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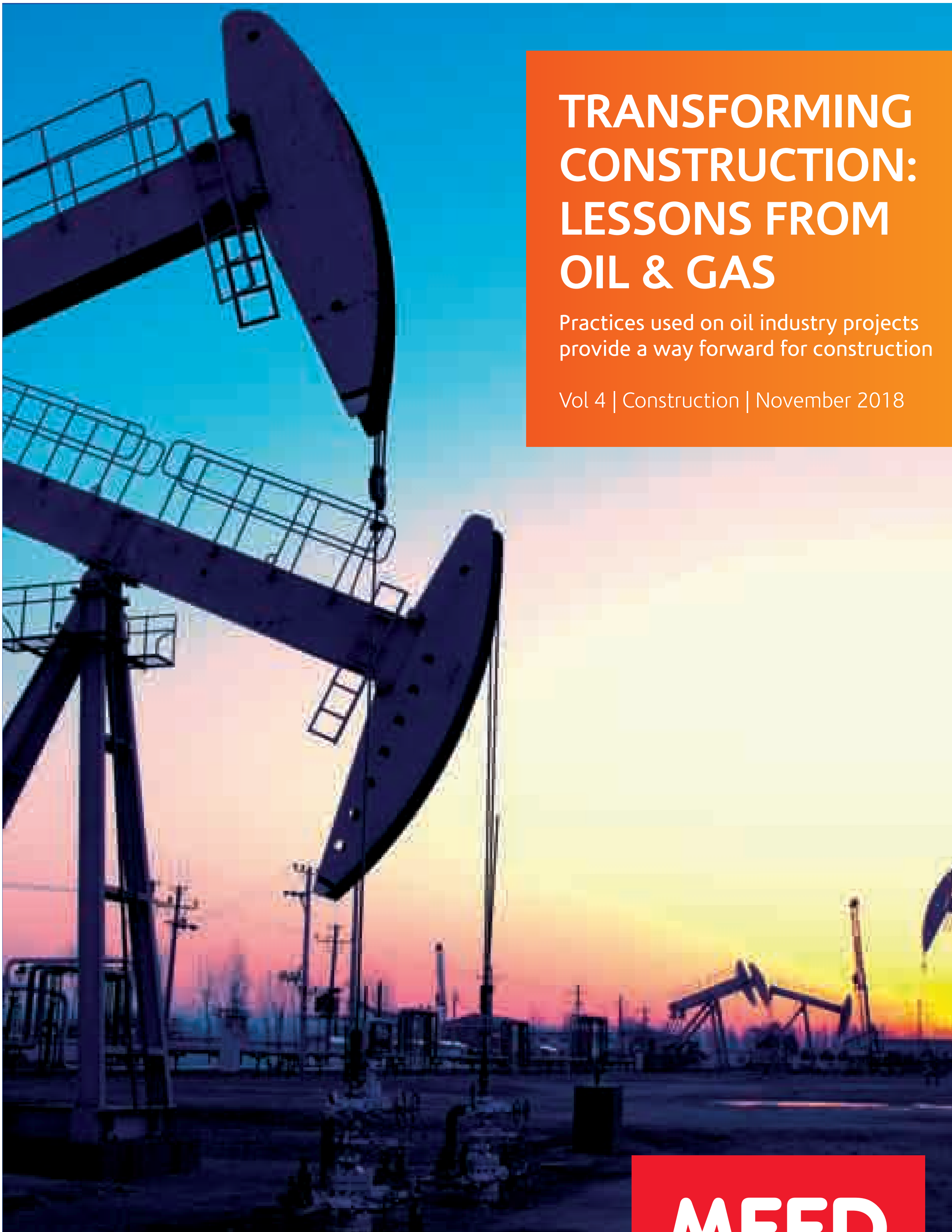

TRANSFORMING CONSTRUCTION: LESSONS FROM OIL & GAS

Practices used on oil industry projects provide a way forward for construction

Vol 4 | Construction | November 2018

MEED
Middle East business intelligence

IMPARTING KNOWLEDGE

The region's construction industry is in a state of revival and can learn valuable insights from its oil and gas counterpart

With nearly $1.6tn-worth of major building and infrastructure projects planned or underway across the GCC, there is no doubting the vital role the construction industry plays in the region.

Yet despite its size and importance, the GCC construction industry faces challenges that are undermining the delivery of projects, the implementation of national visions and the sustainability of the industry itself.

Many of the problems are common to construction around the world. But the slowdown in investment in capital projects in the GCC since 2015 has exposed chronic weaknesses in the region's construction industry.

These weaknesses, which include time-consuming disputes, cost and time overruns, safety flaws, payment delays and a lack of innovation, all stem from the basic principle of "lowest price wins" that underpins much project procurement in the region's construction sector. It is clear to everybody involved in the industry that change is needed. The question is, how?

In its previous series of reports published in 2017/18, the MEED/Mashreq Construction Partnership examined the opportunity to improve the way projects are delivered in the GCC by harnessing the latest innovations and technologies that are being pioneered on best-practice projects around the world.

But construction clients and contractors can also gain valuable insights by looking at how other industries have responded to similar challenges.

With $168bn-worth of projects planned or underway across the GCC, the oil and gas sector is considerably smaller than the construction industry in terms of the number of projects and the overall value of project spending. But despite this, it has much to offer in terms of project delivery.

The characteristics of the oil and gas projects market are fundamentally different to those of the general construction projects sector. Individual projects in the oil and gas sector are generally delivered on a far bigger scale than most construction projects, and they involve the delivery of complex process engineering systems embedded into their structures.

Crucially, different procurement models are utilised, with engineering, procurement and construction (EPC) contracts typically used, along with integrated supply chain management systems and long-term services agreements. Most important of all, the clients typically have a longer-term vision that is centred around national objectives.

In this special report, MEED looks at the characteristics of the oil and gas projects market, the opportunities and challenges, and crucially, what lessons the construction industry can learn from how projects are delivered in the GCC oil and gas industry.

EXECUTIVE SUMMARY

The oil and gas industry offers some valuable lessons to share with construction clients and contractors

- The GCC's oil and gas and construction industries share many commonalities in the form of scale of projects, engineering and fabrication requirements, and their inherent dependence on oil export revenues. Yet when it comes to how projects are delivered, the oil and gas sector is viewed far more positively when compared to its construction counterpart, thanks to its successful track record of planning, procurement and operations.

- The construction and infrastructure sector, covering building, real estate and transport projects, accounts for close to $1.6tn of projects planned or underway in the GCC. The oil and gas industry can claim a mere $168bn-worth of projects planned or underway in the GCC.

- But crucially, oil and gas projects are on average considerably larger and technically more complex. The average oil and gas project contract awarded since 2013 in the GCC has been about $347m compared with just $56m in the construction and infrastructure sector.

- And with about 2,035 individual project clients over the past five years, compared to just 86 in the oil and gas sector, the construction industry is far more fragmented and diverse, with its participants ranging from state-run or quasi-privatised developers to smaller clients offering one-off tenders.

- Many of the challenges facing construction stem from lack of client flexibility. There is opportunity for construction project clients to adopt more strategic procurement models that look beyond the lowest-price-wins tactic.

- The construction industry is highly adaptable to the urban environment, where every project brings with it bespoke designs. The industry is quick to adapt to new trends. But this results in inefficiencies.

- Construction projects can reduce costs by utilising innovation, standardisation, better financing models and new design practices.

- Construction projects tend to be led bottom-up by the supply chain, while oil and gas projects are more engineering and fabrication focused. Standardisation and adoption of technology and modular solutions can help both industries achieve better results.

- In the oil and gas sector, project contractor-client relations are less confrontational than in the construction industry, and project completion takes precedence. The construction industry can save time and costs by adopting a more collaborative approach.

- The construction sector has taken huge strides in safety culture and environmental awareness, but needs to reinforce firmer regulations.

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All data provided by MEED Projects

LESSONS FROM OIL

While both industries should rightly be proud of their respective achievements, the construction sector can learn valuable insights from the oil and gas industry

Around the world, the construction sector is typically characterised by its adversarial contracting culture, with low barriers to entry and a lowest-price-wins tendering model. It is hardly surprising therefore that such a business environment has led to low margins, as well as a questionable safety record and contract disputes, as both clients and contractors seek to maximise their positions.

It does not have to be like this. As the oil and gas projects market shows, there are alternative approaches to project contracting that can reduce delays, limit disputes, and improve quality and safety. This sector is viewed much more positively. Oil and gas project clients and contractors have proven their ability to successfully deliver on plans, typically on a much bigger scale than in the construction sector. And the industry has become synonymous with world-scale projects, cutting-edge technology and overcoming massive engineering problems.

So what, if anything, is the construction sector doing wrong? And is there anything it can learn from the oil and gas sector?

The two industries share plenty in common. Both develop large-scale projects with heavy engineering and fabrication requirements, while also facing similar boom-and-bust cycles. In the GCC, the cycles of the two sectors often overlap. With economies that are highly dependent on oil export revenues, periods of low oil prices often cause a shock to governments' ability to pay for projects.

Oil prices

The outlook for oil prices has a significant bearing on the region's oil and gas projects market as governments weigh up whether or not to push ahead with major spending plans at a time of lower revenues.

> "The two industries share plenty in common. Both develop large-scale projects with heavy engineering and fabrication requirements, while also facing similar boom-and-bust cycles. The two cycles often overlap."

Spending on oil and gas projects in the region contracted abruptly in 2016, as a result of the collapse of oil prices that saw Brent crude fall from over $114 a barrel in June 2014 to below $27 a barrel in January 2016. The consequent fall in oil export revenues put significant pressure on government finances, leading to a review of spending priorities by the region's oil exporters, with project spending slowing sharply as a result.

The GCC currently has $1.6tn-worth of construction projects planned or underway, ranging from housing to railway projects. By comparison, the value of projects planned or underway in the oil and gas sector is about $168bn.

The construction industry is much bigger and more fragmented than the oil and gas projects market, with 13 times the number of projects planned or underway, but with the majority being much smaller standalone developments.

Oil and gas projects have been driven by the need to meet rising local and international energy demand, from

motor fuels to powering electricity generation. More recently, large-scale integrated downstream projects have become strategically important as the GCC producers aim to produce higher-value products, insulating their revenues from oil price cycles and opening up new avenues for job creation.

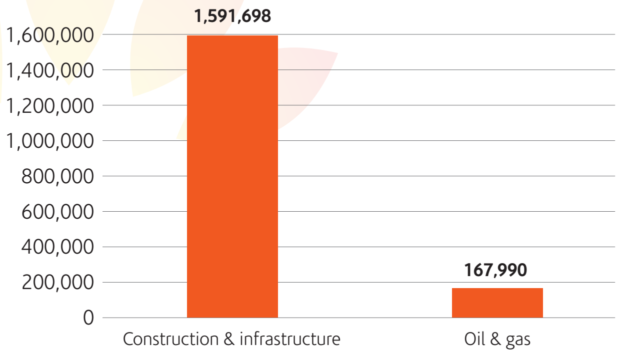
In fact, the dramatic escalation in the size, scope and cost of its projects, with multiple facilities being installed on a single site, means the oil and gas industry faces a conundrum. Delivering these schemes has become a major challenge, especially in a low oil price environment, where many projects must significantly reduce costs to meet the requirements of their final investment decisions.

The clients

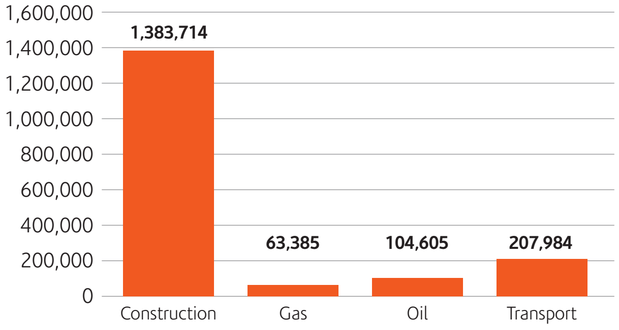
One of the most significant differentiators between the construction and oil and gas projects markets is the type of organisation sponsoring a project: the client.

The GCC oil and gas projects market is centred on a handful of national oil companies (NOCs) such as Saudi Aramco, Abu Dhabi National Oil Company (Adnoc) and Kuwait Petroleum Corporation (KPC), along with their subsidiaries. There are also a number of smaller operators and international oil companies, particularly in Oman, but these tend to operate in joint venture with the host NOCs. A total of 86

Value of GCC oil and gas and construction projects planned or underway ($m)



Value of projects planned or underway in the GCC ($m)



companies have been behind all oil and gas projects in the GCC over the past five years, according to MEED data. By contrast, there have been about 2,035 construction project clients in the GCC over the same period.

The result is that oil and gas project sponsors tend to be repeat project clients tendering dozens of projects over the course of a year, often restricted to a core group of prequalified contractors. Although disputes between clients and contractors occur frequently, since both parties appear to realise they cannot operate without each other, they tend to be resolved quickly and relatively amicably.

It is also fair to say that many of the projects are better funded from the oil companies' own budgets, or externally through project financing provided by banks and export-credit agencies. Oil and gas projects are revenue-generating assets, in contrast with many construction and infrastructure projects.

The construction sector, on the other hand, is much more fragmented and diverse, with a multitude of different project sponsors ranging from large state-run entities or quasi-privatised developers to numerous small clients offering one-off tenders.

The two sectors also diverge in their approaches to tendering and contracting. The one-off nature of construction projects, or sometimes public procurement regulations, has meant that construction clients tend to focus on a lowest-price-wins tendering, which in a downturn leaves contractors facing paper-thin profit margins, forcing them to cut as close as possible to the requirements, and seek to recover any additional costs through claims made against design variations made by the client after the contract has been awarded.

Contrast this with the oil and gas sector, where the lowest-priced bids still often win out, but where greater adoption of innovative designs, standardised equipment and other approaches to driving efficiency regulate savings.

"If you are a smaller oil and gas contractor without the [right] experience, you would never be allowed to bid. You have to take your responsibility seriously on these types of contracts without a doubt," explains one contractor.

The relationship between the client, designers and construction contractors is key. Major oil and gas contracts are traditionally awarded on the basis of detailed front-end engineering and design (feed) work carried out by a separate consultant. The process can take upwards of a year, and there is little the client can do to speed up the process of tendering the construction contracts without compromising the engineering.

"You could be on a contract that spends well over a year, two years, three years in the engineering phase modularising building things before you even get onto site," says the contractor source.

On construction projects, particularly in the commercial real estate sector, designs are often not completed by the time construction begins. While this enables work to begin earlier, it frequently results in major changes to the design during construction.

Safety first

As the GCC's NOCs have built a more global presence working overseas and alongside major international oil companies, their focus on safety at their facilities has increased.

"To get on an oil and gas job, your statistics need to be five times better. Your LTIFR (Lost Time Injury Frequency Ratio) needs to be world class. Nobody takes a local view on this and nobody turns a blind eye because the statistics generally play into the reputation of the operator or client," says a source.

The construction sector generally has fallen far behind on this, and many say that the lowest-price-wins culture can result in corner-cutting to save costs, at the expense of safety.

The construction industry could gain from moving away from fixation on lowest-price-wins as the best path to reducing costs and focus on leading projects through engineering before construction even begins.

But it is not a one-way process. There are also opportunities for the oil and gas sector to learn. Even here, the sector has been slow to adopt new technologies such as interactive 3D engineering environments that allow users to virtually navigate sites and operating facilities before procurement and major construction even begins.

Such technology would allow design issues to be spotted and addressed much more quickly, reducing the man-hours spent on engineering and helping speed up project delivery.

As both industries grapple with the challenges of delivering capital projects, there are no easy solutions to transform performance, but new technologies have the potential of significant efficiency gains. Perhaps the most significant difference is the relationship between clients and contractors. While construction is characterised by an adversial relationship, oil and gas sees it as a strategic partnership.

A TALE OF TWO MARKETS

While the construction industry has a much larger portfolio of projects in the GCC, the oil and gas industry has far bigger schemes

With about $1.8tn of projects planned or underway, the construction and oil and gas industries together account for about 58 per cent of all projects planned or underway in the GCC.

About half of all oil, gas, building and transport projects are under construction. Of the 50 per cent that are in planning, more than three quarters are at the study stage, about 9 per cent are under design, and 5 per cent are at some stage of tendering.

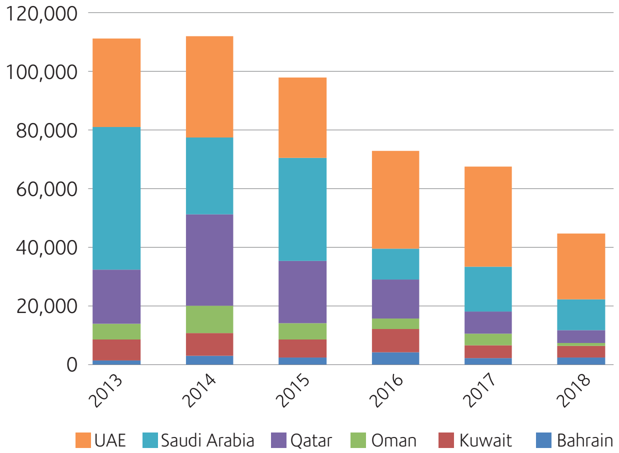
Projects are not evenly split between the two segments however, with the civil engineering and building projects that make up the construction and infrastructure sector accounting for close to $1.6tn of all projects planned or underway, about 88 per cent by value. The oil and gas industry can claim a relatively meagre $168bn of projects planned or underway in the GCC.

Oil and gas

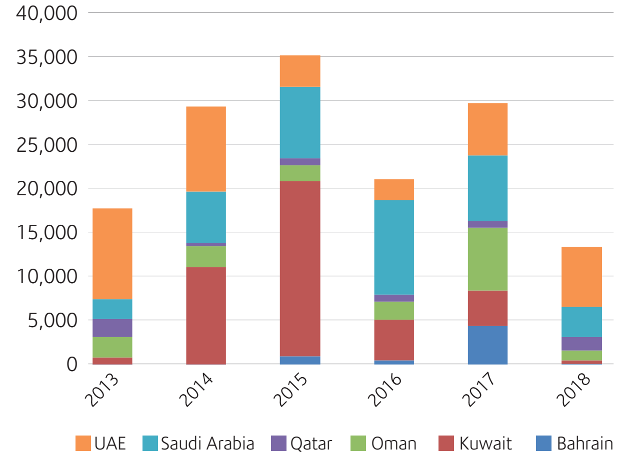
The six GCC states have awarded $133bn-worth of oil and gas projects in the five-year period from the start of 2013 to the end of 2017.

Surprisingly, oil and gas project activity has fared relatively well despite the collapse of global crude oil prices since mid-2014. The value of GCC contract awards climbed

GCC construction and transport contract awards, 2013-18 ($m)



GCC oil and gas contract awards, 2013-18 ($m)



*=Based on contract awards between 1 January 2013 and 30 September 2018.

steeply in 2015, although this is largely attributed to the award of several major contracts for the construction of Kuwait's new 615,000 barrel-a-day (b/d) grassroot refinery at Al-Zour, which accounted for more than half the total $35.1bn awarded.

The value of contracts slipped back in 2016, with oil prices remaining subdued and oil producers' group Opec cutting output in an attempt to halt their decline. Nevertheless, some $21bn of awards were made during 2016. This figure rose in 2017 to a five-year high of just under $30bn.

The upward trend looks to have slowed in 2018, with more than $13bn of contracts awarded up to 30 September. But with several major contracts awaiting a final agreement in Abu Dhabi and Saudi Arabia, the full-year total will be higher.

Construction

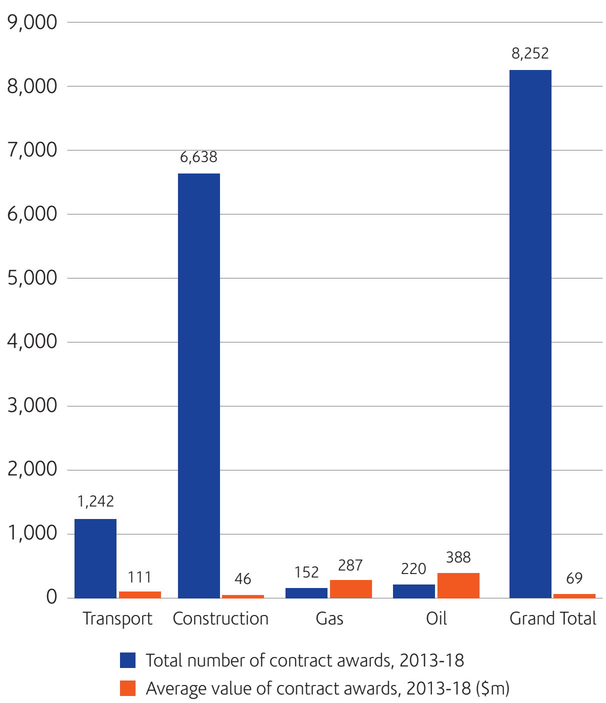
The GCC states have awarded nearly $461bn-worth of construction and transport projects in the five-year period from the start of 2013 to the end of 2017.

Segmenting the construction market further, the building and real estate sector lies behind the skew towards construction projects, with building projects accounting for about 70 per cent of all projects planned or underway in the GCC, and about 46 per cent of the budget value of all projects.

This is the view when looking at the individual projects that have been announced. If you extend the scope of projects to include the headline budget estimate for masterplans, including subprojects that have yet to be announced, building and real estate projects account for about 79 per cent of the value of all projects planned or underway in the GCC.

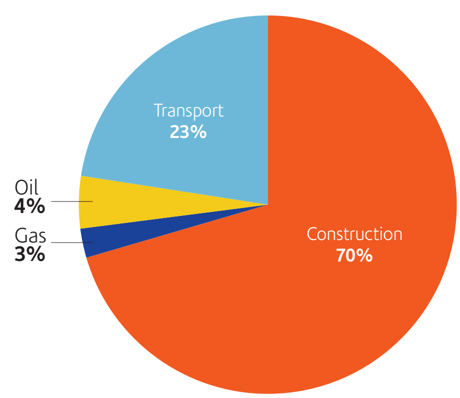
But despite the huge imbalance in the overall GCC projects market towards construction and infrastructure

Number and value of project contracts awarded, 2013-18

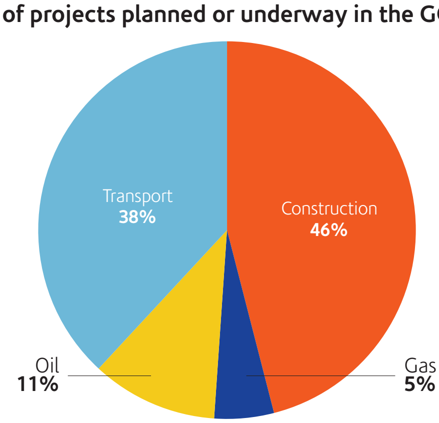


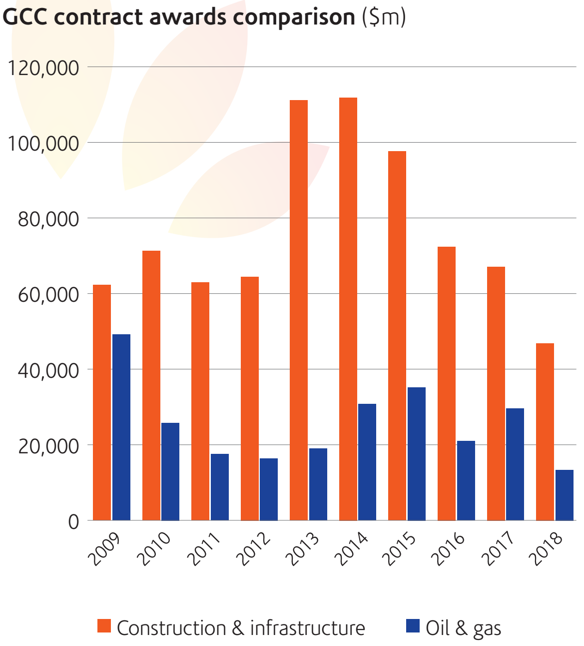
*=Based on contract awards between 1 July 2013 and 30 June 2018.

Number of projects planned or underway in the GCC



Value of projects planned or underway in the GCC





projects, there is a significant shift towards oil and gas projects when you look at the market by the average size of projects.

Value of projects

The average value of oil and gas project contracts awarded in the GCC from 2013-18 is $347m, compared with an average project contract value of about $56m across construction and infrastructure projects. And in the construction segment alone, which covers building and real estate projects and which accounts for the vast majority of projects, the average value of project contracts is $46m.

In broad terms therefore, one of the fundamental differences in the characteristics of the two segments is that oil and gas projects in the GCC are typically about six times bigger than construction projects in the GCC.

Closely related to the size of the project is the technical challenge involved in delivering a scheme.

Bigger projects will inevitably have a higher volume of design and construction elements that have to be coordinated. This increases substantially the risk involved and potential scale of the consequences caused by delays.

Additionally, the bigger oil and gas projects will generally involve the inclusion of a much higher level of process engineering and technology than is commonly found in a building or real estate project.

Mitigating this risk on oil and gas projects is done by having detailed designs completed prior to the commencement of construction. Also, the typical engineering, procurement and construction (EPC) contracts used on oil and gas projects allocate complete responsibility for project delivery on the contractor in the oil and gas sector. Whereas in the building industry, main contractors often are dealing with less complete design, frequent client changes and multiple specialist subcontractors.

The higher engineering and risk allocation involved in oil and gas projects makes the work more specialist, and thus increases the barriers to entry for contractors.

As a result of the requirement for higher levels of technical capacity, the EPC contractors and their employees working on oil and gas projects will generally be more involved in international markets, which will shape their focus on international standards of delivery, communication, safety and innovation.

A final key distinction between the two segments is that oil and gas projects will typically be sponsored by a few, large-scale oil companies, which are repeat project clients across multiple large-scale projects. Many construction project clients are irregular project sponsors, lacking experience or capacity in procuring and managing projects.

As a consequence, oil and gas project clients have sought to introduce efficiencies and increase standards through the development of internal supply chain management structures, and through the standardisation of specifications and contracts.

The one-off nature of building and real estate clients, along with the design contribution from architects seeking to add a unique aspect quality to buildings, means that there is a far more bespoke nature to many construction projects, introducing a higher degree of ad hoc decision-making in project delivery.

POLICY DRIVERS

Economic policies and market trends across the region are driving the shift in investment demand

Forecasts of world oil demand appear to be converging on a new consensus, averaging more than 100 million b/d in 2019 and rising to a peak somewhere around 2030 to 2040. For the Gulf's low-cost producers, the idea of oil demand starting to fall off after this peak represents a harsh vision and a major challenge to the GCC states' traditional economic model, which relies heavily on crude exports.

The challenge facing oil companies is to squeeze as much value out of each barrel of oil that comes out of the ground, producing more high-value fuels, specialty petrochemicals and industrial feedstocks. The aim is not only to maximise revenues, but also seeking technology and expertise transfers.

Plans are already in place for a massive investment in the downstream sector, with more than $200bn expected to be ploughed into new refining and petrochemicals ventures in the GCC by 2025.

The plans are not before time. Despite being the world's third-biggest petrochemicals-producing region, the Middle East and North Africa (Mena) ranks relatively low on integrating its oil, refining and chemicals sectors. Led by Abu Dhabi and Riyadh's new projects, this is set to change, according to a new report released by the Paris-based International Energy Agency (IEA).

It forecasts primary chemicals consumption will grow almost 60 per cent to 1 billion tonnes by 2050. Nearly 7 million b/d of the extra oil the world will need by then will be used by chemicals manufacturers, the agency said. Already sitting at the lower end of the cost curve among primary petrochemicals producers and accounting for 12 per cent of all global high value-chemicals, the Gulf is well set to take advantage of this growth.

> **"With the outlook for oil prices improving through 2017 and in 2018, GCC governments are more free to accelerate strategic projects needed as part of their economic development strategies."**

Adnoc

Abu Dhabi is leading the way in the newest investment wave, outlining plans in May for a $45bn expansion of its Ruwais complex. The new site will take advantage of Adnoc's plentiful feedstock, and capitalise on the emirate's willingness to commit funds to develop a new chemicals conversion hub on the Gulf. Adnoc is expected to announce the first of its new international partners for the Ruwais refinery and petrochemicals complex investment programme by the end of the year.

"Such programmes are at least in part explained by the desire to create a more balanced revenue stream, including refining margins," the IEA said in its Future of Petrochemicals report released in October 2018.

There is considerable room for growth. "Of the region's total crude oil production, about 28 million b/d, only about 7 million b/d is refined locally, with the rest exported to global markets," the IEA explained.

Saudi Aramco

Adnoc is not alone, however. Saudi Aramco has tied up with France's Total to expand its Satorp refining and petrochemicals joint venture, and also with Saudi Basic Industries Corporation (Sabic) to develop a new 400,000 b/d crude-to-chemicals facility. This direct processing route may even come to challenge the current model of integration from upstream to refining and then petrochemicals. Aramco aims to raise its global refining capacity to as much as 10 million b/d from about 5 million b/d now, by the middle of the next decade.

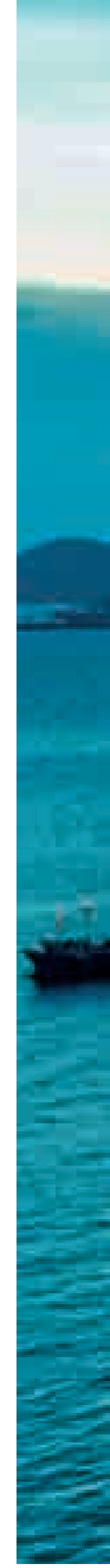
Kuwait, Qatar and even Oman have similar schemes underway to integrate their complexes and diversify their production.

Driving construction

The total value of contract awards in the construction and transport sectors increased in the first half of this year, rising to $32bn from $27bn the in second half of 2017, according to regional projects tracker MEED Projects.

With the outlook for oil prices improving through 2017 and in 2018, GCC governments are more free to accelerate strategic projects needed as part of their economic development strategies.

Despite the increase in contract awards in 2018, the total for the first half of this year is still below the average of



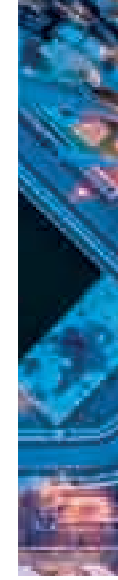
$40bn of construction and transport contract awards made on a half-yearly basis since 2006, and well below the high of nearly $70bn of awards made in the first half of 2014.

Construction and infrastructure projects in the GCC are being driven by a combination of private real estate developments and government infrastructure needs. The strategic goals set by the GCC states, such as UAE Vision 2021, Saudi Vision 2030 and Kuwait Vision 2035, have increasingly focused on economic growth and "localisation". Population growth in the GCC has necessitated the development of residential units and transport infrastructure.

The region's biggest market, Saudi Arabia, is pushing ahead with a large-scale project development drive led by the sovereign wealth fund, the Public Investment Fund (PIF).

THE BIG PLAYERS

Construction eclipses oil and gas in terms of project spending. But with many more project sponsors, it is far more fragmented



Saudi Arabia

Oil and gas

As the world's leading crude oil exporter, Saudi Aramco is the largest oil and gas project client in the region, awarding more than $33.2bn of project contracts in the five-year period from July 2013 to June 2018. In 2017, it retained its top position among GCC oil companies, awarding $7.1bn-worth of major contracts. Of this, upstream projects totalled just over $4bn.

Construction

Saudi Arabia's sovereign wealth fund, the Public Investment Fund (PIF), has been slowly taking over the development of major infrastructure projects. The PIF has also emerged as the primary driver of the strategic real estate development programme across the kingdom, including the $500bn Neom city project announced at the Future Investment Initiative organised in Riyadh in October 2017.

Saudi Arabia's most active client in the construction and transportation sectors with regard to ongoing projects is the Interior Ministry, which is building security compounds and residential complexes around the kingdom. More than $28.5bn-worth of contracts awarded by the ministry are currently under execution.

The second most active client is the Arriyadh Development Authority (ADA), which manages the Riyadh Metro project and bus rapid transit (BRT) system. ADA has about $24bn-worth of contracts under execution, mainly in the transport sector.

Kuwait

Oil and gas

Kuwait's key clients are all subsidiaries of state-owned Kuwait Petroleum Corporation (KPC). Its two refiners, Kuwait National Petroleum Company (KNPC) and the newly formed Kuwait Integrated Petroleum Industries Company (KIPIC), are in the region's top three project clients, after awarding more than $12bn each over the past few years.

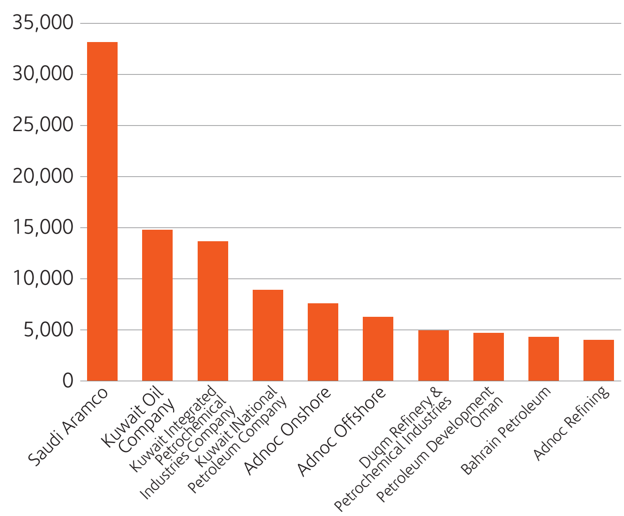
Kuwait Oil Company (KOC), the state's upstream operator, sits in fourth place with just over $11.8bn of awards.

Construction

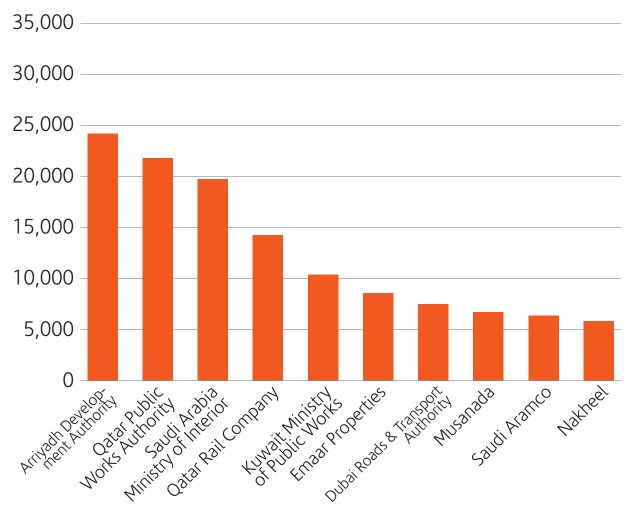
Due to a lack of private development, the construction and transportation sector in Kuwait is dominated by four government clients: the Ministry of Public Works (MPW), Kuwait University, the Health Ministry and the Public Authority for Housing Welfare (PAHW). These four clients account for about 72 per cent of the value of contracts under execution in Kuwait.

The biggest contracts awarded in 2017-18 relate to PAHW's housing programme, the Directorate General of Civil Aviation's (DGCA) airport expansion programme, and

Top 10 oil and gas project clients by value of contract awards, 2013-18 ($m)



Top 10 construction and infrastructure project clients by value of contract awards, 2013-18 ($m)



MPW's roads building programme.

The relaunch of the public-private partnership (PPP) programme may result in more openings for foreign companies, but unless a major scheme comes along, it is difficult to see a substantial increase in private construction activity in the short term.

UAE

Oil and gas

The UAE's oil operations are split across a number of companies, but are dominated by subsidiaries of Abu Dhabi National Oil Company (Adnoc). Its offshore division is the region's fifth-biggest client, with $9.5bn in contracts awarded since 2013. Adnoc Onshore is also working hard to develop its resources as the emirate of Abu Dhabi pushes to meet its long-planned target of boosting its crude oil production capacity up to 3.5 million b/d by the end of 2018.

Construction

The UAE's biggest construction client is Dubai developer Emaar Properties, which has an estimated $6bn of projects underway. This is a considerable increase on 2015, when the company had $3.6bn of projects under execution.

Second is Dubai's Roads & Transport Authority (RTA), which jumped up the rankings thanks to the $2.9bn award in 2015 for the Route 2020 metro link that will connect to the Dubai Expo site. It maintained its position with a number of 2017 awards on the Expo 2020 development and Jewel of the Creek development at the Port Saeed area in central Dubai, plus contract awards for road infrastructure improvements.

Dubai's Nakheel jumped up the ranking from seventh position in 2016 to third in 2017, driven by the $1.14bn contract awarded for the construction of Deira Mall as part of its Deira Island project. Other schemes include the extension of Ibn Battuta Mall and the construction of Palm Gateway.

The two biggest Abu Dhabi construction clients are Abu Dhabi General Services Company (Musanada) and Abu Dhabi Airports Company.

Bahrain

Oil and gas

Bahrain Petroleum Company (Bapco), normally the smallest spender in the region, leapt into the contractor awards table after signing a $4.2bn deal with a joint venture of France's Technip and Samsung Engineering of South Korea for the long-planned expansion and modernisation of its 267,000 b/d Sitra refinery.

With the discovery of the new shale field Khaleej al-Bahrain in 2018, Bapco could be set for more oil and gas project awards. However, the size of the find is yet to be fully determined and it is unlikely to fuel a resurgence of Bahrain's projects sector.

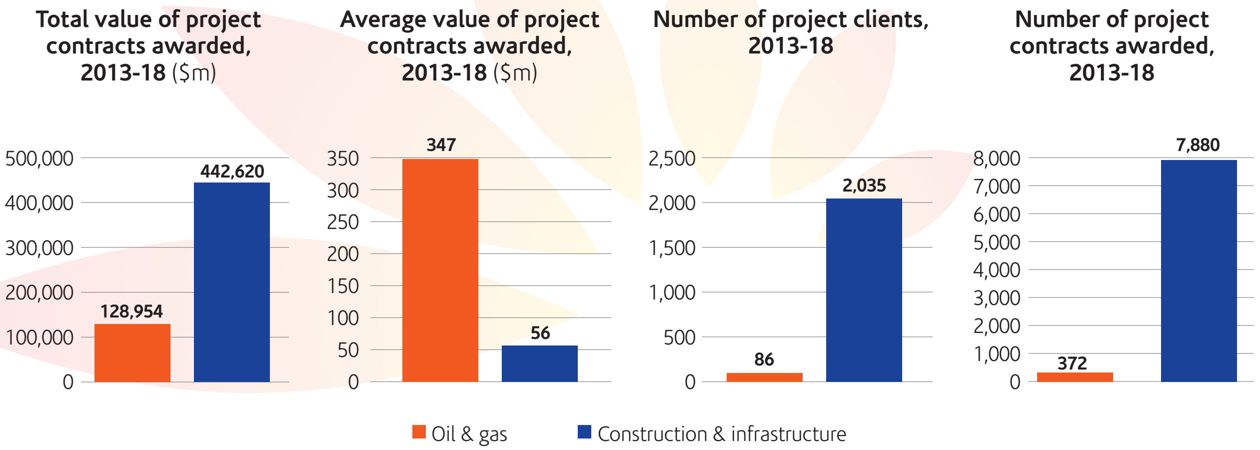
Construction

Manama's real estate sector was hit hard by the 2008 global financial crisis, which was followed by the 2011 political protests, making finance extremely difficult to obtain. At the same time, sales and rental prices continued to decline. As a result, phasing, financing and delivery of existing projects has been scaled back. Developing other income streams is now more important than ever, and tourism is one of the main potential growth areas identified by Manama.

In terms of active clients, Bahrain Airport Company (BAC) has the largest portfolio of projects, mainly due to the $1.1bn-worth megaproject for the Airport Modernisation Programme awarded in 2016. Next is Bahrain's Housing Ministry, which has the second-biggest portfolio of work underway, with schemes all over the country as well as megaprojects such as the East Sitra housing project.

Other major clients include Gulf Holding Company, Diyar al-Muharraq, Gulf Finance House and Bahrain Defence Force, among others.

The clients



*=Based on contract awards between 1 July 2013 and 30 June 2018.

Qatar

Oil and gas

One notable absentee from the top 10 list of GCC oil and gas clients is Qatar Petroleum (QP). Qatar has cemented its place as the world's largest liquefied natural gas (LNG) exporter for years, and has imposed a moratorium on new projects on its giant North Field over the past decade.

The state energy company awarded just $1.25bn in the period, including $657m last year alone. This includes a $450m deal with US offshore contractor McDermott for new wellhead platforms at the Bul Hanine oil field.

However, with the moratorium lifted last year, and a raft of new gas projects planned, QP aims to boost its LNG production capacity to 110 million tonnes a year (t/y), up from 77 million t/y currently, and the projects market should see a new boom.

Construction

Qatar's Public Works Authority (Ashghal), with $23.9bn of contracts awarded since 2013, is the country's biggest projects sponsor. Ashghal is responsible for executing a vast programme of highways, roads and drainage projects, and other infrastructure schemes.

Qatar Rail Company is the second-biggest construction client in Qatar, with $20.1bn-worth of contracts under execution, including the Doha Metro and Lusail Light Rail Transit (LRT) projects. The Lusail LRT is expected to be completed by the end of 2020, whereas the Doha Metro project is expected to be finished by the first quarter of 2026.

Msheireb Properties is one of the leading clients in Qatar by virtue of it being part of the Qatar Foundation for Education, Science & Community Development, and also the owner of the $6.3bn Msheireb Downtown Doha project currently under execution.

Oman

Oil and gas

Oman's top oil and gas project clients include Duqm Refinery & Petrochemical industries (DRPIC) a 50:50 joint venture between state-owned Oman Oil Company and Kuwait Petroleum International, and Petroleum Development Oman. Expected to be operational by 2022, the Duqm refinery project will operate with a refining capacity of 230,000 b/d when it is completed.

Construction

Thanks to a series of awards on the Muscat and Salalah International Airport Expansion in recent years, Oman Airports Management Company (OAMC) is the biggest construction client in Oman in terms of contracts under execution. The second-biggest client is the Transportation & Communication Ministry, which awarded a series of contracts over the past four years for the Batinah and Al-Sharqiyah Expressways and other road projects, totalling about $2.9bn.

MEED's data shows that there is not much difference in spending by top oil and gas and construction clients. The construction industry, however, dwarfs oil and gas in the number of clients and number of projects, but is less strategic. Oil and gas has fewer clients and projects, but they are bigger and technically more complex.

There are 2,035 construction and infrastructure clients in the region, compared with just 86 oil and gas players. In the 2013-18 period, 7,880 construction and infrastructure contracts were awarded. In comparison, only 372 oil and gas projects were awarded in the same period. The average value of oil and gas project contract awards for the period stood at $347m, compared with construction and infrastructure awards' $56m. The average value of construction contract awards in the same period stood at $46m.

PURCHASING POWER

Differing procurement models in both industries impact the overall results of the projects

Whether upstream or downstream, the vast majority of the GCC's oil and gas sector projects are delivered through engineering, procurement and construction (EPC) contracts, although there have been a few notable exceptions.

State-upstream operator Kuwait Oil Company (KOC) is set to launch tenders for the construction of new gas production facilities under a build-operate-transfer (BOT) contract model. However, it remains an exception for the sector.

The major advantage of the EPC contract to the client over other approaches is that it provides a single point of responsibility. Within this, the lump-sum turnkey contract is the dominant procurement model in the GCC oil and gas market.

The model transfers the risk of cost overruns and benefits of any cost savings to the contractor, with only a limited ability to claim additional money due to variations in the work. Occasionally, clients will allow reimbursable contracts.

Under the BOT model, the developer provides the financing for the construction and operation of the facilities, in exchange for operating rights for a set period. Another option used in Kuwait's upstream is to use Early Production Facilities (EPF) with the contractor operating the facilities for around five years to assess their viability before handing over to KOC.

These contracts, which are more common in the power and water sectors, have failed to gain traction in oil and gas however, with contractors unwilling to tie up their own capital resources in operating facilities.

Disadvantages of EPC

While there are advantages to using the EPC contract, there are also disadvantages, including higher prices as a result of contractors taking on almost all the construction risk. Contractors factor this transfer of risk into their price, building contingencies into the price for events that may never happen. Whether the increased price is worth paying is something clients have to bear in mind during negotiations.

Within the EPC contract, some clients are also looking for new ways to move their projects ahead. Traditionally, oil and gas projects are developed in three phases with conceptual and feasibility studies followed by a front-end engineering and design (feed) and then EPC. Studies are typically carried out in-house, with some consultant input to define the broad parameters of the scheme.

Since it comes with a relatively small cost compared with the final EPC contracts, and comes with no commitment to purchasing equipment, feed represents a stage-gate in the client's decision-making process.

But it is a key process, without which the contractor would not be able to offer a lump-sum price. A question such as the amount of piping required for a new refinery build would only be answered during the feed process. The contractor still needs to carry out some engineering, using their own internal practices from years of experience.

One disadvantage of the feed and then EPC approach is that once the design is tendered, the EPC contractor needs to spend hundreds of thousands of dollars to develop their lump-sum cost estimate.

"What's the point in spending all this money, especially for the large projects, and risk not getting it?" one source, who has worked on both sides of the fence, tells MEED. "In today's environment, many contractors may not even bid. This is also disadvantageous for the client."

The nature of the oil and gas sector is also very important. Upstream projects tend to need less equipment, and there are more established norms for cost estimates. However, the further downstream you go, the more complex the processing and more divergent the routes to get to this final product. Contractors are unwilling to risk offering a cost proposal without having done extensive engineering.

Adnoc is a rare example of clients' shifting attitudes towards the process. The company is adopting a new strategy for dealing with contractors, as it looks to save money and time on a raft of major new oil and gas projects planned over the next few years, beginning with the planned $1bn development of the offshore Belbazem oil field.

The company has asked three shortlisted contractors to compete in the feed stage, with the winning proposal selected to carry out the EPC phase. "The two losing bidders will be paid a fee, although this is unlikely to cover their full costs," says a source.

The feed competition, which comes at the client's cost, allows the client to select the best technology based on his own specific selection criteria, as well as allowing him to pick and choose good practices that are not a part of a licensed offering.

Cost savings from the new strategy are not expected to be huge, but saving time will be critical. The time lost between completing a feed and sending out tender packages for EPC bids could easily amount to between six and 10 months.

The new strategy is expected to be deployed on a number of major new schemes next year, potentially saving millions of dollars by reducing the number of man-hours lost between the design and engineering phases of projects.

There are other permutations to the contracts used for projects, depending on the clients' ultimate needs, and how it balances its schedule versus costs. Also factored in are the contractors' appetite for risk, spending time and money on developing a lump-sum price only to see it awarded to a rival.

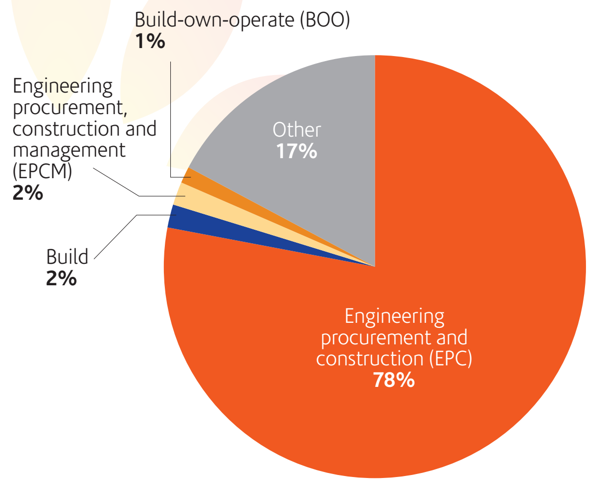
The new approach has clear advantages, in theory. It relies, however, on the client making timely decisions to make sure it does not risk losing any advantage it would have gained. The strategy requires a strong project management team from the client, most likely with support from a project management consultant.

"Clients always struggle to meet their own schedules. The reality is, this type of contract has never happened, for whatever reason, so changing this needs a brave decision," one source says.

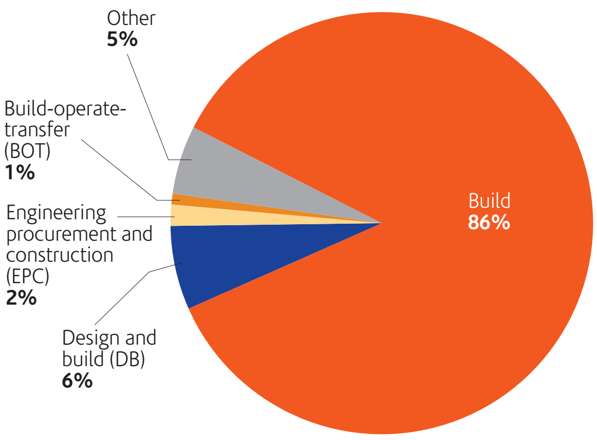
Lowest price wins

With increased competition for work, construction clients are happy to take advantage of the opportunity to drive prices down through the lowest-price-wins model for winning tenders. The tender price, however, does not represent the final outturn price. Contractors often end up recovering this price difference via legal battles. More so, lower tender prices can realistically only mean lowering standards and quality of the finished product. The industry needs to learn from its oil and gas counterparts that lower tender prices do not need to stem from cutting standards, but rather from efficient supply chain practices and innovative designs.

Contract types used in oil and gas (%)



Contract types used in construction and infrastructure (%)



Public-private partnerships (PPP)

Using the private sector to deliver projects in partnership with the government takes away the initial capital expense required from the government, while also bringing in construction and operational expertise from a private sector consortium. The schemes typically involve a private sector consortium delivering a project and operating it for a period of time, during which it will derive revenues from the service it provides that compensate for the expense of building it.

PPP projects often include contracting firms as consortium members responsible for the delivery of the construction work. This is not only an investment opportunity for contractors, but also a way to deliver large-scale construction projects without being so reliant on clients for payments.

AVERTING CRISIS

With a reputation for trouble, the region's construction industry needs to rework its approach to dispute resolution

The construction industry has a well-established reputation for adversarial contractual relationships between clients and contractors. By comparison, the oil and gas industry is seen as less confrontational.

"The [oil and gas] sector has a relatively good mechanism for change orders," one dispute lawyer tells MEED. "Clients will quite often cause delays by changing designs, but the variation mechanism tends to happen very early on and moves quite quickly with the client and contractor negotiating. Disputed areas are often pushed to one side, and dealt with later."

Given the strategic nature of most oil and gas projects to Gulf states, it is often more important for the project to be completed, rather than placed on hold while the lawyers resolve the dispute.

"Claims can build up, and can run into millions of dollars, but more important is that the project be completed," the lawyer says.

"It would be tempting to say many of the [oil and gas] clients and contractors are both more mature and experienced so they can solve their issues. It is also fair to say that many of these projects are better funded," he adds.

Mid-progress disputes

Construction contracts are geared towards the backend, so halting progress mid-project is not as easy. Many projects in the region are fast-tracked and proceed to the construction stage before designs are fully complete. This means contractors frequently take on projects that change in scope during the construction period, resulting in claims that clients do not think they should have to pay.

The oil and gas sector has its own cycles, of course. Billions of dollars' worth of projects have been shelved since global crude oil prices plummeted to less than $30 a barrel in mid-2014. Since they are normally financed by the clients, rather than with debt, oil and gas projects tend to be placed on hold, to be restarted again in a few years' time, says one contractor.

With prices in October 2018 crossing $80 a barrel, there are signs the industry is beginning to invest again.

"If you don't finish a job, both parties have a big dispute because you could have procured materials, finishes are manufactured, it has arrived on site and nothing has been paid. The supply chain holds that debt right until the time it is fixed and handed over and more," the contractor says.

Despite working on projects worth billions of dollars, contractors are often on margins as slim as 5 per cent. "The clients also can't afford to see the contractors go out of business. They know the margins are thin. There are not enough major contractors, and they are too thinly spread. Takeovers and mergers mean there are fewer and fewer remaining," says another contractor.

Lower oil prices have increased the pressure on projects, straining relations between the EPC contractors and clients to reduce costs. Most of this has been done by reducing staff, causing longer-term problems as expertise leaves the sector.

Learning from the past

In late 2009, in the midst of the global financial crisis and Dubai's property market crash, MEED conducted a survey of Dubai's 25 biggest construction contractors. Among the key findings was a comment that clients were unable or unwilling to pay their bills. While some of the outstanding payments have been resolved either through the courts or through payment following capital increases, nearly a decade later many of these contractor bills remain unpaid.

Yet, law firms are rarely used in the process of creating these new construction contracts. Instead, they are brought in to deal with disputes, which in some cases might be avoided had a better arrangement been created in the beginning. For all parties, the cost of advice in planning stages is a small fraction of that required to deal with two years of dispute. Disputes arise for many reasons, but lawyers note that projects continually make the same mistakes. Project parties do not always adequately understand the contracts that they have agreed to.

To reduce the number of disputes and save the money and time required to deal with them, these areas can be addressed and there needs to be more recognition from project owners that claims are a natural part of a project and that dealing with variations quickly reduces delays, which can have a domino effect if ignored.

DELIVERING ON TIME

Standardisation and improved use of technology could help both the oil and gas and construction industries streamline their project delivery timelines

The GCC's construction sector has witnessed significant changes over the past five years. The consistently low oil prices since 2014 have forced a complete overhaul of governments' spending plans. Expenditure has been cut, priorities have shifted and the way that projects will be delivered in the future is set to change, as governments are no longer looking only for contractors to build their projects, but also for investors to help fund them.

The reduction in new project opportunities has increased competition for contracts, forcing contractors to lower tender bid prices in order to win work, thereby eroding profit margins.

At the same time, the fiscal adjustments being made by governments has led to lengthening delays in contract payments.

Government-backed clients are in the best position to respond to the new environment, provided they commit to investing in the construction companies themselves, rather than just in projects. This would make it more likely for the region's contractors to survive the downturn and help to ensure projects, and visions, are delivered.

But it could take time for this new environment to come about, and in the meantime, contractors will continue to struggle with profit margins and the threat of projects being cancelled.

Fragmented industry

Compared to oil and gas, the construction sector is highly fragmented, both in terms of contractors and clients. This means that it is only the public sector, which accounts for a significant portion of projects in the Gulf, that can really change the current situation. As regulators and major clients, the region's governments have the authority to push for improvements in delivery.

Greater standardisation of building regulations and encouraging contractors to adopt new technologies could help project delivery, although this may come at a cost many contractors are not willing to bear.

Contractors often have their own biases and will select materials and specifications that they have used before, which can result in increased costs, as well as complicated procedures for operators and maintenance contractors.

Where construction contractors can frequently finish years over schedule, this would seem unimaginable for a major oil and gas project. Because of the close collaboration between contractors and clients, the majority of the work is pushed to the front of the EPC schedule during the engineering phase. This is true even on greenfield sites, where it is not uncommon for a contractor to spend several years working on engineering and fabricating modules before ever getting onto the site.

Simple solutions

Construction project delivery tends to be shaped from the bottom up by the capacity of the project supply chain, rather than top down from the engineering stage. An oil and gas job, on the contrary, is top down and engineering driven. It is a subtle difference.

"A lot of Middle East mechanical, electrical and plumbing (MEP) is [now] starting to adopt oil and gas principles," says one source. "It is getting there. They are learning, and companies that get involved in both are more successful because of their ability to predict and plan."

Modular solutions are another possibility, although the success of this would depend on the specific economics of the project.

"It may be easier and cheaper for a project in a country with very tough labour unions to just have modular units fabricated overseas and put on barges to be assembled and connected on site, rather than building directly on site," one contractor says.

For gas processing plants, this could become common. Total is now building small-scale modular LNG plants in Oman, using technology from Japan's JGC Corporation. Aimed at the burgeoning LNG bunkering market, the modular facilities are a new alternative to large, fully customised and considerably more expensive LNG plants, and can be installed in much less time.

Other contractors such as TechnipFMC are also developing standardised equipment for subsea processing facilities. These can be delivered and installed in a fraction of the time compared to custom-made equipment.

Using standardised equipment like this could help accelerate the time to producing the first oil and gas from a field, as well as reducing the manpower and lowering fabrication costs. However, for more complicated refining processes, this may not always be an option.

AWARENESS IS KEY SAFEGUARD

Is the global oil and gas industry safer than the construction sector?

The nature of the product in the oil and gas sector makes the industry perceivably more dangerous. And yet, the likelihood of dangerous incidents in the construction industry is far bigger than on oil and gas projects. The reason behind this is a fundamental difference in approach to safety between the two sectors.

"Most oil and gas projects are based in isolated locations, ie, offshore or in deserts, and when safety systems fail, they tend to be major — for instance, Piper Alpha," says one oil and gas contractor.

Additionally, the oil and gas industry has better enforced health and safety laws as a result of previous disasters and employs highly qualified safety managers to oversee these laws. Construction industries in the region have been less effective at standardising and enforcing safety regulations. Falls from heights and objects falling from height onto passersby below are two of the biggest forms of accidents on construction sites, and both are easily preventable using harnesses and safety railings.

Lack of transparent data makes it difficult to equate the two industries' accident records side by side. Experts, however, agree that training is one of the biggest factors in favour of oil companies. The induction process for workers is stringent, often running for a number of weeks, ensuring they are well versed in preventing accidents.

"Companies like Adnoc do not let a worker even set foot on site unless he is familiarised with all aspects of the safety training process," says a source. "The cost of major industrial oil-related incidents is usually millions of dollars, and the consequent business interruptions are around four times more expensive again, not counting litigation, investigation and regulatory penalties."

Severity and probability are key factors in risk assessments. "While the severity of accidents in oil and gas is higher, the probability is lower because everything is much more controlled," says one contractor. "On the other hand, severity is a variable in construction, but probability is instantly higher, merely because of the lack of awareness."

Reasons for negligence

Construction companies often skimp on the training process due to the short turnaround times on projects. "If a project is due to be delivered in a matter of months, assigning a quarter of it for training is simply counterproductive to a contractor," says a source.

Another obstacle for safety in construction occurs in the form of diverse migrant workers, who speak different languages and have varied cultural approaches to safety.

"Although there are many published health and safety regulations, primarily from the UK and US, these are not as readily used. The construction workforce tends to be unqualified or uneducated personnel, with in many cases language differences. The safety information given to the workforce is nor as detailed or enforced by better-qualified supervisors," says one source.

Operational distinctions between various construction companies also dictates their investments – and interests – in safety. Large-scale companies such as Emaar follow government regulations, often because their projects are under global scrutiny. Smaller-scale companies, however, tend to operate without set safety standards because of the additional costs it entails, and also because they can just "get away with it". Firmer implementation of laws is the answer to this.

Construction is catching up with the safety standards of oil and gas projects. Government regulations have toughened over the years, prioritising worker safety.

Technology is a common ground for both industries. Sensors that detect chemical leaks and potential hazards, virtual reality gear and drones are just some of the trends that have found acceptance on both sides.

What construction companies are increasingly coming to understand is that mere adoption of practices will not suffice. They need to be followed through to ensure a zero-accident environment as per regulatory framework. And while construction does have a long way to go, it is getting there gradually.

CLOSING THE GAPS

Introducing lasting improvements in the construction sector will depend on commitments from both clients and contractors

The downturn in the region's construction sector since 2015 has exposed the construction supply chain to increased business risks resulting from delayed payments, disputes with clients and wafer-thin profit margins due to increased competition.

The impact of these issues is a potentially serious loss of investment and skills that could undermine the quality and delivery of projects in the region. Already, leading international players have left the market. And, given the vital role of construction to growth, jobs and infrastructure, the consequences of allowing regression in the development of the construction industry will set the region back against its competitors.

At the heart of these issues are fundamental problems that have been locked into the construction industry for generations, not just in the GCC, but in many construction markets around the world.

Many of these problems have, at their root, the lopsided contractual relationship between clients and contractors that characterises the construction industry.

In this unequal relationship, the client holds all the cards and typically tends to see getting the lowest price for a project as its primary objective. The contractor is generally viewed as an adversary, and project engineers and architects are expected to be on the side of the client.

The contractor, meanwhile, is required to pitch for work against competitors on a lowest-price-wins basis. It is then expected to carry almost all project risk through the construction period. Its only scope for recourse is through claims for design variations made after their contract is signed, thus exacerbating the adversarial approach instilled by the clients.

It is a toxic mixture that has endured because the majority of construction project clients are irregular, or even one-off project sponsors with no long-term interest in the industry. And also because the relatively low barriers to entry for contractors fosters cut-throat tender bids to win work.

In the oil and gas industry, the picture is fundamentally different. There are far fewer project clients, and those that exist generally have an ongoing programme of strategically important and technically complex projects. Additionally, the consequences of cost or time overruns, or of accidents, are potentially devastating.

This strategic view of project delivery changes the approach from that adopted by building developers and

provides considerable opportunities for the construction industry to learn.

The introduction of strategic initiatives in construction procurement and project delivery, perhaps through increased regulation of procurement, particularly in the public sector, could enable the greater use of a range of beneficial project management concepts.

From a bidding perspective, these include the replacement of the prevalent dependence on lowest-price-wins tendering with requirement for technical assessment of build, and the closer integration of design and construction through earlier involvement of contractors or design and build contracts.

Increased investment in digital technology would smooth collaboration between parties both at the planning stage and execution stage, and improve safety on the jobsite.

Within the supply chain, there is also significant scope for the further standardisation of components, as well as the greater use of supply chain management in public sector and government-related entities.

Finally, the construction sector could potentially benefit significantly from improved risk sharing through more balanced contracts between client and contractor, for a more amicable project environment.

ABOUT MEED

MEED has been integral to delivering business information, news, intelligence and analysis on the Middle East economies and activities for over 60 years. Attracting a key senior management audience through its content and activities, MEED is a media brand, publication and data business that covers a spectrum of services which inform, engage, connect and ultimately support our subscribers and partners in their business development and strategic growth.

Recently acquired by GlobalData Plc, MEED is now part of one of the largest data and insights solution providers in the world with the capacity to build global communities for our clients.

Our purpose is to support the region's companies make better and more timely decisions through our innovative data solutions and grow through our comprehensive and world-class marketing solutions.

To find out more email: info@meed.com

ABOUT MASHREQ

Established in 1967, Mashreq is the oldest bank in the UAE, with award-winning financial solutions and services. Throughout its 50 years' history, Mashreq has differentiated itself through innovative financial solutions, making it possible for its customers to achieve their aspirations.

Today, Mashreq has a significant presence in 11 countries outside the UAE, with 21 overseas branches and offices across Europe, the US, Asia and Africa.

Mashreq launched its new Vision and Mission recently, outlining its commitment towards its clients, colleagues and the community. In line with its vision to be the region's most progressive bank, Mashreq leverages its leadership position in the banking industry to enable innovative possibilities and solutions for its customers across corporate, retail, international, treasury and Islamic banking.

Mashreq is proud to be the first financial institution in the UAE to be awarded the Gallup Great Workplace Award for four consecutive years from 2014-17. Mashreq also continues to invest in recruiting, training and developing future generations of UAE national bankers.