of Municipality and Environment (MME) and the Qatar Petroleum Company (QP) forms, or FIDIC based amended bespoke forms.

The contracts are generally on a fixed price lump sum basis, utilizing bills of quantities or specifications and drawings, however, the design and build route is becoming more prevalent in the market. The contracts are often biased towards clients, wherein the contractor buys all the project risks for an increased initial price, however, such contracts are generally administered in a reasonable manner.

A high proportion of private sector projects utilize a bespoke form based on the FIDIC forms of contract, such contracts are generally fixed price lump sum which follows the general theme of most contracts in the state.

The Public Works Authority (Ashghal) utilize an in-house bespoke contract which was updated in 2018 to become more contractor-friendly with a greater share of risk. The updated suite is now tailored to a particular procurement route more suitable to the individual project needs. This approach should reduce the volume of project specific amendments included in tenders.

Major international projects frequently use a more traditional FIDIC forms (typically the 1999 version) with amendments to dispute resolution clauses and removal of DAB provisions.

Before any contract is awarded, there are commonly several rounds of negotiation, during which the price and other contractual terms can be modified to respond to a reduction in contract price.

“Before any contract is awarded, there are commonly several rounds of negotiation, during which the price and other contractual terms can be modified to respond to a reduction in contract price.”

Al Janoub Stadium, Qatar

©Hufton+Crow

United Arab Emirates

Construction contracts in the UAE are predominantly based upon the FIDIC forms of contract.

Large-scale developers and major repeat clients in the region generally now develop and utilize bespoke forms of contract, tailored to each individual client.

Such contracts generally use the FIDIC 4 'red book' form as a basis, amended to a greater or lesser degree depending upon the risk profile of each client. This also applies to works procured by Dubai Municipality. Abu Dhabi Municipality, however, bases contracts on a modified FIDIC 3 form, taken from the 3rd edition of the FIDIC conditions of Contract for Works of Civil Engineering Construction.

Contracts based on the 1999 'red book' are often used in the UAE, but in general, the market remains firmly rooted in the FIDIC 4 form.

Civil works' contracts within the UAE are mostly procured on a re-measurable basis, whereas building works will generally be based on a fixed price lump sum.

However, there are exceptions. More and more clients are procuring projects using a fast-track approach and will therefore incorporate a re-measurable element, reflecting those parts of the design that are incomplete at tender stage.

There is also a significant increase in appetite for the use of design and build forms of contract, as clients intend to transfer a large share of the risk on to the contractors, as well as seeking overall project schedule savings due to earlier procurement being enabled.

> "Civil works contracts within the UAE are mostly procured on a re-measurable basis, whereas building works will generally be based on a fixed price lump sum."

Al Raha Beach Development, Abu Dhabi, UAE

Building regulations and compliance

This section outlines the procedures for obtaining building permissions across the region. AECOM's project management team is vastly experienced in the procedures for building permits internationally and locally and is able to guide and oversee this process.

Bahrain

Procuring a municipal building permit in Bahrain is now completed through the on-line portal, Benayat, over a seven-stage process:

Stage one
Prepare drawings

The client must engage a consultant to prepare the necessary architectural and engineering drawings and documents for the next stages of submission. It is generally sufficient to include simple outline plans, cross-sections to indicate overall heights and an area statement.

Stage two
Obtain pre-approval

Certain projects will require a pre-approval from the Urban Planning Development Affairs, Road, Planning and Design Directorate (RPDD), Civil Aviation Authority and other authorities. Specific criteria is listed out within the online portal and should the project fall under any of the requirements, then the pre-planning approval is required.

Stage three
Third party checker

Before the building permit submission and after the pre-approval, if required, the building permit package is to be submitted to a third party engineering firm to review and confirm compliance with the building code and application criteria. The reviewing firm must be of a similar grade to the submitting firm and must be registered with the Council for Regulating the Practice of Engineering Professions (CRPEP). A full list of firms is provided on the Benayat portal.

Stage four
Building permit application and third party declaration

Upon agreement with the third party, the documents are to be uploaded to the online network. The third party must, within seven days, validate the application online to allow the process to move to the Government entity review.

Stage five
Government entities review

Once the submission is made and the third party validates, the respective Government entities will review and provide any conditions. The main authorities involved at this stage are the Municipality, Sanitary Engineering Planning and Projects Directorate (SEPPD) and the Electrical Distribution Directorate (EDD).

Stage six
Fee payment

Once the submission has been reviewed and there are no objections/non-conformities, the municipal charges must be paid for the following elements:

1. Building Permit Fees.
2. Building Permit Insurance Deposit.
3. Infrastructure Fees (if applicable).
4. Civil Aviation Fees (if applicable).

Stage seven
Issue of building permit

Upon payment of the fees the building permit, along with any conditions, will be issued electronically via the Benayat system for works to proceed.

Application audit

Within two weeks of issuing the building permit, it shall be reviewed by the authorities audit team. The audit team shall inform the engineering office to resubmit or modify the drawings if any changes are required to be made to meet the relevant building code standards.

Kingdom of Saudi Arabia

Obtaining a building permit in the Kingdom of Saudi Arabia varies from region to region, however, they tend to follow the same basic principles. The various procedures and approvals from the main municipality, the branch municipality and the fire department need to be obtained. Obtaining these approvals typically takes between three to four months depending on the nature and size of the building/project.

The following is a general outline of the steps needed to obtain a building permit:

Stage one

Obtaining a letter from the main municipality

A letter from the owner is submitted to the main regional municipality, along with a copy of the land deed. The municipality checks the masterplan of the area to ensure the suitability of the plot for the construction of a building. The municipality then writes a letter to the branch municipality of the area where the plot is located. This process takes five days and does not incur a charge.

Stage two

Obtaining a preliminary location permit from the branch municipality

The owner submits a copy of the letter obtained previously from the main municipality to the branch municipality, requesting an inspection of the plot to ensure that the plot length, width and total area are as indicated on the deed. The branch municipality then issues an approval to use the land. This process takes five days and does not incur a charge.

Stage three

Obtaining approval from the fire department

The branch municipality writes to the fire department, or civil defense, to obtain its approval of the plan submitted by the owner for the fire-alarm and fire-fighting systems. The fire department approves these plans and sends them back to the municipality. This process takes ten days and does not incur a charge.

Stage four

Obtaining a final building permit

The branch municipality issues a building permit and sends it to the main municipality for approval, which is given dependent on the nature of the building. The owner can collect the permit from the main municipality after one to three months. The cost of this permit is SAR 1,200.

Qatar

Compared with many other countries, the planning and building approval process in Qatar is relatively clear and structured. Land ownership, other than by Qatari nationals and the state, is still extremely limited. The key process in securing development rights is obtaining a land title or 'PIN', since without it all other permits and applications cannot be commenced. Once the land is secured, the project masterplan is submitted for approval to the Planning Department and local municipality offices.

Stage one

DC1 approval

General overviews and strategies for the utilities and primary infrastructure are submitted to the relevant utility service providers for comment. During this process, each department generally issues a series of reference numbers that are then used as the file number for all future submissions.

The culmination of this round of submissions is the DC1 approval. As the design develops, a second round of submissions are made to the same utility departments for final approval. In addition, a submission is made to the Qatar Civil Defense (QCD) department who review the fire and life safety aspects of the project.

Stage two

DC2 approval

Depending upon the scale and nature of the project, separate traffic studies may be required and these would be submitted to the Road Affairs Department for approval. Qatar Civil Defense may request modifications to ACMV, FF/FA at this stage.

Stage three

Final stage/building permit

Once the DC2 approval is secured a further set of standard forms are circulated with a consolidated set of documents for final signing and approval. These documents constitute the building permit.

As a general guide the whole process usually takes at least 80 days (duration for private sector is stated in the KPI document issued by MME in relation to the corresponding size and type of the project), depending upon the quality of the submission, although in practice it often takes much longer due to comments from different departments and progressive design revisions.

During the whole of this process, it is generally not advisable to revise or modify any submission as it may delay the approval process.

All submissions must be in Arabic, or bilingual, and should be endorsed by locally registered and approved design companies. International companies cannot make these submissions by themselves.

There are some parts of Qatar that are exempt from the building permit approval process. These are generally related to oil and gas production facilities.

Recently, a number of revisions have been made to the design standards of buildings, in particular, high-rise structures. These address issues such as fire safety, refuge areas, the use of lifts in the event of fire, and the nature and extent of façade glazing.

Fit out and refurbishment projects now follow a similar DC1 and DC2 process, a change from the requirement to obtain a maintenance permit before work commenced. The approval process is now under the control of the Ministry of Municipality and Approvals.

This submission must be made by a registered local consultant and failure to do this can significantly delay the approval and permitting process. The statutory approval process comprises multiple stages that in turn, dictate the program parameters.

The stages are as follows:

Opening of the file
Submission of MME documents, forms and architectural preliminary drawings.

DC1
Fire and life safety (consists of egress paths, occupancy load, emergency lighting, fire ratings, etc.) and Kharamaa drawings.

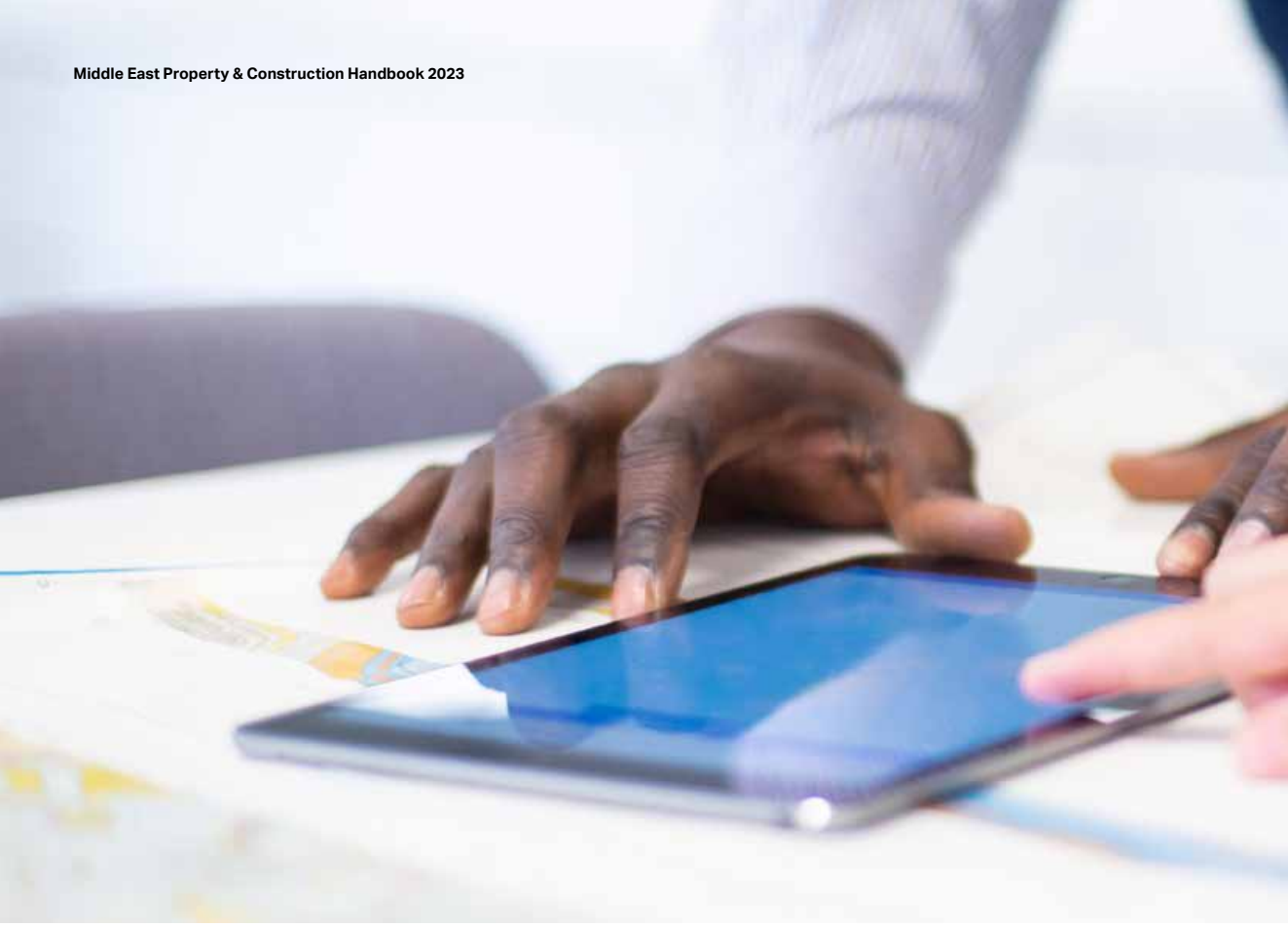
DC2
Fire fighting, fire alarms, ACMV (upon request), emergency lighting and Kharamaa loads confirmation (if requested by MME).

Building permit
MME forms for construction.

Following approvals from all of the required stages, and receipt of the municipality building permit, it is only then that officially marks the time works may then commence on site. However, at the landlord's discretion, mobilisation and demolition works may commence.

The main risks associated with civil defense approvals and municipality building permits are as follows:

- Submission of incorrect information, resulting in rejection of the application.
- Administrative delays within the Civil Defense Department.
- Public holidays and governmental shutdowns.



United Arab Emirates

The following is a general outline of the procedure for obtaining a building permit in the UAE, but there are many further obligations and procedures to be completed within each of the stages. For example, stage three of the building permit application requires no less than 15 different forms, documents and separate approvals to be submitted as part of the application.

It is the responsibility of the construction contractor or lead consultant to obtain the building permit, although all applications must be signed by locally registered consultants.

Stage one
Submitting the preliminary application

The applicant submits a preliminary application to the relevant municipality or statutory authority and pays a deposit.

Stage two
No Objection Certificates (NOC)

These are obtained from various governmental and municipal departments including; civil defense, the fire department, drainage, communication, water and electricity, civil aviation, oil and gas, coastal and military.

Stage three
Submitting the building permit application

The full building permit application, including all NOCs, is submitted to the relevant municipality or statutory authority.

Stage four
Obtaining the building permit

On approval, the applicant collects the building permit and applies for a demarcation certificate.

Stage five
Obtaining the building completion certificate

NOC's are to be obtained from various governmental and municipal departments, this is so you can submit to the relevant municipality or statutory authority for the final building completion certificate application, along with all supporting documents.

06 Directory of offices

Directory of offices

United Arab Emirates

Abu Dhabi
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International Tower
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Al Ain
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Al Ain

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F: 971 3 755 4727
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U-Bora Tower
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Business Bay, Dubai

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Kingdom of Saudi Arabia

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