OIL & GAS

THE IMPACT OF COVID-19 AND OIL PRICE DECLINES ON OIL SENSITIVE OFFICE MARKETS

CUSHMAN & WAKEFIELD

TABLE OF CONTENTS

INTRODUCTION 3

ABERDEEN 6

ABU DHABI 8

CALGARY 10

DALLAS 12

DENVER 14

DOHA 16

HOUSTON 18

JAKARTA 20

KUALA LUMPUR 22

MOSCOW 24

RIO DE JANEIRO 26

SINGAPORE 28

STAVANGER 30

ST. JOHN'S, NEWFOUNDLAND
AND LABRADOR 32

OIL PRICE COLLAPSE
THE IMPACT ON OIL SENSITIVE OFFICE MARKETS

COVID-19 spread throughout the world at an alarmingly fast rate during the first half of 2020, shocking the global economy. The damage was clear as the global economy went from expansion to contraction within a few months. The International Monetary Fund (IMF) forecasts a decline of -4.9% for global GDP in 2020—by far the worst global economic performance in the post-World War II era.

The oil and gas industry, like many, was powerfully affected by this contraction. Demand for petroleum products fell sharply at a time when global output was ramping up, fueled by rising shale oil production in the U.S. As a result, global oil prices collapsed for the third time in the last 13 years. This decline is compounding the impact of the pandemic in cities where the oil and gas industry is an important, or even dominant, contributor to the local economy.

A RECENT HISTORY OF SHARP OIL PRICE DECLINES

Since reaching an all-time high of $143.95 per barrel in July 2008, there have been three major price collapses in Brent crude oil, the global benchmark. Each decline ended with prices falling between -75% and -88%. The latest decline brought the price of oil down to roughly $9.00 per barrel. Following an agreement by OPEC and some non-OPEC producers to reduce production, prices have rebounded and stabilized at about $40.00 per barrel.

GLOBAL OIL PRICE DECLINES
Brent Crude Oil, Dollars per Barrel

DATES	PEAK	TROUGH	CHANGE
07/08-12/08	$143.95	$33.73	-76.57%
06/14-01/16	$115.19	$26.01	-77.42%
01/20-04/20	$70.25	$9.12	-87.02%

U.S. Energy Information Administration

THREE DIFFERENT TRIGGERS

THE GREAT FINANCIAL CRISIS

In 2008, demand collapsed during the Great Financial Crisis (GFC) as the global economy experienced its worst performance since the Great Depression. Global oil consumption dropped 5.6% during the recession, taking roughly 5.6 million barrels (mbd) of consumption out of the market per day.

This demand drop triggered a $110.00 per barrel decline in the global price of oil, the largest dollar decline in history. The price shock hit markets where oil and gas make up a large segment of the local economy just as those markets were ramping up office construction, resulting in a sharp increase in vacancy and decline in asking rents.

THE SHALE BOOM

In the years from 2011 to 2014, the price of oil remained above $88.00 a barrel, making shale oil exploration and production profitable. Those conditions, coupled with low interest rates and billions of dollars in loans available to oil companies, drove an enormous increase in production from massive shale oil deposits in the U.S. and Canada. The result was a supply side price shock.

From its low of 5.0 mbd in 2007, U.S. production surged to 9.1 mbd in 2014 and in Canada, output increased from 3.3 mbd to 4.3 mbd. Even Brazilian production ramped up from 1.8 mbd to 2.5 mbd. From mid-2007 to 2015, total global oil supply increased by 14.3 mbd.

This supply increase outstripped demand growth and led to a global oversupply that put downward pressure on prices. From June 2014 to January 2016, Brent crude prices fell from $114.00 to $26.00—a 77% decline—generating the second largest decline in history.

All three of the major price declines had different triggers.

COVID-19, THE GLOBAL PANDEMIC

The third largest decline began in January 2020 as the effects of COVID-19 spread globally. What differentiates this drop, as with many of the effects of the pandemic, has been the speed with which it occurred. From January 2020 to April 2020, the price of Brent crude oil per barrel fell by 87%—from $70.00 to $9.00—as supply remained elevated while demand collapsed. This decline was the result of both supply and demand factors.

On the supply side, led by the U.S. pumping approximately 13 mbd per day, the world continued to increase oil production aggressively over the last five years. Global supply reached a record of approximately 102 mbd in late 2018 and remained elevated until the end of 2019, reaching 101 mbd. As the pandemic hit the transportation sector hard—particularly air and automobile travel—demand began to collapse, and global petroleum consumption fell 18.6% from 101.9 mbd in December 2019 to 82.9 mbd in May.

GLOBAL CRUDE PETROLEUM SUPPLY AND DEMAND

Millions of Barrels per Day (mbd)

U.S. Energy Information Administration

Major global oil producers tried to cut output, but demand fell even faster. As of May 2020, world production had fallen to 89.6 mbd, down sharply, but not as far as consumption had declined. This led to the highest surge level in commercial inventories on record. Pushed by plunging prices in early May, major OPEC and non-OPEC oil producers agreed to production cuts that, along with a stabilization of the global economy, have caused prices to stabilize. As of late June 2020, Brent crude prices have bottomed and bounced back to a range from the mid-$30.00s to low $40.00s per barrel.

OECD COMMERCIAL PETROLEUM INVENTORIES

End of Month

U.S. Energy Information Administration

Clearly, the key to resolving the oil glut is on the demand side of the equation. Until the global economy begins to recover, demand for oil will remain weak and inventories will remain elevated.

For the oil producing industry, the damage has already occurred. The local economies that rely on the oil industry as a major economic engine are getting hit with a second shock on top of the effects of the pandemic.

The balance of this report focuses on 14 markets across the world where the oil and gas industry greatly contribute to local economic activity and commercial real estate market. The markets include Aberdeen, Abu Dhabi, Calgary, Dallas, Denver, Doha, Houston, Jakarta, Kuala Lumpur, Moscow, Rio de Janeiro, Singapore, Stavanger and St. John's, Newfoundland and Labrador. Each market features an overview into the oil sector, market drivers, the impact on commercial real estate (CRE) throughout past oil market downturns and lessons learned.

ABERDEEN

Aberdeen is the commercial capital of Northeastern Scotland and the center of Europe's petroleum industry due to its role as a base for offshore drilling for North Sea oil deposits. The North Sea oil reserve has reached its peak production rate, though there are varying views on how many years production will maintain at such high levels. It is likely to be driven by demand rather than lack of supply. In recent years, the city's economy has grown more diversified to include electronics design and renewable energy resources. Aberdeen is also a major seaport, handling around five million tons of cargo annually which contributes £1.5 billion GVA to the local economy.

Aberdeen	2005	2019	Change	Change	National Rank
Population ('000)	209	227	18	9.0%	26
Total Employment ('000)	183	183	0	0.2%	14
Office-Using Employment ('000)	53	56	3	5.9%	14
Inventory (sf)	6,815,000	10,265,000	3,450,000	50.6%	10

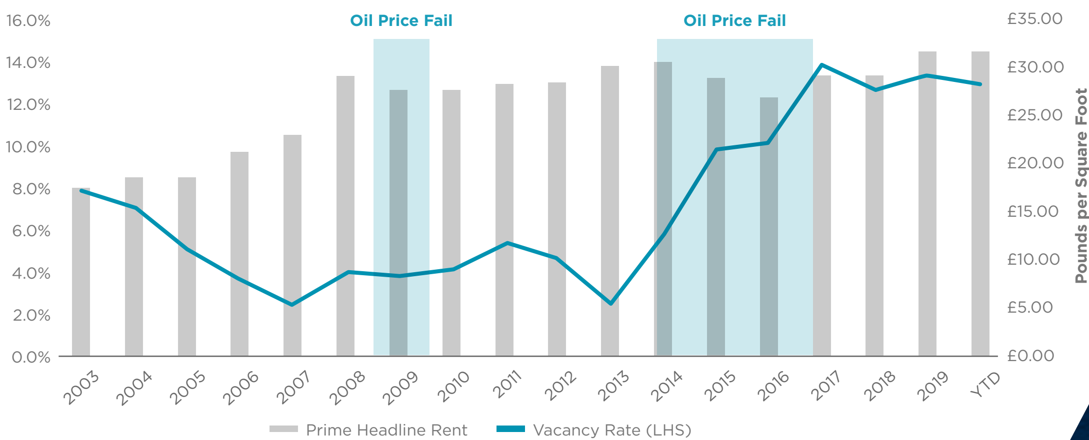
PMA, Cushman & Wakefield Research

KEY MARKET DRIVERS

Other than the energy sector, finance, business services, technology and administration have a significant effect on the local economy. These sectors account for 26.8% of jobs in Aberdeen, generally in line with the rest of the United Kingdom (UK). A significant portion of the professional and business services firms in the market service the energy sector. The complexities of the sector require a strong relationship between the local authorities and the different entities that are typically involved. As a result—perhaps to no surprise—the largest occupier of office space is Aberdeen City Council, which employs more than 5,000 people in the city center.

THE IMPACT

ABERDEEN OFFICE RENT VS. VACANCY



PMA, Cushman & Wakefield Research

Past

Historically, the Aberdeen office market was heavily influenced by the performance of the oil and gas industry. Leasing volumes were buoyed in times of oil price growth. In 2008, take-up reached a record high of 972,000 square feet (sf), in line with the peak in oil prices. New record heights of 1.1 million square feet (msf) hit in 2012 and 2013. Accordingly, leasing activity was severely impacted when oil prices fell. When Brent crude oil decreased to its lowest price in 12 years in 2016, just 206,000 sf of office space was acquired.

Recently, this fall in demand was accompanied by rising vacancy rates. However, occupier confidence has recovered to an extent as oil price volatility has eased while 2019 saw the highest level of take-up in five years.

Present

The momentum built in the market throughout 2019 continued into 2020. Data suggests that the fourth quarter of 2019 and first quarter of 2020 recorded an increase of 50% in space leased compared to the preceding six-month period. However, some deals may be placed on hold due to the measures implemented at the end of March in response to the spread of COVID-19. Provisional data indicates less than 5,000 sf was acquired in the second quarter of 2020. In addition, the vacancy rate was on a downward trend aided by particularly low levels of construction in 2018 and 2019. There was 2.3 msf available to lease in Aberdeen city center in the second quarter of 2020, the lowest since 2018 and broadly in line with the five-year average. As a result, the prime rent has remained stable at £32.50 psf—the highest level recorded in the market. Notably, over-supply in the suburban market has placed downward pressure on the prime rent.

Looking Ahead

The oil and gas industry will continue to drive the Aberdeen office market for some time to come. However, in the short-term the effect of the Russia-Saudi Arabia oil dispute along with the stay-at-home policies introduced in response to the pandemic are likely to lead to depressed leasing volumes. Conversely, a lack of affordable development debt after the GFC has led to lower levels of speculative office development across the UK. This has held back vacancy rates which should help balance out demand-side pressures and stabilize rents.

LESSONS LEARNED

In the long-term, the North Sea oil reserves are thought to have reached peak output which will place pressure on occupiers from the energy sector. Tenant diversification will be particularly important in this market, which has already been addressed by the increased prominence of other sectors in the occupier profile. The Aberdeen Economic Policy Panel has called for an increasing focus on renewables, culture and tourism to boost the economy with a Regional Economic Strategy committed to raising productivity outside the oil and gas sector to ensure success through diversification.

ABU DHABI

The United Arab Emirates (UAE) is a federation of seven Emirates. The Emirate of Abu Dhabi is the largest of the seven Emirates occupying approximately 87% of the landmass. Since the discovery of oil, the UAE has undergone a profound transformation from an impoverished region of small desert principalities to a modern state with a high standard of living. This is most evident in the Emirates of Abu Dhabi and Dubai, which account for the lion's share of economic activity in the UAE. With the advent of independence in 1971 and the formation of the United Arab Emirates, oil revenues contributed to a comprehensive modernization program in Abu Dhabi. It included the construction of new residential complexes, offices, roads, schools, hospitals, an international airport and seaport with oil and gas companies as the major office occupiers.

Historically, the majority of commercial office space in Abu Dhabi was situated in mixed-use buildings with a combination of residential and commercial units with only a small portion dedicated to office space. This trend started in 2004 on the back of high demand for office space that drove significant growth in informal office space. This led to villas and apartment blocks being utilized as office accommodation. After 2009, the trend shifted as the GFC led to a downturn in demand and new office product came online, resulting in a reduction in informal office occupancy.

Abu Dhabi	2007	2019	Change	Change	National Rank
Population ('000)	930	1,500	570	61%	2
No. of Employed Persons ('000)	550	1,003	453	82%	2
Office-Using Employment ('000)	117	245	128	109%	2
Inventory (sf)	15,063,755	45,068,851	30,005,096	199%	2

Statistics Abu Dhabi Statistics Center, Cushman & Wakefield Research

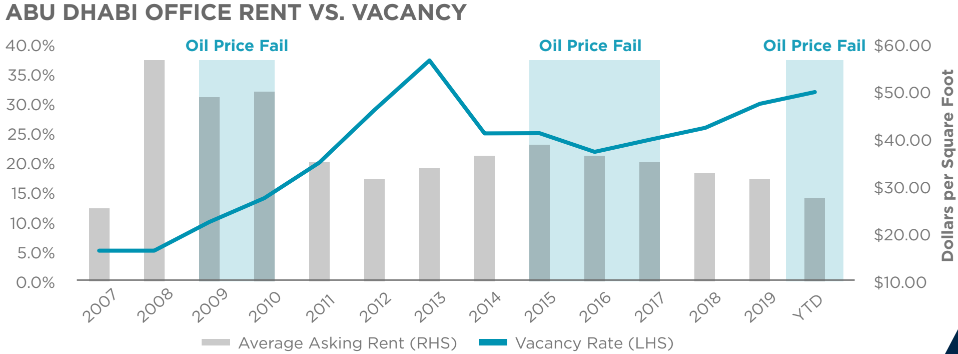
KEY MARKET DRIVERS

Aside from the energy sector and government entities, other major office demand sectors include engineering, consultancies, contracting sector, media and professional services, transportation and small medium enterprises (SMEs). Relative to its population and GDP, Abu Dhabi has a high number of financial institutions with more than 20 local, 25 global and 50 representative offices of other banks located in the Emirate.

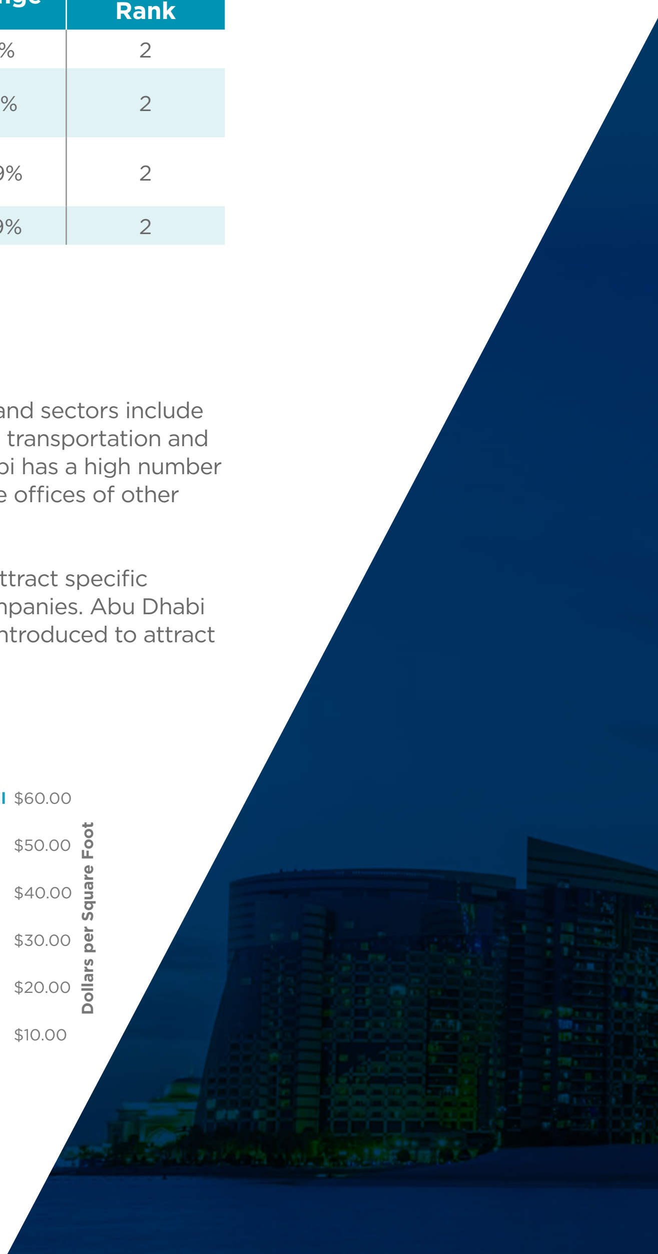
Additionally, specialized submarkets have been introduced into the market to attract specific business activities. One example is TwoFour 54 which targets media and IT companies. Abu Dhabi Global Market, an international financial center located in Al Marya Island, was introduced to attract international financial institutions to the capital.

THE IMPACT

ABU DHABI OFFICE RENT VS. VACANCY



Cushman & Wakefield Research



Past
Historically, demand from oil companies and related activities was linked to oil price movements. The market witnessed an increase in demand from 2004 to 2008 where limited office inventory coincided with a sharp rise in demand from all market activities. Following the 2008 to 2009 market crash, demand declined sharply from oil companies and most other business activities. The market recovered over the course of 2011 to 2014 when oil prices increased again while overall market performance also continued to grow.

Present
New demand from oil companies has declined significantly due to the outbreak of COVID-19. Government authorities have imposed restrictions on individuals' movement which has affected most business activities. Consequently, many job cuts have occurred, and companies are increasingly looking to cut costs. Office utilization rates should remain lower than usual throughout 2020, although uncertainty remains about the direction the office market will take in the long-term

A combination of new office building construction and subdued market activity over the past few years has increased vacancy levels from 20% in 2016 to more than 30% in the first half of 2020. This has better positioned tenants to negotiate rents and other tenancy terms, such as extended grace periods, additional parking spaces and better service provisions as landlords offer more incentives to attract tenants.

Looking Ahead
Low oil prices and an increase in supply will continue to hold back growth in the market. However, any recovery in oil prices is likely to generate demand once again. As potential demand generators for new office space, Abu Dhabi government is currently working to diversify its economy away from the oil and gas industry through the development of SMEs, financial institutions, and sectors like hospitality, IT and media.

LESSONS LEARNED

Office market performance currently relies heavily on the oil sector and government investments. The market witnessed a surge in both rental and occupancy levels when oil prices were growing, though a recession occurred following the downturn in oil prices. Government authorities are seeking to address this reliance on oil by intensifying measures to diversify the economy to create sustainable growth in the office sector.

CALGARY

Alberta is by far Canada's largest oil-and natural gas-producing province, accounting for more than 80% of the country's crude oil production, three quarters of which comes from the vast oil sands in Northern Alberta. Calgary, well known as a world-class energy city, is home to 118 of the 800 largest corporate headquarters in Canada, mostly located in the downtown office market. Of these, 73% are in the energy sector. Not surprisingly, the city is also home to a diverse energy-related ecosystem made up of engineering, geoscience and environmental sectors.

Calgary	2005	2019	Change	Change	National Rank
Population ('000)	889.2	1,286.0	396.8	44.6%	4
Payroll Employment ('000)	629.1	868.3	239.2	38.0%	4
Office-Using Employment ('000)	192.4	267.3	74.9	38.9%	5
Inventory (sf)	46,278,820	69,921,777	23,642,957	51.1%	3

Statistics Canada, Moody's Analytics, Cushman & Wakefield Research

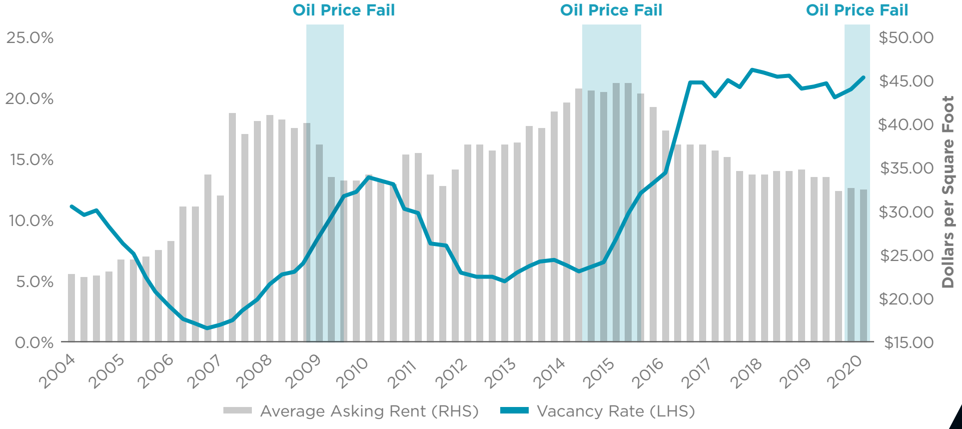
KEY MARKET DRIVERS

Aside from the energy industry, other major office demand sectors include technology, engineering, medical research, advertising, media, professional services and transportation. The technology sector, particularly focused on companies that specialize in energy-related innovation, has also driven growth in recent years. Vancouver-based Finger Food Advanced Techology Group recently opened a second office, located in Calgary's Brookfield Place. In May 2020, it was announced that the company had been acquired by Unity Technologies, an international video game software company. Aviation, aerospace and logistics have also been very active. Medical research is another sector with promise. In 2019, Calgary-based Parvus Therapeutics made headlines when it signed a C$1-billion agreement to develop revolutionary new drugs for autoimmune diseases.

As a Western Canadian hub for the distribution of goods and services, Calgary's industrial sector has experienced steady growth in recent years. Proximity to the Canadian Rocky Mountains and national parks has driven the city's tourism. Construction activity has also been a key driver of job growth, accounting for some 66,300 jobs as of May 2020. With several large infrastructure projects underway including a new cancer center, major roadway infrastructure projects and recently unveiled convention center, hiring is expected to resume as recovery takes hold.

THE IMPACT

CALGARY OFFICE RENT VS. VACANCY



Cushman & Wakefield Research

Past
Calgary's downtown office market has struggled with an availability rate surpassing 20% since the oil price decline began in 2014. While energy market counterparts globally recovered as the price of Brent crude rebounded, Calgary-based companies remained hampered by low Western Canadian Select (WCS) prices, the benchmark for Alberta crude oil pricing. While construction continues on sections of the Keystone XL pipeline, the high cost of extraction from Alberta's oil sands makes it extremely difficult for companies to profitably get product to market, particularly when the price for WCS remains below $30.00 per barrel.

Present
After the June 2014 oil price shock, Calgary's CBD availability soared, hitting 23.7% by first quarter 2018. Since then, a fragile recovery started to take hold. Even though green shoots of recovery began to appear prior to the outbreak of COVID-19, Calgary's oil and gas industry was still facing significant challenges. Not only has the current availability rate notched upward to 24.9% at the close of second quarter 2020, but Husky Energy had placed over 200,000 sf on the sublease market, Encana—a huge office space user—announced plans to rename the company and relocate its headquarters to Denver, CO, and Murphy Oil announced the closure of its 110-person Calgary office, placing approximately 50,000 sf of sublease space on the market. To compound matters, oil prices sank to unfathomable lows not seen since the 1990s—though have since recovered—trading at the mid-$30.00s as of July 24, 2020.

Calgary has one of the highest unemployment rates among major Canadian cities, at 15.6% in June 2020, more than double the rate in February 2020. On the positive side, industrial commercial real estate had flourished across Canada, and Calgary's experience was no exception. Industrial absorption topped 8 msf between 2015 and the end of 2019. As more Canadian consumers adopt e-commerce habits—which have been accelerated due to the outbreak of the pandemic—industrial demand for warehousing and distribution space is not anticipated to slow anytime soon.

Looking Ahead
Even though Calgary's CBD office availability rate was at a high 23.2% in the first quarter of 2020, positive absorption was beginning to occur prior to the pandemic. In the downtown market, where a flight to quality was underway, the Triple-A availability rate had fallen to 14.7%, while Double-A had fallen to 12.9% by fourth quarter 2019. As a result, pricing stability took hold and net rates strengthened across premium assets. While the reduction in capital investments and sector-wide layoffs are unprecedented and will push up availability, the Conference Board of Canada projects Alberta's economy will shrink by 5.8% in 2020, but pent-up demand and low interest rates will support a 6.1% rebound in 2021.

Nearly 360,000 sf of sublease space hit the CBD office market as the pandemic spread and work-from-home policies were enacted. Now, available sublease space accounts for nearly a quarter of the overall vacancy rate.

Although oil and gas companies can use previously held excess space to meet social distancing guidelines, it is unlikely to combat the rising tide of availability. While companies continue to evaluate real estate requirements in a post-pandemic world, it is unclear how the market will continue to be impacted—particularly for companies that previously adopted densification efforts and will likely need to reevaluate space planning to allow for proper social distancing measures.

LESSONS LEARNED

As energy-dependent markets are clearly more exposed to the economic risks associated with the pandemic, the good news is that the city has made significant strides in diversifying its economy. The emergence of technology is an area that shows long-term growth potential. Companies like Finger Food Advanced Technology Group have helped solidify Calgary as an emerging tech city. Additionally, e-commerce will continue to gain traction and drive absorption in industrial markets.

While energy is unlikely to propel the office markets as they have in the past, at least for the foreseeable future, there is no question that when global business resumes, pricing and demand for oil will rise, which will support a slow revitalization of Calgary's central and suburban office markets.

DALLAS - FORT WORTH

Headquarters to major energy companies like ExxonMobil and Pioneer Natural Resources, the Dallas-Fort Worth (DFW) market has a strong energy sector presence. Leasing activity in the industry averaged 2.9% of total activity from 2005 to 2019. Despite a strong presence in energy, DFW boasts a diverse economy with a multitude of industries.

Dallas - Fort Worth	2005	2019	Change	Change	National Rank
Population ('000)	5,777	7,638	1,861	32.2%	4
Payroll Employment ('000)	2,823	3,797	974	34.5%	4
Office-Using Employment ('000)	757	1,087	330	43.5%	4
Inventory (sf)	162,904,051	238,035,495	75,131,444	46.1%	2

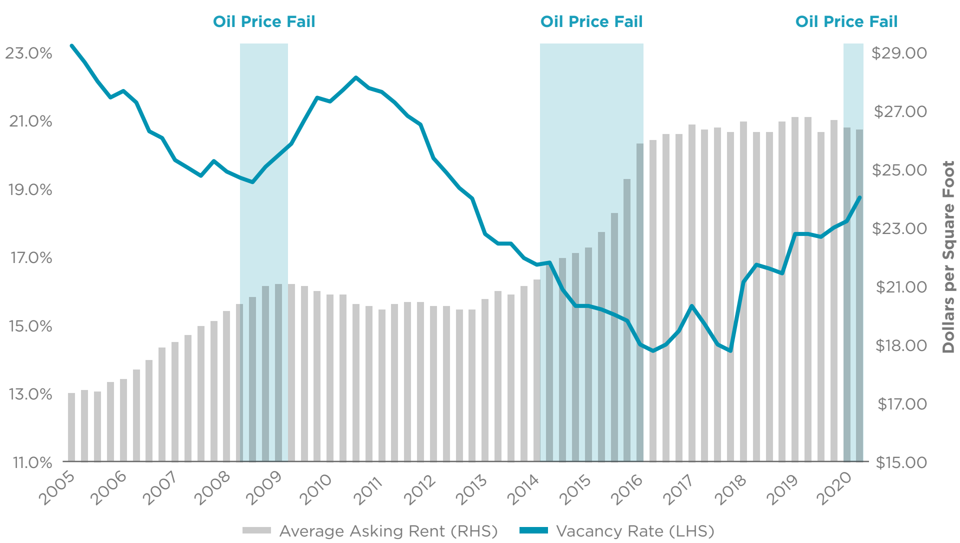
Moody's Analytics, Cushman & Wakefield Research

KEY MARKET DRIVERS

DFW experienced immense growth from 2005 to 2019 as population, employment and office inventory increased more than 30%.[1] The market's allure of zero corporate and personal income tax coupled with a low cost of doing business—3% less than the national average[2]—has attracted companies like JPMorgan Chase, McKesson, Toyota and Uber to relocate from more expensive locations. As the fourth largest metro in the U.S. with 7.7 million people[3], DFW has a lower cost of living compared to other large metros like Atlanta, Chicago, Denver and Seattle.[4] The market also averaged 3% employment growth,[3] with all industries experiencing growth over the past five years.[1] The transportation and warehousing, healthcare and professional/scientific/technical industries saw the highest employment growth.[1] Cumulatively, these three industries accounted for more than a third of the market's employment growth over those five years.[1]

THE IMPACT

DALLAS - FORT WORTH OFFICE RENT VS. VACANCY



Cushman & Wakefield Research

Past

Historically, the energy sector's office leasing activity in DFW closely aligned with oil price decreases. However, the energy sector's office leasing activity decreased an average of 23% more than the oil price decline in 2008 and 2014. The Pioneer Natural Resource's new 1.13-msf lease caused the 2017 energy sector leasing spike.

Comparatively, the overall market was more resilient to oil price decreases due to substantial industry diversity. Overall office leasing activity declined by 42% from 2008 to 2009 but increased by 8% from 2014 to 2015. The DFW office market also had a delayed response to the GFC. The office market reported both increasing vacancy rates and decreasing rental rates for a year beginning in the third quarter of 2009, a quarter after the national recession ended. In 2014 when oil prices declined, the DFW office market reported decreasing vacancy and increasing rental rates during the same period that continued for more than a year. The two historical trends indicate that declining oil prices had less impact on the office market's performance unless the price declines are coupled with a national recession.

Present

Currently, the DFW office market has a lower vacancy rate than it did during the 2008 oil decline but a higher vacancy rate than it did during the 2014 oil decline. The current office market has higher rental rates and a smaller construction pipeline compared to the two previous oil declines.

Dallas-Fort Worth Office Market	Q2 2008	Q3 2014	Q2 2020
Vacancy	19.5%	16.2%	18.8%
Gross Rental Rate	$20.46	$22.08	$26.44
Under Construction (sf)	5,357,580	6,103,093	4,717,198

Looking Ahead

The DFW market has grown immensely since the last 2014 oil price decline. Energy sector jobs have decreased by 21% while the market continued to grow and diversify in other sectors.[3] High-tech employment increased by almost 16% during this same period.[3] The technology boom and corporate relocations incentivized by lower costs has fueled DFW growth over the past few years. The population between 25–44 years old in DFW grew by almost 12% and office-using employment grew close to 17% since 2014.[3] Overall the market, since the last oil price decline, maintained strong growth and continued industry diversification.

LESSONS LEARNED

Considering this performance, DFW's energy sector leasing activity is likely to have a downward trajectory during oil price decreases. The overall office market, however, will only experience both increased vacancy and decreased rental rates if oil price declines happen in conjunction with a national recession. The 2008 experience suggests that the office market will likely have a lagging response and may experience milder and shorter recessionary impacts than the nation. Given the market's strong growth over recent years, DFW should be bolstered by an increased diversity of industries and is well positioned to handle the current oil price drops.

[1]EMSI, [2]Dallas Regional Chamber of Commerce [3]Moody's Analytics, [4]Numbeo

DENVER

Colorado is home to one of the most significant oil and gas basins in North America, the Niobrara-DJ Basin encompassing much of the north and northeast portions of the state. With this large basin in Denver's backyard and the market's central proximity to other large basins throughout the Western United States, it comes as no surprise that the oil and gas business is a significant employment sector for the Colorado and Denver Metro economy.

From 2005 to 2019, Denver's employment increased approximately 28% while its oil and gas employment recorded an increase of approximately 118%.[3] Even with this large increase in employment, oil and gas occupiers account for less than 5% of office space around the Denver Metro area. However, they are highly concentrated in Denver's CBD, currently leasing approximately 11% of total inventory. The CBD has been home to small, mid-cap and large companies like Noble Energy, Halliburton, Occidental (formerly Anadarko) and Ovintiv (formerly Encana). During the 1980s, oil and gas users occupied over 30% of CBD office product, a figure which has decreased consistently over time.

Denver Metro Area	2005	2019	Change	Change	National Rank
Population ('000)	2,354	2,697	613	26.0%	19
Payroll Employment ('000)	1,212	1,556	344	28.4%	16
Office-Using Employment ('000)	345	448	103	29.8%	17
Inventory (sf)	66,777,502	117,131,662	30,354,160	35.0%	12

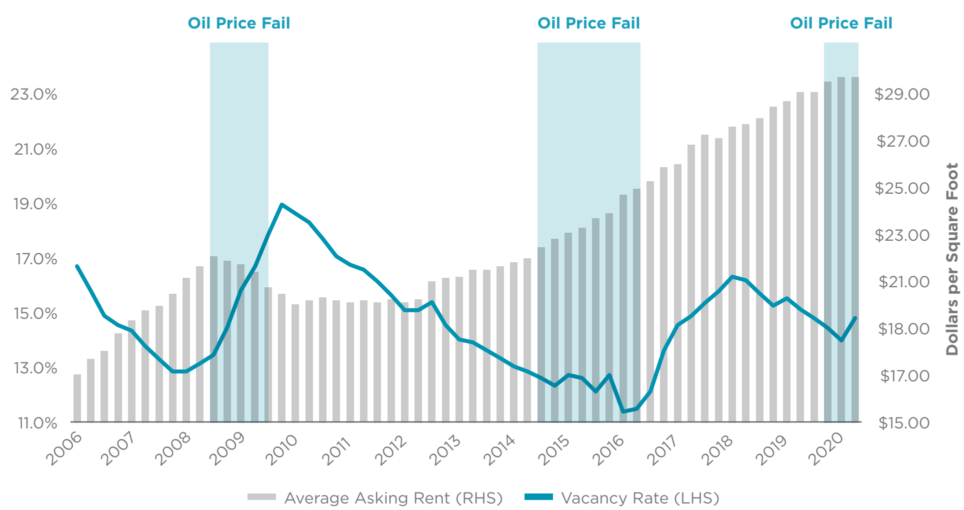
Statistics Canada, Moody's Analytics, Cushman & Wakefield Research

KEY MARKET DRIVERS

Denver's Metro and CBD inventory has grown significantly since 2005, increasing roughly 35% and 33% respectively. Tech has been the driving force behind Denver's growing tenant mix over the past 36 months, although aerospace and defense, communications, healthcare and FIRE (finance, insurance and real estate) industries also continue to grow throughout the region.

THE IMPACT

DENVER OFFICE RENT VS. VACANCY



Cushman & Wakefield Research

Past
Historically, Denver's office sector has been largely impacted by downturns in oil and gas. During the 1980s downturn, the Denver metro office market witnessed up to 4 msf of oil and gas tenants disappear from the metro area. The CBD was hit the hardest during this downturn, giving downtown Denver a ghost town feel, with vacancy increasing to over 30% and rental rates plummeting.

Fast forward to the oil crisis of 2014 and Denver's CBD encountered strong volatility from the sector again. As oil prices continued to plummet worldwide, the submarket exhibited an abundance of sublease space with just shy of 1 msf space available. At the time, the vast amount of new office developments—over 1.7 msf from 2014 through 2016—led overall vacancy to increase 500 basis-points (bps) to 16.7%.

Present
Market volatility surrounding the oil and gas sector as a result of the current condition of oil prices has started to impact Denver occupiers. By the end of the second quarter of 2020, approximately 677,000 sf was available via sublease from oil and gas tenants throughout the CBD. It is important to note that a portion of this availability is due to merger and acquisition activity that occurred within the industry. Given that these occupiers are less dense than most employers, the effect on office absorption will be outsized negatively. Based off historical oil and gas crisis fundamentals, coupled with the COVID-19 crisis, it is likely these negative absorption trends will continue throughout the second half of 2020 and beyond.

At the end of the second quarter of 2020, the Denver metro and CBD office markets recorded an uptick in overall vacancy. Metro Denver overall vacancy increased 70 bps to 14.7%, while the CBD recorded a more severe increase of 120 bps to 17.1% at the end of the second quarter of 2020. This large delta between Metro and CBD overall vacancy is largely due to the over 1.1 msf of vacant sublease space available in the CBD, which nearly doubled from first quarter 2020 to second quarter 2020 and lead to over -388,000 sf of net absorption. Overall gross rental rates have continued to stabilize, increasing less than a percentage point to $37.74 psf in the CBD, while metro-wide overall gross rental rates followed suit, increasing marginally to $29.09 psf at the end of the second quarter 2020. The metro currently has 2 msf (1.1 msf in the CBD) under construction as one new project, 240 Saint Paul, broke ground during the second quarter of 2020. Collectively, these 12 projects were 22% preleased at the end of the second quarter 2020.

Looking ahead
Denver's balance of industry diversification has mitigated the efforts from oil and gas volatility. With over 3 msf delivered in the CBD and 8.2 msf delivered across the Denver Metro since 2014, the office market conditions have continued to evolve and diversify.

LESSONS LEARNED

Due to the industry diversification, the Denver market is less vulnerable to a shrinking oil and gas footprint than in the past. After the state bill SB19-181 passed in 2019 (oil and gas fracking authority regulations shifted to local governments allowing for stricter oversight by municipalities) Denver's oil and gas office exposure has declined.

Even with the short-term fallout, the oil and gas industry will come back and the space it sheds will be backfilled by newly formed entities or other users in the market. Denver's desirability will remain as the market continues to evolve into a top destination for occupiers around the Rocky Mountain region. The CBD will remain at the forefront of activity, which is reassuring, as Denver's highly educated talent base continues to reside in the urban core.

[3]Moody's Analytics

DOHA

Doha is the capital of Qatar, a peninsula in the Persian Gulf. Oil and gas production is the main driver behind the country's economy. Qatar's natural gas reserves equate to about 13% of the total world reserves or the third-largest reserve in the world. Additionally, the country is the largest liquified natural gas (LNG) exporter in the world with a market share of 28%.

Office development in Doha has relied on the completion of large master-planned projects, such as West Bay and Lusail Marina, rather than supply and demand dynamics or organic growth. This has resulted in the emergence of an oversupply in the office sector since 2016.

Population, employment figures and office supply have all witnessed dramatic growth since 2006 as illustrated in the table below.

Doha	2006	2019	Change	Change	National Rank
Population ('000)	1,023	2,713	1,690	165.27%	N/A
Payroll Employment ('000)	669	2,096	1,427	213.36%	N/A
Office-Using Employment ('000)	170	N/A	N/A	N/A	N/A
Inventory (sf)	3,348,104	25,111,390	21,763,287	650.02%	N/A

Oxford Economics, Qatar Planning and Statistics Authority, Qatar Labour Force Sample Survey, Cushman & Wakefield Research

KEY MARKET DRIVERS

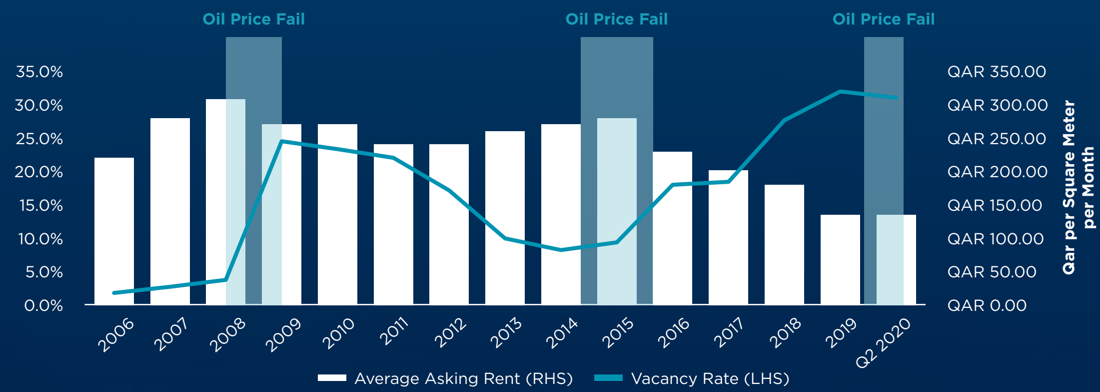
Qatar has made significant steps to diversify its economy beyond oil and gas, including investing in revenues from the hydrocarbon industry, introducing the Qatar Financial Center (QFC) and creating the Qatar Free Zones. Founded in 2005, the QFC is a business and financial center that aims to attract international companies providing professional and business services to financial service industries. In recent years, the QFC has continued to grow and has diversified beyond the financial services sector. The Qatar Free Zones Authority was also established in 2005 to attract foreign investment.

It is estimated that approximately 65–70% of office demand is generated by the hydrocarbon sector, government or semi-government entities. Historically, the government has strongly supported the real estate market by leasing significant quantities of office space, often in excess of its requirements. The private sector in Qatar is also largely dependent on the public sector spending, which is generated by oil and gas revenues. Office demand from the private sector often follows the trends of the public sector.

In November and December of 2022, Qatar will host the FIFA World Cup, which has stimulated significant investment in infrastructure projects as well as commercial, residential and hospitality developments. While preparation for the World Cup has produced a significant short-term boost, the long-term impact of the FIFA World Cup on the CRE market is unclear.

THE IMPACT

DOHA OFFICE RENT VS. VACANCY



Cushman & Wakefield Research

Past
Between 2006 and 2008, new office supply did not meet the rapidly rising demand. Due to the lack of Class A accommodation, most companies with active requirements were forced to consider alternative, secondary locations. During this period, rental inflation averaged close to 20% per year. Rising rental rates stimulated new commercial development, increasing supply. However, reduced demand following the GFC meant that much of the new supply was initially unoccupied, resulting in a fall in rents.

By 2011, Qatar's new CBD in West Bay was quickly the subject of new demand from oil and gas and government-related occupiers. New demand and delays in new supply reaching the market led to rental inflation once again by 2013. The fall in global oil prices in 2015 resulted in a period of fiscal consolidation in Qatar and government entities and hydrocarbon companies withdrawing from the market for new office space. The fall in oil prices also had an impact on new demand in the private sector. Reduced demand and a significant increase in new supply has resulted in a steady fall in rents since 2016.

Present
The introduction of measures to curb the spread of COVID-19 has resulted in an enforced period of inactivity in the office leasing market. The lack of transactional activity has made it difficult to quantify the fall in rental value; however, the downward trend in rents is likely to continue for the rest of the year.

Activity in the occupier market has increased in May and June as several proposed relocation projects that were postponed due to the pandemic are now back on the agenda. The increased uncertainty in the economy has resulted in a number of smaller private sector companies choosing more flexible options provided by serviced offices and plans to review strategies in 2021.

Looking Ahead
The overarching factor influencing office market dynamics in Doha has been the unprecedented increase in new supply, which has not been matched by new demand. It is anticipated that the pace of new office construction will slow significantly until most of the existing supply is absorbed and new development is justified by tenant demand.

LESSONS LEARNED

The office market has struggled with oversupply since 2016. Demand for office space has been driven directly or indirectly by oil and gas revenues. Global shifts towards renewable energy have raised doubts about future demand for offices from the oil and gas sector in Doha. Over the next decade, it is unlikely the speculative development of commercial office space will continue. However, ongoing absorption should allow occupancy rates to recover enough to justify new development in the mid-term.

HOUSTON

Houston, known as the energy capital of the world, employs nearly one third of the nation's jobs in oil and gas extraction with more than 4,600 energy-related firms, including nearly 800 oilfield service companies and more than 650 exploration and production firms.[5] Although Houston has diversified, it is still driven by the energy market, more specifically the price of oil. The mining and logging industry represent 2.5% of Houston's total employment, increasing to 8.3% when other energy-related industries including engineering services and chemical manufacturing are included.[6] In 2018, the average job in the energy-related industry was approximately $142,000 a year, more than double the metro average.[5] These higher paying energy-related jobs help stimulate Houston's economy, especially when it comes to housing, retail and entertainment. When oil prices drop it negatively impacts these sectors and other office-occupying industries.

Houston	2005	2019	Change	Change	National Rank
Population ('000)	5,234	7,129	1,895	36.2%	4
Payroll Employment ('000)	2,588	3,364	776	30.0%	6
Office-Using Employment ('000)	1,031	1,289	258	25.0%	9
Inventory (sf)	151,698,073	189,185,378	37,487,305	24.7%	5

EMSI, Moody's Analytics, Cushman & Wakefield Research

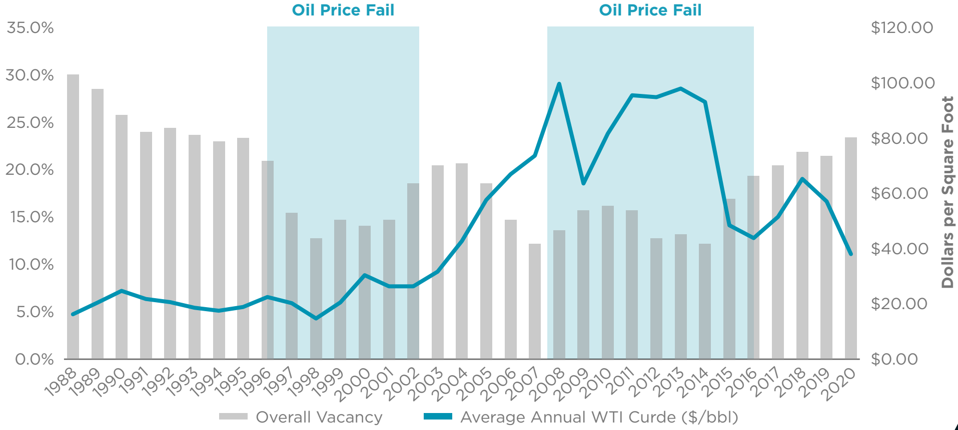
KEY MARKET DRIVERS

While the energy industry drives Houston, its growth is also influenced by the strength of the U.S. and global economies. Other key industries include life science, manufacturing, logistics and aerospace. Houston is home to one of the largest ports in the country and two international airports, making it a hub for foreign trade and foreign investments. Houston's Texas Medical Center is the world's largest medical complex, which continues to foster growth in the healthcare industry.

The energy industry is broken up into three segments: upstream, midstream and downstream. Each sector reacts differently to lower oil prices. While the upstream sector of exploration and production (office-occupying) is negatively impacted, it can be somewhat offset by the positive impact on the downstream sector of petrochemical manufacturing (industrial-occupying).

THE IMPACT

HISTORICAL OVERALL VACANCY AND WTI CRUDE OIL PRICES



U.S. Energy Information Administration, Cushman & Wakefield Research

Past
The oil crash in 2009 during the GFC had a large influence on Houston's overall economy. Oil prices dropped from an annual average of $100.00 per barrel in 2008 to $62.00 per barrel in 2009.[7] Houston lost over 110,500 jobs that year.[6] Vacancy climbed 470 bps and rents dropped 7.9%. Oil prices began to climb, averaging $80.00 per barrel in 2010 and remained in the mid-90s until year-end 2014. By November 2011, Houston had recovered all jobs lost.[5] The rebound in oil prices resulted in strong employment growth and helped jumpstart Houston's recovery from the GFC.

The energy industry was more prepared for the 2014 oil crash. Houston's economy had become more diverse with strong growth in other industries including construction and healthcare. At this point in time, Houston lost 80,000 energy jobs, yet total employment was only down to 4,700 jobs from 2015 to 2016.[5] While the previous oil crash impacted Houston's economy, the 2014 oil crash was more focused on the office sector. Bankruptcies, layoffs and mergers and acquisitions increased, causing demand to slow while supply continued to climb. Houston's office vacancy climbed 900 bps from 2014 to 2017. Available sublease space skyrocketed, increasing 146% to 11 msf in 2016. Although asking rents only dropped 2.7%, most landlords offered more concessions including free rent and additional tenant improvement dollars in order to compete with prime sublease space at discounted rates.

Present
Houston's office market is still recovering from the 2014 oil crash, and COVID-19 along with the most recent oil crash will push recovery out even further. Since 2015, Houston's office market has had 5.4 msf of negative absorption, and the overall vacancy increased 260 basis points year-over-year to 23.2% this past June. Leasing activity has slowed and is expected to remain sluggish indefinitely. The pandemic began to impact sublease space, as more than 400,000 sf of new sublease listings were added in June. This trend is expected to continue as businesses face financial challenges from the pandemic, low oil prices and a struggling economy.

Looking Ahead
As stay-at-home orders continue due to the pandemic, the demand for oil plummeted and for the first time, the futures price for WTI crude oil was negative. According to local economists, COVID-19 and the oil crash could result in Houston losing between 150,000 and 350,000 jobs.[5] Energy companies will suffer from this "double whammy," and more exploration budget cuts are expected along with an increase in bankruptcies. Non-energy employment is less volatile and office-employment growth will rely on industries which are expected to recover more quickly including financial services, construction and business services. Even as the workforce returns and commuting and travel picks up, low oil prices are expected to slow down Houston's economic recovery.

LESSONS LEARNED

Low oil prices will continue to hold back growth and the Texas economy could struggle longer compared to the rest of the country. While rising oil prices helped Houston lead the economic recovery following the GFC, this recovery, more so than in the past, will likely be driven by the U.S. economy.

The current economic situation has already resulted in rising sublease space as companies shed excess office space. Instead of lowering rental rates, some landlords have "withdrawn" rates which is a sign of more competitive rates and increased concessions including free rent and additional tenant improvement dollars. Houston is known for its boom-to-bust cycles. Office market fundamentals are expected to remain soft and tenant-favorable over the next few years. Still, Houston is resilient and although it may take a few years to rebuild, the market is expected to come back as it always has.

[5]Greater Houston Partnership, [6]U.S. Bureau of Labor Statistics, [7]U.S. Energy Information Administration

JAKARTA

As the capital of Indonesia, Jakarta is home to the local headquarters of many domestic and multi-national energy companies. Despite the oil production decline in the country over the past decade, the nation's oil consumption has continued to grow, ensuring it remains an important market for the energy sector.

In large cities like Jakarta, energy consumption continues to underpin the bustling city's daily activities, including the developing public transportation networks, increasing private car ownership and expanding sector of commerce and its "knock-on" impact to various real estate sectors.

Jakarta	2005	2019	Change	Change	National Rank
Population ('000)	9,042	10,558[1]	1,516	16.8%	6
Payroll Employment ('000)	2,299	3,128	829	36.1%	N/A
Office-Using Employment ('000)	N/A	N/A	N/A	N/A	N/A
Inventory (sf)	55,382,500	122,951,100	67,568,600	122.0%	N/A

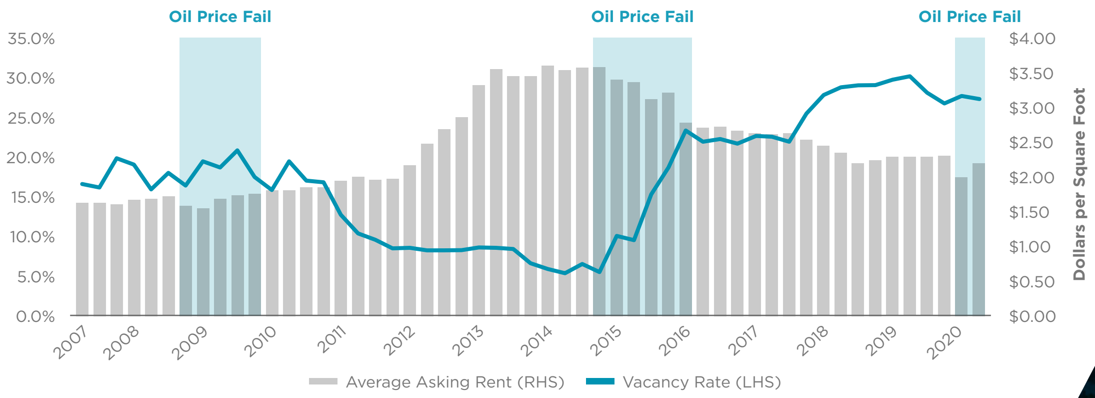
Indonesia Census Bureau, Cushman & Wakefield Research *[1]projection number*

KEY MARKET DRIVERS

Jakarta is the center of almost all business activity in Indonesia, accounting for nearly 70% of the country's money circulation. Traditionally, the key market drivers other than the oil and gas sector include finance and banking, telecommunication and insurance. Internet-based businesses such as e-commerce and fintech along with the coworking industry have also helped to diversify Jakarta's growing tenant mix over the past four years.

THE IMPACT

JAKARTA CBD OFFICE RENT VS. VACANCY
Class A



Cushman & Wakefield Research

Past
Prior to the 1997 Asian Financial Crisis, almost all major oil and gas companies were headquartered in Jakarta's CBD. For decades the energy industry was the second largest source of demand for the CBD's Class A office space, after the banking and financial sector. In 1998, some major oil and gas companies relocated from the CBD to the outskirts of the city, particularly along the JI TB Simatupang corridor in South Jakarta.

After the GFC, Jakarta's office market performed well between 2011 and 2014 with decreasing vacancy rates, positive absorption and soaring rental rates. Oil and gas and coal mining companies were key players in the market and leased and/or purchased many of the Class A office spaces. As the increasing demand could not be met due to limited existing supply, many developers started new construction in 2014.

In 2015, the commodities price downturn, which included oil and coal, affected the real estate market in Jakarta's CBD and suburban markets. Certain oil and gas and coal mining companies stopped expansions and even reduced square footage, leading to an increase of 24.3% in the overall market's vacancy rate by 2016.

Present

After the oil and commodity price fall in 2015, Jakarta's office market has been flooded by new project completions. In turn, availability soared, hitting 30.6% in Class A offices by second quarter 2019.

A slow recovery, however, began to appear in August 2019 as indicated by positive quarterly absorption of about 839,600 sf until the outbreak of COVID-19 in March 2020. Since then, leasing activity has mostly stopped. Currently, the Jakarta office market has a higher vacancy rate than it did during the Asian financial crisis in 1999 and the 2015 oil decline.

Looking Ahead

Due to the impacts of COVID-19, including the recent oil price crash and new work-from-home policies, demand for office space from most sectors will likely remain sluggish. According to the Ministry of Finance, the pandemic could shrink the national economy by a range of -0.4% to -2.3% in 2020, which will push the real estate market recovery out even further.

Currently, foreign oil and gas companies' footprints are shrinking in Jakarta. Most upstream businesses have been taken over by the state-owned oil and gas company Pertamina. Further, Pertamina is building its own compound and plans to occupy 50% of its buildings whilst the remaining 50% will be leased to third-party oil and gas occupiers.

It should be noted, all oil and gas companies in Indonesia with upstream businesses and activities must receive a written budget and financial approval from the Special Task Force for Upstream Oil and Gas Business Activities (SKK Migas). SKK is a state-owned institution established by the Government of the Republic of Indonesia. SKK Migas controls 80% of budgets spent by oil and gas companies and in turn controls decisions for real estate activities including renewals, relocations, purchases and leases.

With Pertamina's plan to invite oil and gas companies to occupy its office compound in the future, securing SKK Migas approval may become more stringent and subject to increased business case scrutiny and justification, particularly should any oil and gas company wish to be located in alternative private sector office buildings.

LESSONS LEARNED

Historically, the oil and gas sector has been a dominant factor in the local office market with demand rising and falling with the price of oil. Going forward, other factors are also likely to play a role in the demand and supply of office space.

With government regulations impacting the budgets and other activities of oil and gas companies, especially those with upstream activities, the office market is going to be impacted by the regulatory process as well as by the impact of changes in oil and gas prices.

KUALA LUMPUR

The contribution of the oil and gas industry to the Malaysian economy is significant. There are over 3,500 oil and gas businesses in the country representing international oil companies, independents, services and manufacturing companies that support the needs of the industry's value chain both domestically and regionally. Malaysia is committed to ensuring a sustainable and successful energy industry through pro-business policies, specifically in Kuala Lumpur (KL).

Kuala Lumpur	2005	2019	Change	Change	National Rank
Population ('000)	4,927	7,780	2,853	57.90%	1
Payroll Employment ('000)	691.4	863.4	172	24.88%	1
Office-Using Employment ('000)	N/A	N/A	N/A	N/A	1
Inventory (sf)	82,719,850	129,814,119	47,094,269	56.93%	1

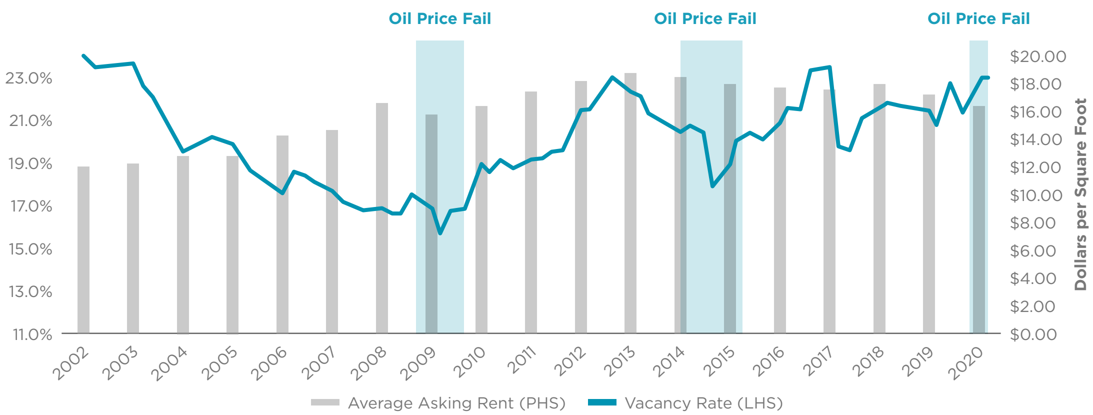
Department of Statistics Malaysia

KEY MARKET DRIVERS

As Malaysia aspires to become the regional hub for oil and gas, it has facilitated global players like Aker Solutions, FMC, Halliburton, Cameron, Technip, Schlumberger and Baker Hughes to set up operations in the country while providing technical expertise in engineering and technology as well as outsourcing requirements and supporting skilled developments. Aside from the energy industry, other major office demand sectors include technology, transportation, finance, medical research, advertising and professional services. These sectors have been the driving force behind KL's growing tenant mix over the past few years.

THE IMPACT

KUALA LUMPUR OFFICE RENT VS. VACANCY



IVPS, Cushman & Wakefield Research

Past

KL's office leasing activity was slightly impacted by the global downturn in oil and gas as oil prices declined from $115.00 per barrel in mid-June 2014 to $69.00 per barrel in early December 2014. However, the economic decline in 2015 led to a decrease in the annual net office take-up in 2016 and 2017, which fell to 1.25 msf and 0.57 msf respectively. These figures are relatively low compared to the average take-up which is in the range of 3.5 msf yearly.

In early 2017, ExxonMobil Exploration and Production Malaysia Inc. undertook cost cutting measures and renewed approximately 60% of the space at Menara ExxonMobil, an office building located in KL's CBD. This space was later taken over in the second quarter of the same year by Petronas, the government oil company of Malaysia. Other large and small industry players that downsized space within the Golden Triangle—the prime location in KL's CBD marked by the three arterial roads of Jalan Imbi, Jalan Sultan Ismail and Jalan Raja Chulan—have either sublet or consolidated operations.

Present

Currently, the office leasing market has a higher vacancy rate compared to the financial crisis in 2008 and oil price decline in 2014. This is a result of the current office market's development of new office precincts and more high-quality office space, which translated to higher rental rates and a larger construction pipeline in the market compared to that of 2014. The recent COVID-19 outbreak has further increased the vacancy rate and it is expected to remain elevated throughout 2020.

Looking Ahead

Although there is slow demand in the oil and gas sector, the office market witnessed strong take-up from coworking office space providers with the emergence of CommonGround (the largest coworking operator in Malaysia), WeWork and Regus. These operators have aided in the take-up of large vacant space in new office towers. Further, technology and shared service occupiers have been expanding since 2015, specifically in the KL fringe area including Bangsar South, Mid Valley and KL Sentral.

LESSONS LEARNED

With declining oil and gas occupiers' presence in Malaysia, there is a glut of office space in KL. Landlords are faced with challenges to maintain high rental rates previously paid by the oil and gas companies. The rates are further pressured with continued consolidation by financial institutions. In addition, KL landlords are faced with stiff competition from offices in the fringe localities where the same quality of office space is offered at lower rental rates.

New supply like TRX Exchange, Conlay Tower and Hap Seng Tower 3 and others in the pipeline for completion in the next 12-18 months may continue to face extreme challenges as the majority of occupiers are taking a "wait and see" approach. Amid challenges in the office market, some real estate investment trusts (REITs) and landlords of older and dated office buildings are reportedly focusing on asset management and enhancement initiatives by upgrading office buildings.

MOSCOW

Russia's largest oil basins are concentrated in the Eastern part of the country including Tatarstan and Siberia. The areas mostly consist of build-to-suit local administrative offices for large oil companies rather than the traditional office market.

Both the office market and oil sector are highly consolidated in Russia. While headquarters are mostly located in Moscow, most functions and service subsidiaries are integrated inside oil companies. The impact of the oil prices on the CRE industry in Russia is largely indirect.

As an oil dependent country, the office market has generally felt the impact of declining oil prices because of its connection to the rest of the economy. Considering Russia's economy is largely commodity based, the government works out economic strategy based on the oil price. As commodity prices fall—especially oil—it reduces the revenue available for investment. Moreover, many businesses in other industries are financed by oil profits. As a result, oil price drops may shrink investment opportunities. A high dependence of the exchange rate of the local currency on oil prices is an additional issue that has recently been strongly regulated by the Central Bank.

Moscow	2005	2019	Change	Change	National Rank
Population ('000)	10,425	12,678	2,253	21.6%	1
Payroll Employment ('000)	6,157	7,202	1,045	17.0%	1
Office-Using Employment ('000)	663	2,349	1,686	254.4%	1
Inventory (sf)	57,070,511	202,240,034	145,169,523	254.4%	1

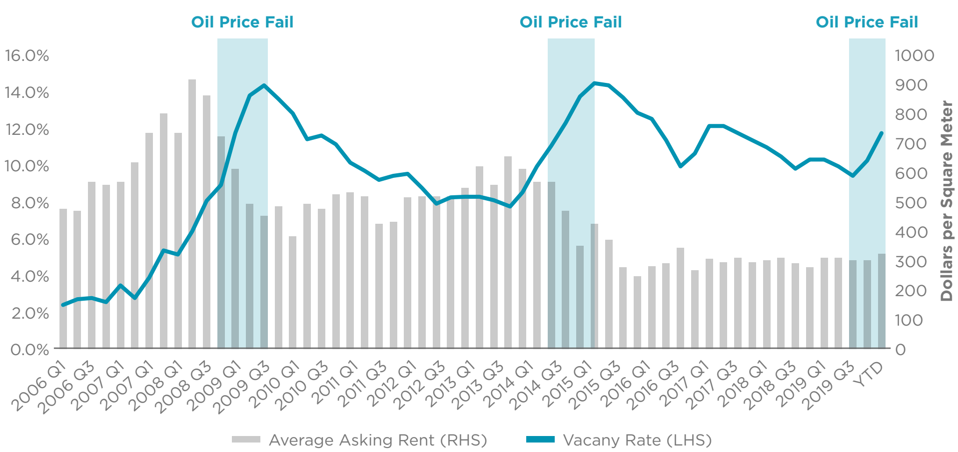
Russian Federal State Statistics Service, Cushman & Wakefield Research

KEY MARKET DRIVERS

As a large business and administrative hub, Moscow has the largest and one of the only financial centers in the country hosting 80% of the total office stock. The office sector is dominated by banking and finance, manufacturing, energy and professional services. Recently, the federal government has become a key market player in CRE by providing additional support to the market during instability periods.

THE IMPACT

MOSCOW OFFICE RENT VS. VACANCY



Cushman & Wakefield Research

Past
After the booming 2000s, the real estate market was overwhelmed when the GFC hit. The fall of oil prices led to the devaluation of the local currency. This weakened the economy during a substantial construction boom in 2008. As a result, the office market experienced a sharp drop in USD rental rates of -37%, a rapid growth of vacancy averaging 4.8 percentage points and take-up fall at 55% in 2009. In some newly developed office areas, vacancy reached 20%. The market began to balance in 2010 as oil price stabilized, although rental rates never returned to the pre-crisis level.

The next shock occurred from 2014 to 2015 when a drop in oil prices was multiplied in Russia by the Western sanctions that led to a deep devaluation of the local currency and resulted in changes to the office market. The market shifted from USD to local currency, and construction volumes started to decrease twofold almost every year. In mid-2016, a number of large office deals with federal ministries and companies with state participation stabilized the market.

Present
Currently, the Moscow market is tight and construction activity remains limited. Supply and demand balance is healthy and rental rates in the local currency are competitive and sustainable to exchange rate fluctuations. Furthermore, there is a lack of quality consolidated blocks which will bolster the absorption of new construction.

Looking Ahead
Over the last 10 years, the market weathered two serious shocks. It's expected to show high resilience in the short-term and to continue incremental growth in the mid-term. This is in line with the general strategic shift from the economy of efficiency towards the economy of resilience.

LESSONS LEARNED

The Russian economy is still highly dependent on oil prices in line with most oil producing nations, but increasing budgetary flexibility has enabled the government to adjust spending and limit development when prices fall. Accordingly, the real estate market has learned its lessons well: developers and investors are now pragmatic and cautious, which has allowed the market to show sustainability in the current downward period.

[2]EMSI, [3]Moody's Analytics, [4]Dallas Regional Chamber of Commerce, [5]Numbeo

RIO DE JANEIRO

Over 3 msf in São Paulo and Rio de Janeiro is occupied by oil and gas companies. Of that, 23% are located in CBD Class A office buildings in Rio de Janeiro. In 2007, after the announcement of the World Cup and Rio Olympic Games, the market entered a virtuous cycle that produced positive momentum. Foreign investments and government funding pushed forward, aiding in the development of the real estate market. From 2007 to 2014, 806,000 jobs were created in Rio de Janeiro that generated over 24 msf of building completions.

Beginning in 2014, a series of crises—the impeachment of President Rousseff, the steep drop in oil prices and a corruption investigation into the state oil company Petrobras (known as Operation Car Wash)—pushed Brazil into an economic recession. The impact resulted in the oil and gas field to decrease by 3,678 employees since 2014 and the vacancy in CBD Class A buildings to skyrocket above 40% in 2017.

Rio de Janeiro city	2007	2019	Change	Change (%)	National Rank
Population ('000)	6,093	6,718	625	10.26%	2
Payroll Employment ('000)	2,175	2,266	91	4.2%	2
Office-Using Employment ('000)	499	529	29	5.8%	2
Total Inventory (sf)	51,584,585	74,829,182	23,244,597	45.06%	2

IBGE, Ministério do Trabalho, Cushman & Wakefield Research

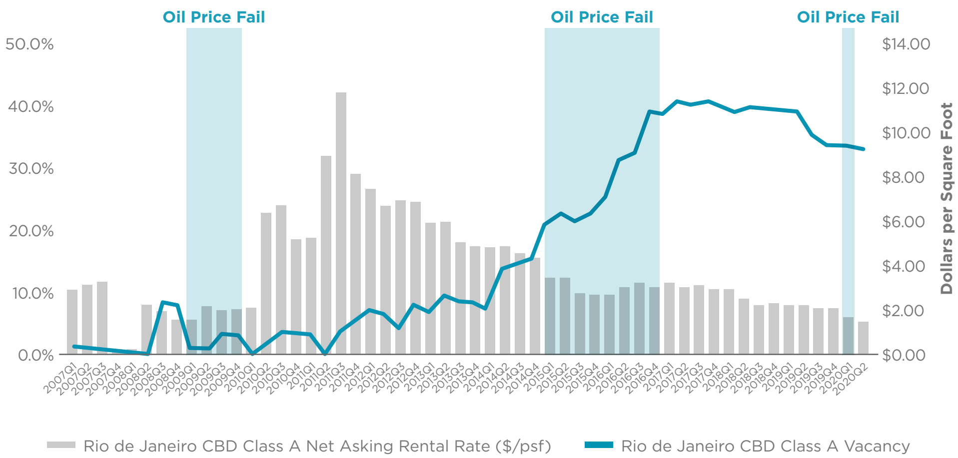
KEY MARKET DRIVERS

Although Rio de Janeiro depends on the energy industry, other industries including finance, banking, insurance, public administration and public companies drive the markets growth. Specifically, companies within the finance, banking, insurance and healthcare sectors have expanded in the last four years during the flight-to-quality movement.

THE IMPACT

RIO DE JANEIRO OFFICE RENT VS. VACANCY

CBD A and A+*



Cushman & Wakefield Research

** average exchange rate (end of each quarter)*
*** no $ value for 2007Q4 and 2008 Q1*

Past
Rio de Janeiro had outstanding performance between 2007 and 2014 with low vacancy rates, positive absorption and numerous completions. Petrobras, a driving force in the market, occupied many of the top Class A buildings. In 2013, it signed a 966,000-sf lease at Centro Empresarial Senado.

The oil price downturn, local recession and the large number of completions profoundly affected the real estate market after 2014. In 2016, Petrobras reduced its footprint by 597,000 sf and once again in 2018 by 463,000 sf. This sublease space coupled with the other companies affected by the oil industry contributed to a vacancy rate above 40%.

Present
Due to the oil demand shock and uncertainty around COVID-19, the Brent crude price dropped to its lowest level in April 2020. Petrobras has already reduced services from supplier providers in Brazil and announced the halt of operations at 45 oil platforms in the Northeast and Southeast regions. Although the number of barrels produced per day will reduce, the future of office space is unclear. However, by the end of the second quarter of 2020 signs of recovery bloomed as Brent prices reached $40.00.

Petrobras hiring cutbacks and selling of exploration basins revealed signs of a changed strategy. As a result, other industry sectors started to gain space and market share in Rio. Unlike the 2014 crisis period, the current market presents opportunity for tenants to renegotiate lease agreements and rental prices as well as employ the flight-to-quality approach.

Looking Ahead
The pre-salt layer already produces over 60% of Petrobras's national production. In 2015, Petrobras announced the pre-salt exploration had a breakeven of $45.00 per barrel. The new oil crisis might halt the operations causing uncertainly in Rio's recovering market.

Although the current market landscape is challenging, Rio was expecting the largest auction of oil and gas blocks with 128 blocks offered in 64.100 square kilometers. This can attract more companies and aid in new investment for corporate, retail, hotel, residential and leisure construction activity. However, recently the National Petroleum Agency (ANP) approved the temporary suspension of the 17th Bidding Round for areas of exploration and production, without a concession regime, which initially was scheduled for this year.

LESSONS LEARNED

Without a doubt, the oil price downturn will impact the national long-term investments and economic activity as the sector represents 13% of the Brazilian GDP, according to the ANP. Although the real estate industry tracks very closely with the macro-economic indicators, other industries continue to grow their market share, paving the way for new beginnings in Rio de Janeiro and lessening the impact of oil price declines.

Furthermore, landlords have learned to overcome past downturns through portfolio diversification and better negotiation terms, better positioning themselves for the road ahead.

SINGAPORE

Although Singapore does not have its own oil reserve, it is still a key oil refining and trading hub in Asia due to its strategic location and stable political environment. There are numerous petrochemical refineries located on Jurong Island, including ExxonMobil's refinery, the largest refinery in the world. Singapore's robust infrastructure and transport connectivity throughout the region provides an ideal hub for corporate energy companies with many oil firms flocking to the country's CBD.

Singapore	2005	2019	Change	Change	National Rank
Population ('000)	4,266	5,769	1,503	35.2%	N/A
Payroll Employment ('000)	2,272	3,753	1,481	65.2%	N/A
Office-Using Employment ('000)	443	943	500	112.9%	N/A
Inventory (sf)	69,589,000	87,274,000	17,685,000	25.4%	N/A

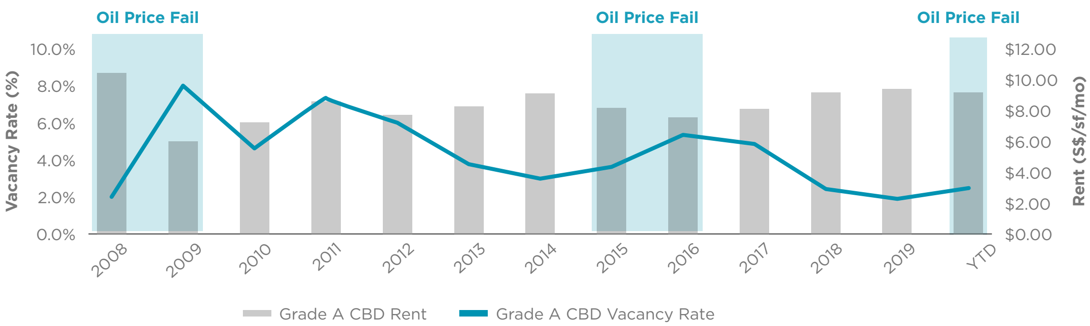
Department of Statistics Singapore

KEY MARKET DRIVERS

The Singapore office market has a diversified tenant profile including professional services, legal and real estate occupiers. The finance and technology sectors are the largest occupiers of space with a high concentration of the firms located in the premium submarket of Marina Bay. Recently, tech firms and coworking operators have driven leasing demand, securing large spaces in both new and existing buildings in the CBD.

THE IMPACT

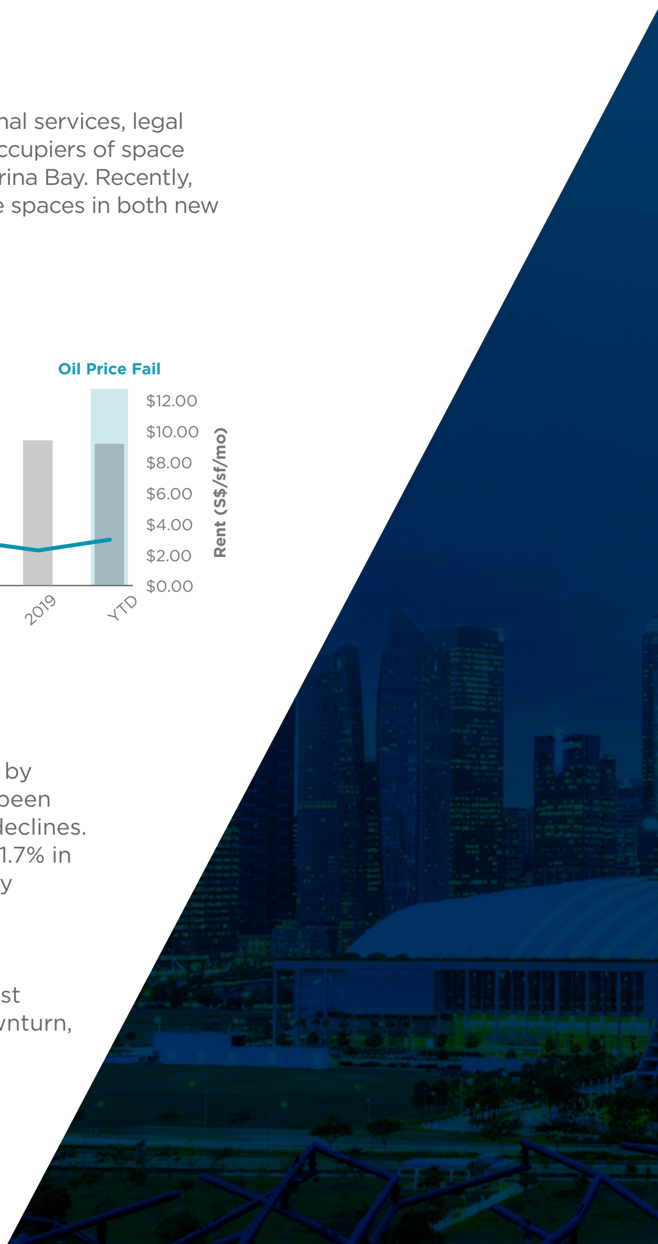
SINGAPORE OFFICE RENT VS. VACANCY



Cushman & Wakefield Research

Past
Owing to Singapore's open economy, the office market is heavily influenced by the global macro-economic environment. Historically, the office market has been hit hard during economic downturns, which in turn have triggered oil price declines. During the GFC, Class A CBD rents tumbled by 19.5% in 2008, followed by 41.7% in 2009. Similarly, rents declined by 10% in the 2015 economic downturn and by 6.9% in 2016.

Regardless of downturns, the market continues to show resilience when the economy regains its footing. Post-GFC, Class A CBD rents experienced robust growth of 16.6% in 2010 and 20.2% in 2011. Likewise, after the 2015-2016 downturn, rents rose by 6.6% in 2017 and a hefty 12.7% in 2018.



Present
The office market was robust prior to the emergence of COVID-19 with rents rising on the back of the continued expansion of tech firms and co-working operators. The vacancy rate was also extremely low, nearly 2%. When the pandemic hit, leasing demand weakened significantly as market sentiment declined. Firms began to pause expansion plans to take a “wait-and-see” approach. As companies activate business continuity plans and lockdowns remain in place, remote working has skyrocketed, reducing the immediate demand for new space.

As many companies are cash-strapped and without budgets for fit-out costs, rates for renewals are currently more resilient while rents for new leases have larger decreases. Although the government expects the country to enter its deepest recession yet, Class A CBD rents have been relatively stable, dipping only by 2.3% quarter-over-quarter in the second quarter of 2020.

Singapore’s tenacity may in part be due to the largest ever local stimulus package disbursed by the government. In addition, the market is currently experiencing tight supply. The annual average of 0.7 msf entering the market during the period of 2020–2021 is significantly lower than the 2010–2019 annual average of 1.2 msf.

Looking Ahead
Oil companies occupy a relatively small proportion of the Class A CBD inventory. Although, in recent years, leasing activity by this sector gained momentum as Singapore’s importance as a regional hub grew, leading to several major oil firms taking up space in prime office buildings. In 2016, BP signed a lease for 70,000 sf in Marina One, the newest project in Marina Bay. In 2017, Chevron leased 72,000 sf of prime space in DUO Tower. Subsequently in 2018, French energy giant, Total, consolidated its operations from multiple operations in Frasers Tower, increasing its footprint from 80,000 sf to 125,000 sf. Not to be left out, Saudi Aramco relocated to OUE Bayfront in 2019, taking up 30,000 sf in the building.

Oil companies leasing activity is expected to slow during the recession, but the impact on the office market is expected to be minimal.

LESSONS LEARNED

While Singapore office rents are expected to moderate in 2020, the market remains resilient and is projected to make a strong recovery once the global economy returns to growth. However, concerns remain that there could be a structural shift in the market if numerous companies opt to save on real estate costs and let a large portion of its workforce continue remote working, post-pandemic. Nevertheless, the government intends to focus on its decentralization initiative and tighten future supply in the CBD, which will aid in mitigating any reduction in demand.

STAVANGER

Stavanger is considered the Norwegian oil capital and is one of Europe's largest energy hubs. The city, located at the west coast of Norway, is home to many large international and domestic firms. Among these is the largest energy company in the Nordics, Equinor, as well as other large companies such as Aker BP, Shell, ConocoPhillips and Wintershall. Stavanger is also home to several government-run industry regulators including Norwegian Petroleum Directorate and the Petroleum Safety Authority.

The oil and gas industry is the largest employer in Stavanger, accounting for 11% of the employed population. From 2005 to 2019, industry jobs grew by 68%. Even though the activity fell drastically when the price of oil took a dive in 2014, it has recovered in the last couple of years.

Over the last 50 years, since the start of Norwegian petroleum activities, about 48% of the estimated total recoverable resources on the continental shelf have been produced and sold. With large remaining resources, it is expected that the level of activity on the Norwegian shelf will continue to be high for the next several decades. As an indicator of this, in 2019 Norway produced 3.7 mbd of marketable oil equivalents.

Stavanger	2005	2019	Change	Change	National Rank
Population ('000)	174	214	40	23%	4
Payroll Employment ('000)	95	120	25	26%	4
Office-Using Employment ('000)	30	38	8	27%	4
Inventory (sf)	N/A	N/A	N/A	N/A	N/A

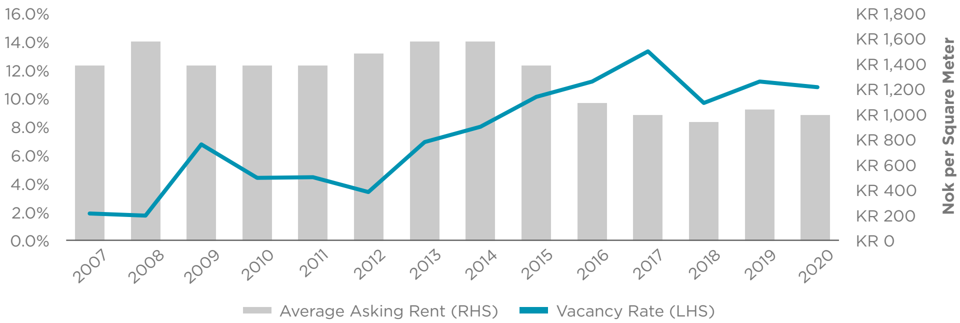
Statistics Norway

KEY MARKET DRIVERS

The development in the oil and gas industry has great impact on the general activity in the Stavanger region. Even though the industry defines the region, Stavanger is also well known for its innovation and ability to change. When the price of oil fell in 2014, population growth stopped, and the price of homes fell by 10%. Nonetheless, economic activity quickly recovered, driven by the growth in industries such as healthcare, education, information and communication. Further, with a shift towards renewable energy, dependency on oil in the region is decreasing. Specifically, a focus on wind energy is increasing in Stavanger.

THE IMPACT

STAVENGER OFFICE RENT VS. VACANCY



Cushman & Wakefield RealKapital

Past
The oil price shock of 2014 hit during a commercial office construction and leasing boom. As the price of oil fell, office vacancy rates increased so drastically that Stavanger no longer had the lowest office vacancy rate in Norway. Even though vacancies were low, asking rents were moderate as the local government offered inexpensive land for development. When oil prices took a downturn in 2014, investment volume dropped drastically, and employment decreased by 20%.

Present
The massive oil price drop coupled with the effects of COVID-19 was a shock for companies that now had to handle both the complications of the pandemic as well as major hits on revenue. Both Equinor and Aker BP quickly announced major cuts in future investments. The situation was unclear and all possibilities for cost cuts were considered.

Then, the oil price surged from $20.00 per barrel to $40.00 per barrel simultaneously as the Norwegian government announced tax cuts to maintain investments. These actions allowed the decline in total employment to be far less dramatic than feared. Nevertheless, office vacancies are still high following the last oil crisis and there is still a downward pressure on rents, especially in oil and gas intensive areas of Stavanger.

Looking Ahead
The oil and gas industry has undergone large footprint cuts since the last oil crisis in 2014, resulting in higher efficiency, and in turn, better equipping the market to handle future declines in oil prices. The development of new offices has also been very low, and much of the office space caters to non-oil and gas companies in Stavanger city.

LESSONS LEARNED

The oil industry has had a major impact on the Norwegian economy for the past 50 years and is likely to remain a key driver in the future, especially the next several years as production remains robust. Oil companies are major occupiers of office space in Stavanger and will continue to be an important source of demand for space in coming decades. Nonetheless, the oil industry has most likely passed its peak production years and will play a smaller role in the nation's growth in the future. The Norwegian Government has created a state fund for the profits from the oil sector—which is now larger than the value of remaining oil and gas reserves—that should enable the nation to transition to other industries as the impact from oil diminishes.

ST. JOHN’S NEWFOUNDLAND AND LABRADOR

As the third largest oil producing province in Canada, the offshore oil and gas industry is a massive contributor to Newfoundland and Labrador’s economy. Direct beneficiaries have been the office and industrial markets in the province’s capital, St. John’s. Commercial oil production took hold in 1997 and, by 2018, Newfoundland and Labrador accounted for 5.1% of Canada’s crude oil production and more than 25% of Canada’s light oil production.[8]

Mining, quarrying and oil and gas extraction accounted for more than 25% of the province’s GDP in 2018 and averaged almost 30% between 2010 and 2017. In 2018, the industry created 5,200 direct jobs and was responsible for thousands of additional jobs across many sectors including construction, professional services and legal.

St. John’s Newfoundland and Labrador	2007	2019	Change	Change (%)	National Rank
Population ('000)	151,500	186,500	35,000	23.1%	22
Payroll Employment ('000)	89,800	115,600	25,800	28.7%	22
Office-Using Employment ('000)	28.5	35.2	6.7	23.3	19
Total Inventory (sf)	2,413,776	3,774,358	1,360,582	56.3%	11

Statistics Canada, Moody’s Analytics, Cushman & Wakefield Research

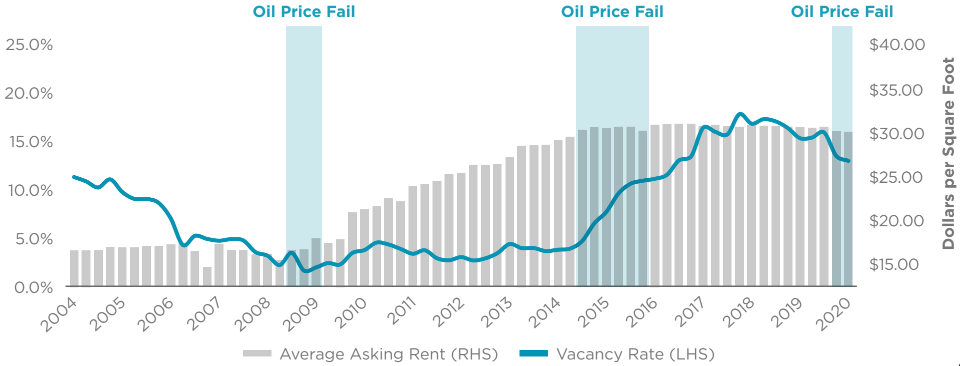
KEY MARKET DRIVERS

Almost every sector in Newfoundland and Labrador is influenced by the health of the oil and gas industry. Capital-intensive projects have driven job growth within engineering, support services and on construction sites such as the C$14-billion offshore Hebron project. Mega construction projects in public utilities and mining will continue to support employment. Examples include the Vale Long Harbour Nickle Refinery (C$4.25 billion) and Nalcor’s Muskrat Falls Hydro Development Project (C$12.7 billion). Other sectors underpinning the province’s economy include the fishery, banking and financial services, tourism, food distribution and trucking.

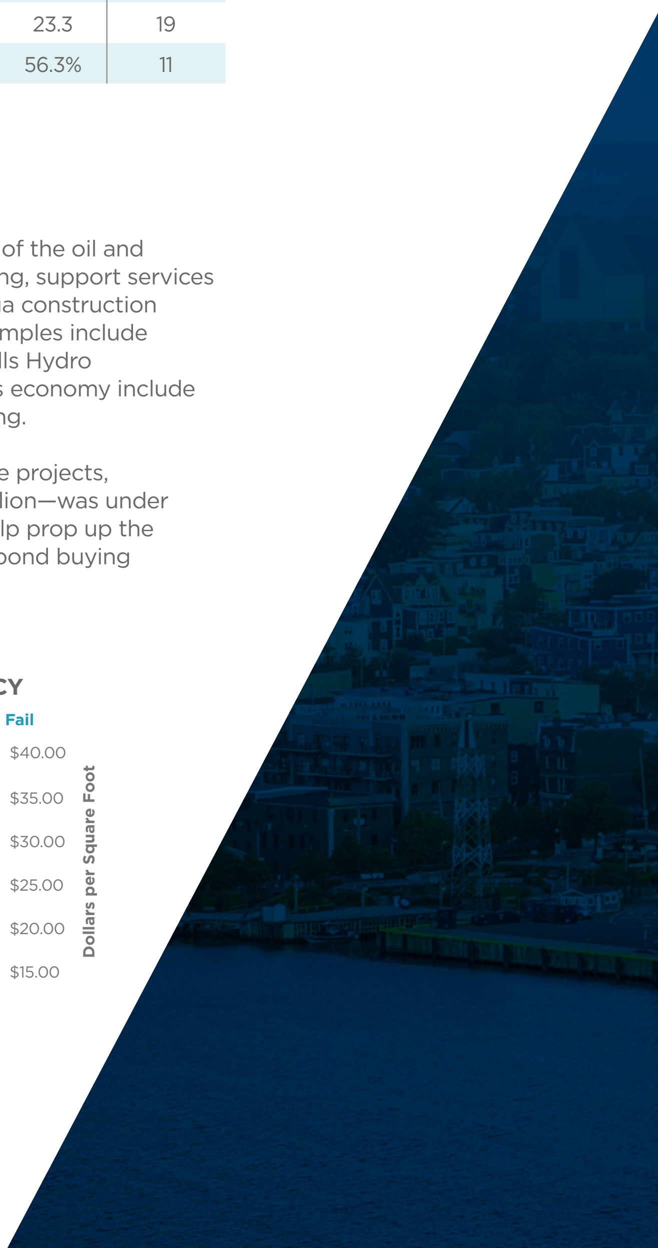
Due to steep oil price drops since 2014 and cost overruns on huge infrastructure projects, Newfoundland and Labrador—facing an estimated debt load of almost C$14 billion—was under financial strain long before COVID-19 and the more recent oil price shock. To help prop up the hardest-hit provinces, The Bank of Canada initiated a provincial and corporate bond buying program to deliver near-term cash flow and economic stability.

THE IMPACT

ST. JOHN’S, NEWFOUNDLAND AND LABRADOR OFFICE RENT VS. VACANCY



Cushman & Wakefield Research



Past
In the heady days of record-high oil prices, there was tremendous pent-up demand for office space in St. John's. The arrival of two new office towers in 2014 provided the opportunity for companies to relocate and lock down 10-year leases as they looked to a bright future. When oil prices began their precipitous fall in June 2014, companies retrenched and laid off staff causing a significant amount of office space to return to market. So, while second quarter 2014 saw St. John's Class A office availability fall to almost 0%, by fourth quarter 2017 it had skyrocketed to 27.7%. By 2018, availability rates fell back to 20.6%, although this recovery was tenuous.

Present
St. John's CBD all-classes availability at 23.3% is expected to reach almost 30% when Exxon and CNLOPB relocate to the suburbs in the second half of 2020. While face rates have held remarkably firm, particularly in new developments, generous tenant inducements have put downward pressure on net effective rents. With the dramatic decline in business activity due to the pandemic and the free fall in oil prices, this trend shows no signs of letting up. The fishery has also been hard hit by social distancing, challenges on boats and reduced demand for fish exports. The province's tourist industry is also in jeopardy and it has an older and aging population that will continue to weigh on labor markets and healthcare sectors. The silver lining is that the technology sector has been driving some new construction, including a 72,000-sf building in the suburbs.

Looking Ahead
It should be noted that Newfoundland and Labrador was on the cusp of seeing massive investments in oil and gas exploration and development before COVID-19. However, huge reductions in capital expenditures across the energy sector, including the revelation that Exxon Mobile will halt drilling for up to 18 months, has intensified worries for this Atlantic Canadian province. In March, Equinor and Husky Energy announced that the Bay du Nord project, the first deep-water oil field, will be indefinitely postponed. CNOOC International announced a delay in its Flemish Pass drilling project as it cannot safely execute offshore work during the pandemic. Drilling activity on Hibernia was suspended but oil production on the gigantic oil platform off of the provinces' east coast will continue. Further, hundreds of workers were ordered off two major worksites in Labrador in order to prevent the spread of the pandemic. Vale halted mining and construction activities at its Voisey's Bay site and Nalcor Energy called for a controlled demobilization of its workforce at the Muskrat Falls construction site. Overall, the outlook for capital expenditures looks bleak. Statistics Canada projected an 11.8% drop in capital spending intentions in Newfoundland and Labrador for 2020, the weakest among the provinces.

LESSONS LEARNED

Office availability in St. John's CBD market was expected to reach 30% due to migrating tenants in 2020. This, however, did not factor in the devastating impact that COVID-19 and the recent steep oil price drop would have on business and public revenues at a time when provincial debt was precipitously high. To mitigate steep job losses, the provincial government announced it will maintain public employment at current levels during the crisis.

While it will take a significant increase in oil prices to turn around the St. John's real estate market, the province continues to pressure Ottawa for additional stimulus relief to prop up the economy. Prime Minister Justin Trudeau announced the provision of C$750 million for the oil sector to help companies invest in technologies, with 10% targeting Newfoundland and Labrador. With continued support from the federal government and the eventual global economic recovery, the province will begin a slow climb towards stability.

[8]*Canadian Energy Regulator*

CONTRIBUTORS

Jadson Mendes Andrade
Head, South America
Market Research & Business Intelligence
jadson.andrade@sa.cushwake.com

Stuart Barron, CPA, CA
National Director of Research
Canadian Markets
stuart.barron@cushwake.com

Mike Coppola
Associate Market Director
Colorado
michael.coppola@cushwake.com

Tatyana Divina
Deputy Head of Insight
Russia
tatyana.divina@eur.cushwake.com

Mark D. Lampard
Head of Singapore Commercial Leasing
Head of Regional Tenant Representation
mark.lampard@cushwake.com

Christine Li
Head of Research
Business Development Services
Singapore & Southeast Asia
christineli.mw@cushwake.com

Waleed Mahmoud
Research
UAE
waleed.mahmoud@cushwake.com

Maria Maximova
Senior Research Analyst
Qatar
maria.maximova@cushwake.qa

Cammie Moise
Associate Director
Houston
cammie.moise@cushwake.com

Patrick Scanlon
Head of UK Office Insight
patrick.scanlon@cushwake.com

Hans Petter Skogstad
Head of Insight
Norway
hps@cwrealkapital.com

Ching-Ting Wang
Research Director
Texas
chingting.wang@cushwake.com

FOR MORE INFORMATION

Ken McCarthy
Principal Economist
Americas Head of Applied Research
ken.mccarthy@cushwake.com

ABOUT CUSHMAN & WAKEFIELD

Cushman & Wakefield (NYSE: CWK) is a leading global real estate services firm that delivers exceptional value for real estate occupiers and owners. Cushman & Wakefield is among the largest real estate services firms with approximately 53,000 employees in 400 offices and 60 countries. In 2019, the firm had revenue of $8.8 billion across core services of property, facilities and project management, leasing, capital markets, valuation and other services. To learn more, visit www.cushmanwakefield.com or follow @CushWake on Twitter.