

Things Are About to Change: Oil and Gas Have Been Found in the Eastern Mediterranean



Large quantities of oil and natural gas have been discovered in the East Med and the race to extract them has begun. These hydrocarbon finds hold the potential to build regional stability and to bolster the economies of important US allies and partners, all of which is in the interest of the United States. But these discoveries could just as easily stoke further instability and conflict if nations default to historic resentments and if regional powers jockey to monopolize on or block access to this strategic treasure.

Extending from Israel and Egypt in the East and South to Turkey, Greece and Italy in the North and West, the Eastern Mediterranean has long been an economically dynamic and politically important region for the United States and its

NATO allies. It is about to become even more important.

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There are some early signs of cooperation, and these should be welcomed. States which acutely stand to benefit from the finds—Greece, Cyprus, Israel, and Egypt—have begun working toward a solution and have discussed various export options. The first-ever regional gas forum was held Jan 14, 2019, in Cairo, with these Eastern Mediterranean Gas (EMG) pipeline participating countries, along with Jordan, Italy and the Palestinian Authority. The meeting discussed the future of the EMG pipeline and the potential of Egypt as a regional gas export hub. Egypt owns robust domestic energy infrastructural facilities in the Nile Delta—including two LNG plants (sitting idle) and pipeline infrastructure for easy connection to the newly discovered hydrocarbons in the East Med for turnkey distribution to LNG markets in Africa, Israel and the Middle East.

The European Union, too, thinks the new gas and potential oil discoveries in the East Med could strengthen regional energy cooperation, aid overall regional political stability, and spur economic growth in important European economies such as Italy and Greece. A proposed EMG pipeline costing \$7 billion and opening in the mid-2020s is a beacon of hope for the European Union to increase energy diversification, bring billions of dollars of lifetime revenues to southern Europe and curtailing Russia's dominance over the European energy market.

Yet even with this early cooperation, the role of U.S. and NATO naval forces as a diplomatic and economic actor in U.S. foreign policy and execution has never been more important in the Eastern Med. The discovery of hydrocarbons in the East Med has initiated historical interest and possible shifts in the global balance of power in a region already full of ongoing tensions.

I have completed multiple tours in the region, with my last being as a Sixth Fleet Air Operation Officer, where I navigated firsthand the multiple lines of conflict. These conflicts, some fought in the open and others simmering beneath the surface, include disputes between Turkey and Israel, between Egypt and Turkey, between Turkey and Greece over territory and the Cyprus issue, and among Israel and its Arab neighbors, just to name a few. From my experience it is difficult to imagine an easy way forward as these conflicts continue to plague the region and make exploitation of the East Med natural resources a geopolitical issue.

Enter the United States. "The role of the U.S. Navy as a diplomatic and economic actor in US foreign policy and execution is as strong as ever and likely to remain so for the next several decades," said the Chief of Naval Operations, Admiral John Richardson, in February. Nowhere else do these words ring truer than in the Eastern Med, where stability and economic prosperity are at the cusp. Nowhere do risks to United States, NATO and its allies have more facets and come from more directions than in the Mediterranean region. Well-positioned naval forces have the flexibility to respond to any crisis that may arise in the region quickly and authoritatively all while creating stability through consistent presence.

It makes economic sense for the United States and NATO to deploy naval forces to the Eastern Med where four of the five major threats, to the United States and its allies, mentioned in the National Defense Strategy can be confronted while at

the same time effecting a top economic and geopolitical priority. The security and prosperity of the European Union, specifically among its southern nations, depend on anticipating, containing, and reducing risks in the Mediterranean region by consistent presence. The United States and NATO must get ahead of adversaries in the region and have them react to Western moves rather than the West continue to react to the actions of its adversaries.

Diplomatic and economic functions of naval forces while conducting exercises with allies in the region should be the primary instruments in this effort, but hard power also has its role, especially when risks turn to threats and threats turn to violence. After all, there is still something to gunship diplomacy.

Even with U.S. presence, however, there must be a concerted effort. Egypt has established cooperation agreements with Israel, Cyprus and Greece. The four nations have made efforts that seek to enhance civil and military activities, including joint military drills to bolster interoperability and cooperation, and ultimately stability in the nations' energy sectors. U.S. and NATO forces must look for opportunities to join in these joint exercises.

Yet the discovery of these sizeable amounts of hydrocarbons has not only attracted the attention of the West, but also that of other nations worried about the potential effects on the region's current power balance. Turkey, Russia, Iran and even China are attempting to gain geopolitical influence in this critical and distinct region.

The Eastern Med bustles with age-old local disputes that are territorial, ethnic and religious in origin. Turkey has opposed extraction activities off the coast of Cyprus and has threatened to blacklist major firms that take part in the extraction and exploration operations. Turkey not only challenged Greece and Cyprus over the ownership of the natural resources discovered in the region, but also has begun seismic and drilling activities in Cyprus' UN recognized, exclusive economic zone. Furthermore, Turkey has enhanced cooperation

with Iran –the two nations have established a comprehensive pipeline network to bring gas to the European markets. Both countries have been negotiating additional projects in the region, and now worry that an EMG pipeline will disrupt their efforts. Iran is trying to establish a foothold in Syria to ensure a post-conflict land bridge to the Eastern Med, further increasing its relevance in energy geopolitics and threat to Israel. Russia increasingly wants to be viewed as a respected global power in the region. It has established bases in Syria and has increased its military presence in the Eastern Med. Now it looks to have a say in the East Med and maintain its dominant stand in the global gas market. Finally, China is investing heavily in the East Med, as it views the East Med region as the western end of its Belt and Road Initiative and entry point to the European Market.

In the end, the exploitation of the East Med resources will require a stable region bolstered by U.S. and NATO alliance support that includes naval forces for diplomacy, open economic sea lanes and poised hard power.

Commander Tony Chavez is a navy federal executive fellow at the Chicago Council on Global Affairs. A decorated navy aviator, Commander Chavez has served in every U.S. Navy fleet throughout the globe.

US' ExxonMobil plans more drilling in the Eastern Mediterranean after recent gas discovery



Two weeks after announcing it had made the world's third largest natural gas discovery in the last two years off the coast of Cyprus island, U.S. energy giant ExxonMobil is now working on projects to commercialize its gas reserves and also planning to drill more exploration wells around the island, according to Stephen Greenlee, the president of ExxonMobil exploration company and vice president of the ExxonMobil corporation.

Greenlee's comments came at CERAWeek by IHS Markit, the world's largest energy conference bringing together industry leaders in Houston.

"We have obviously just announced the discovery and we are currently working on the size of it, trying to understand the most commercial vehicle to commercialize the reserves," Greenlee told the Daily Sabah on the sidelines of the event.

Greenlee also confirmed that the company will be looking into more drilling opportunities in the region while also being engaged in projects to monetize the Glaucus-1 reserves in the most lucrative way.

The ExxonMobil discovery, announced by the Greek Cypriot administration's Energy Minister Georgios Lakkotrypis, was

made in the second well of the company, Glaucus-1, located in the putative Block 10 in the exclusive economic zone unilaterally declared by the Greek side. The Glaucus-1 is estimated to contain 5-8 trillion cubic feet of gas (142 to 227 billion cubic meters).

Greenlee previously said the gas discovery was an encouraging result in a frontier exploration area. "The potential for this newly discovered resource to serve as an energy source for regional and global markets will be evaluated further."

Last year, Italy's ENI and France's Total said they had found a promising prospect of natural gas in a nearby concession, Calypso, located on Block 6 of the Greek administration's unilaterally declared Exclusive Economic Zone (EEZ).

The consortium of ExxonMobil and Qatar Petroleum started drilling in Block 10 in November 2018.

The Greek Cypriot government has not yet commercialized any gas discovery with a huge political problem waiting to be resolved in the island as well as a lack of infrastructure to process and utilize the gas. It has one gas field, Aphrodite, which contains an estimated 4 trillion cubic feet of gas discovered to the south of the island in 2011.

In response to the infrastructure problem, the Greek Cypriot government launched a tender for a liquefied natural gas (LNG) facility to be constructed by November 2020. The facility will be capable of unloading LNG from LNG carriers ranging in size from 120,000 cubic meters to 217,000 cubic meters.

Greenlee refrained from commenting on the political conundrum in the island which has been an impediment to the equitable share of resources between the Turkish and Greek communities on the island. "It is an issue between the governments to resolve," he said and did not comment on any future interaction between the two sides.

ExxonMobil's Greenlee also suggested that ExxonMobil is open to joint drilling with other countries in the region, including Turkey, if the data allows and the opportunity rises.

Turkey has also accelerated its seismic survey and drilling activities in the Eastern Mediterranean in the last five years. The country's seismic vessel Barbaros Hayreddin has been conducting surveys in the region since 2013 after an agreement with the Turkish Cypriot government was signed in 2011, which gives Turkey exploration rights for 30 years. Its first drillship Fatih also started operations with deepwater well-drilling in October 2018 off Alanya, a district in the Mediterranean province of Antalya.

The island of Cyprus has been divided since 1974, when a Greek Cypriot coup took place after decades of violence against the island's Turkish community and Ankara's intervention as a guarantor power. The status of the island remains unresolved in spite of years-long negotiations.

**Flexible renewable power:
Spain to triple solar thermal
capacity by 2030**



Spain's NECP has been approved by the **Spanish Council of Ministers** and submitted to the **European Commission**. ESTELA, the representative association of the **European Solar Thermal Electricity sector** (also known as concentrated solar power), highlights that the plan includes a proposed **increase in installed capacity of solar thermal electricity from 2,300 MW to 7,303 MW by 2030**.

This development in Spain is a strong signal that the value of solar thermal electricity is now recognised when forecasting the future energy generation mix. The additional 5 GW of latest-spec solar thermal power plants, **with much larger storage volumes**, will capture, store and subsequently generate electricity, mostly in a complementary way to photovoltaic and/or wind generation, contributing to the stability of the grid.

With 2.3 GW installed capacity currently, Spain is the global leader in STE technology. However, with threefold growth over the next 10 years, the European STE/CSP industry could substantially strengthen that leadership, reaching into world markets whilst maintaining its excellence in research and innovation activities.

More STE/CSP in Europe means the technology could (already today) provide a substantial contribution to the required flexibility for a further increase of solar PV and wind

generation towards decarbonisation – without waiting for industrial maturity of other technologies that are currently unable to deliver bulk amounts of CO₂-free dispatchable energy.

As with other green technologies, STE/CSP offers deep and long-lasting benefits to the future economy and job markets as part of a Just Transition. The deployment of solar thermal power plants should have an immediate, positive macroeconomic effect on GDP and stimulate employment for all European countries involved along the STE/CSP value chain following investment in related equipment, components, and services.

Granting solar thermal power plants a more significant role over the next decade will ease the necessary phasing-out of coal and nuclear power plants. **The proven competitiveness of solar thermal power plants against fossil backup technologies** and the ability of this technology to provide the basic services of conventional power plants will lead to a zero-emission generation fleet – combined with the other already established intermittent renewables, especially in sunny European countries.

Rolling out STE across Southern Europe for the benefit of the whole EU electricity system

STE provides the possibility of moving towards an efficient share of flexible and non-flexible renewable generation across Europe but requires a clear endorsement by the European Commission coupled with practical help.

The justifications are clear

- Leaving the completion of the 2020 and 2030 objectives to a purely market-driven process will lead to a further increase of non-flexible RES in Europe (essentially wind

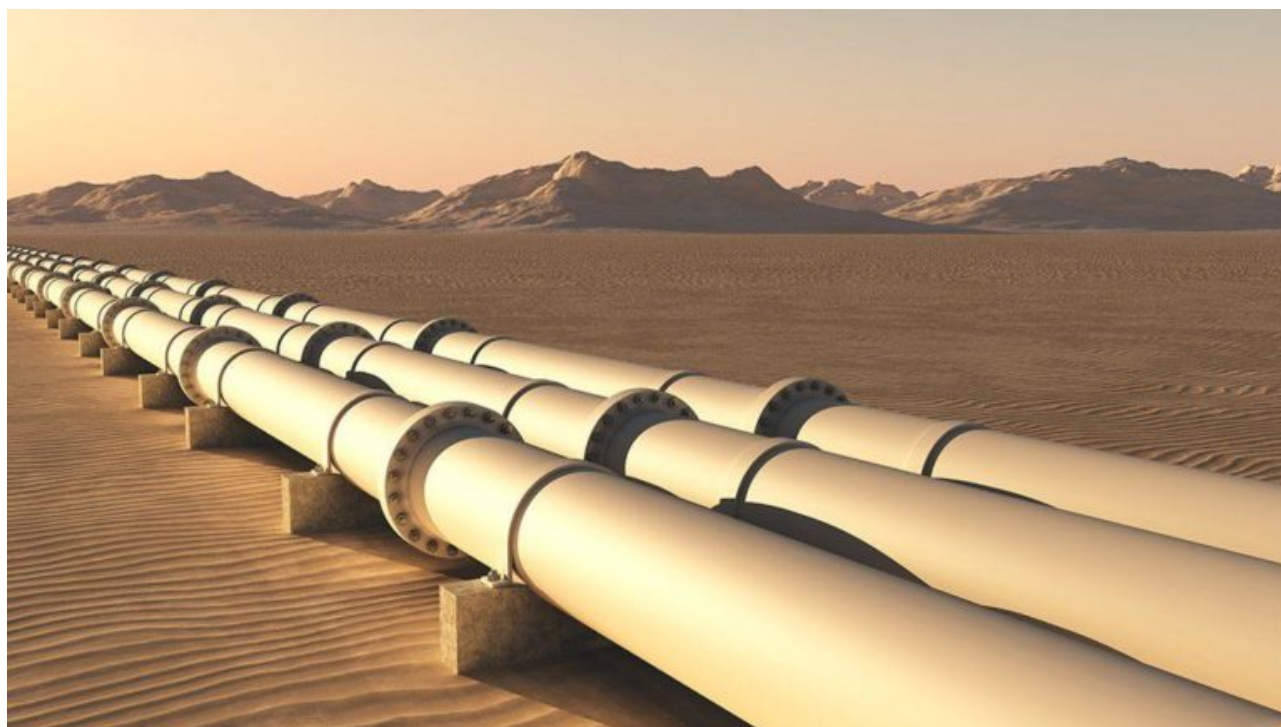
and PV);

- At the horizon **2030 and beyond**, a more balanced share between flexible and non-flexible RES will be vital to ensure the reliability in a decarbonised European power system which is required to address the foreseen lack of flexible power generation overall;
- Expensive backup capacity from conventional power plants can be avoided if flexible RES (STE/CSP) is properly and adequately implemented from now on where **fossil back up capacities should be considered part of the costs of non-flexible RES**;
- Support for this program should be the product of a well-coordinated (at EC level) combination of sources: Directives, strategic energy security investments, cohesion funds, development and cooperation (including outside EU);

These issues were already identified in the 2014 IEA Technology Roadmap – Solar Thermal Electricity report that foresees **4% of the whole installed capacity by 2050 for Europe coming from STE/CSP**. That would mean that an additional 1 GW/year capacity in STE would need to be installed in total in Europe between 2015 and 2030.

ESTELA President Dr. Luis Crespo calls for EU institutions and, most importantly, other EU Member States getting behind their 2020 RES objectives, to take this example from Spain as an opportunity to consider again the role of STE/CSP in their strategies. This, he points out, would be in keeping with the RES Directive (recast to 2030) entering into force in 2021 which calls for proactive cooperation between Member States for the development of cross-border projects.

Egypt's gas production to increase to 7bn scf/day next June



(MENAFN – Daily News Egypt) The Ministry of Petroleum aims to increase Egypt's natural gas production to 7bn cubic feet daily (scf/day) by June, compared to the current production of 6.8bn scf/day through increasing gas production from the Zohr field.

A source at EGAS told Daily News Egypt that the increase from Zohr to 2.6bn scf/day compared to 2.3bn scf/day now will compensate for the natural decline rates and increase the total local production.

He pointed out that new projects were connected to production, such as Zohr, Nawras, North Alexandria and 9B, and have contributed to increasing Egypt's natural gas production.

The source added that it is targeted to increase Egypt's natural gas production to 7.5bn scf/day in 2019/20.

The local market's consumption of natural gas is currently dropping to 5.5bn scf/day as a result of the decrease of electricity plants consumption in winter.

Moreover, the source explained that the consumption rates of natural gas in the local market is growing according to the industrial development and urban plan and the increase in the number of cars that operate with natural gas.

The consumption of the electricity sector represents 61% of the total natural gas consumption, while the rest of the sector such as industry, household, and petroleum products consume 39%.

The source said that the local gas consumption rate would increase gradually to 7bn scf/day in the next fiscal year (FY) compared to 6.2bn scf/day this FY.

The average local market consumption of natural gas will increase to 9bn scf/day by FY 2020/21 according to the industrial development plan with the increase of the electric energy produced and delivered to homes, as well as to the largest number possible of cars operating with gas instead of petroleum products.

The Ministry of Petroleum's plan aims to complete the implementation of Zohr, North Africa and Borollos to contribute to increasing local production and covering consumption rates with the operation of liquefaction factories through the gas comping from Cyprus and Israel.

Equinor CEO: Energy sector 'facing a crisis of confidence'



he oil and gas sector is “facing a crisis of confidence” and a mounting lack of trust as climate change concerns rise worldwide, the chief executive of Norway’s top energy company said Monday.

Equinor CEO Eldar Sætre said at the CERAWeek by IHS Markit conference in Houston that the environmental issues represent a real threat to the industry unless oil and gas companies proactively step forward to dramatically reduce emissions and pollution.

“We are collectively not doing enough,” Sætre said.

The industry must align to promote more transparency, public engagement and climate change action. Equinor, for instance,

touts having roughly half the carbon dioxide emissions on average as the rest of the oil and gas sector.

Equinor, although still an oil and gas firm, also invests heavily in renewable energy, especially offshore wind farms. In the U.S., Equinor has the Empire Wind farm offshore of New York and is now developing a similar project offshore of Massachusetts.

Sætre also bemoaned a general lack of help coming from governments when it would help if nations would set specific targets on emission reductions and incentives to help get there.

“Politics becomes ever more shortsighted,” he said, “and is increasingly governed by populism.”

This article first appeared on the Houston Chronicle – an Energy Voice content partner. For more from the Houston Chronicle click [here](#).

Shale on brink of M&A as oil majors flex muscles in Permian



HOUSTON (Bloomberg) – Cowboy boots and turquoise belt buckles are giving way to smart suits and silk ties as the world's biggest shale oil field prepares for mergers.

As oil executives from across the world gather in Houston for the annual CERAWeek by IHS Markit conference, the Permian basin in the U.S. Southwest is on the cusp of a radical transformation with one simple premise: bigger is better. The energy industry appears primed for deals at a time when Big Oil is flexing its muscle in the region.

Just last week, Exxon Mobil Corp. and Chevron Corp. unveiled audacious growth plans for the Permian basin, hitherto the domain of smaller rivals. Royal Dutch Shell Plc is said to be on the prowl for deals while BP Plc bought in last year.

Meanwhile, independents are under increasing investor pressure to merge or sell out in an effort to end relentless production growth that has burned through some \$200 billion over the past eight years. "The ability of the larger companies to do an accretive acquisition is probably at its highest level since

the beginning of the shale revolution,” said Michael Roomberg, a fund manager at Miller/Howard Investments Inc. which manages \$5 billion. “M&A interest is at its highest in nearly a decade.”

But the century-old oilfield cycle of big players swallowing up smaller ones may not happen quickly or follow the conventional path.

The supermajors, facing investor pressures of their own, are unwilling to throw cash around like they did in the heady days of \$100-a-bbl oil. All-stock deals could be dilutive because many U.S. independents trade at higher price-to-earnings multiples than integrated oil companies, according to data compiled by Bloomberg.

Diamondback Energy Inc. and Concho Resources Inc. pulled off all-stock deals that together were worth almost \$20 billion last year, showing a willingness to merge their way to gain scale.

Pressure has mounted on Permian-only and smaller companies in recent weeks. Pioneer Natural Resources Co. and Halcon Resources Corp. replaced their CEOs while names such as Alta Mesa Resources Inc., Centennial Resource Development Inc., and Laredo Petroleum Inc. have seen their market values decimated.

There are 112 operators in the Permian basin and that means an excessive number of management teams operating similar assets, said Ben Dell, founder of activist investor Kimmeridge Energy Management Co. Economies of scale are needed and about 20 companies, or any valued under \$3 billion, should be combined in a “merger of equals,” he said.

Independents were once the innovators that worked out how to pump oil from previously impermeable shale formations. That turned the U.S. from a petroleum importer dependent on the Middle East into a global energy superpower. America’s record production has prompted OPEC to take measures intended to

forestall a glut. Saudi Arabia plans to extend deeper-than-agreed supply curbs into April, a Saudi official familiar with the policy said yesterday.

For North American oil companies, the shale revolution came at a cost. Excluding the integrated majors, explorers spent \$200 billion over the last eight years, according to data compiled by Bloomberg. Investors have signaled they've had enough. They want a manufacturing-style production mode, which favors the biggest, most efficient operators.

Exxon Chief Executive Officer Darren Woods was blunt in his assessment of how the supermajor will meet its Permian target of 1 MMbpd by 2024 – more than OPEC member Libya's entire output. "We're changing how the game gets played," he said.

Exxon and Chevron both emphasized their focus on existing Permian holdings, favoring small land swaps rather than big corporate deals.

But the European supermajors, playing catch-up, appear to be willing to play the acquisition game. BP Plc entered the fray last year with its \$10.5 billion purchase of BHP Billiton Ltd.'s onshore assets and Shell is said to be interested in buying Endeavor Energy Resources LP, one of the Permian Basin's largest private operators, for as much as \$8 billion.

The arrival of Big Oil may change the region's Wild West image. Until now, the barrier of entry has been low, with dozens of private equity-backed wildcatters, many of whom are in their early 30s, flipping leases and drilling exploratory wells with the aim of selling them to the highest bidder.

It's a far cry from Exxon's systematic approach, perhaps a sign that the days of the rags-to-riches wildcatters may be ending.

Norway divestment affects wide array of oil explorers



Selling Out

These are the 10 largest shareholdings affected by Norway's decision

Company	Value of Holding	Percentage Stake	Country
EOG Resources Inc	\$488m	1.0	United States
Reliance Industries Ltd	485	0.5	India
Occidental Petroleum Corp	456	1.0	United States
Valero Energy Corp	336	1.1	United States
CNOOC Ltd	330	0.5	China
Woodside Petroleum Ltd	288	1.4	Australia
Canadian Natural Resources Ltd	278	1.0	Canada
Anadarko Petroleum Corp	238	1.1	United States
PTT PCL	218	0.5	Thailand
Concho Resources Inc	162	0.8	United States

Source: Norges Bank

Bloomberg 

The decision by the world's biggest sovereign wealth fund to sell some of its energy holdings encompasses a vast array of companies, from US shale drillers and developers of Canadian oil sands, to off shore drillers from Africa to China. Norway's \$1tn investment fund said on Friday that it will gradually sell its holdings in oil and gas exploration and production companies in order to reduce the country's exposure to a permanent decline in crude prices. That's a smaller step than the full fossil-fuel divestment that some were proposing, but still affects some of the industry's most famous names. Houston-based shale driller EOG Resources Inc is the biggest shareholding to be sold, with a total value \$488mn, or just under 1% of the company, according to the fund's website. Indian petroleum and chemicals giant Reliance Industries Ltd

is the next largest, with a stake of 0.5% worth \$485mn. Other notable US names include Anadarko Petroleum Corp, Apache Corp and Occidental Petroleum Corp. On the other side of the Atlantic, explorers Tullow Oil Plc and Premier Oil Plc are affected. All of them appear on a list of 134 companies placed in the exploration and production category FTSE Russell. The stocks will be “phased out from the fund gradually over time,” according to Norway’s finance ministry, which may prevent the sale causing any big changes in these companies’ market values. But the move also raises questions about the industry’s appeal to investors in the very long term. “The Norwegian sovereign wealth fund is seen as something of a poster-child amongst sovereign wealth funds,” said Alejandro DeMichelis, director of oil and gas research at Hannam & Partners LLP. “This decision could also trigger other large investors to review their stance toward investing in the oil and gas sector.” Life is changing for oil companies. Ten years ago, they accounted for about 15% of the S&P 500 index. Today, they make up just 5%, having been mostly displaced by technology giants such as Facebook Inc and Apple Inc. Driving this shift is a smorgasbord of new energy sources that’s bringing unprecedented competition for capital. Consumer choices are set to drift farther from the hydrocarbons of the 20th century, with renewables potentially meeting about a quarter of demand by 2040, according to oil major BP Plc. It’s no surprise, then, that investors are increasingly questioning the wisdom of betting on oil. A divestment campaign started by activist group 350.org in 2012 has already persuaded funds holding \$8tn to back away from fossil fuels, according to its website. Scrutiny could intensify as AGM season approaches. Catherine Howarth, chief executive officer of ShareAction – a group that has targeted Royal Dutch Shell Plc in the past – said she expects a “ramp-up” of pressure at annual general meetings that start in the spring.

Venezuela told to pay Conoco \$8.75bn over oil seizures



ConocoPhillips was awarded \$8.75bn by the World Bank's arbitration tribunal in response to Venezuela's seizure of oil assets more than a decade ago. The Washington-based International Centre for Settlement of Investment Disputes published a report Friday upholding Conoco's claim that Venezuela unlawfully confiscated its Hamaca and Petrozuata heavy crude oil projects in the Orinoco River basin in 2007, and said the Houston-based company must be compensated accordingly. The award comes as the US tries to ratchet up pressure on the administration of President Nicolas Maduro after sanctioning state oil company Petroleos de Venezuela SA and recognising Juan Guaido as the nation's interim leader. Venezuela's economy has been in turmoil as oil exports con-

tinue to crash. Residents of Caracas and other cities on Friday endured a second day without power while Maduro blamed "US imperialism." "We welcome the ICSID tribunal's decision, which upholds the principle that governments cannot unlawfully expropriate private investments without paying compensation," Conoco General Counsel Kelly B Rose said in a statement. Venezuela's information ministry didn't immediately respond to requests for comment. Conoco was also awarded \$2bn last year by the International Chamber of Commerce over the seizure of assets. Following that decision, the company moved aggressively to take over PDVSA facilities in the Caribbean islands of Bonaire, Curacao, St Eustatius and Aruba. Vessels carrying Venezuelan crude were ordered to immediately pull away from Caribbean ports, creating a backlog of ships and hindering the nation's oil exports. In August, Conoco reached a settlement with PDVSA under which the company agreed to pay the \$2bn back in quarterly instalments over four-and-a-half years. Conoco said in January it had received about a quarter of what's owed. Some of the payment had been made in crude. Conoco also said at the time it expected to get another payment in February, despite US sanctions. "Given the size of the award and current adverse situation in Venezuela, receiving full payment in a timely manner remains to be determined," Scott Hanold, an analyst at RBC Capital Markets LLC, wrote in a note.

Oil's big reset: Energy majors learn to thrive after

price crash



Bloomberg/London

When Opec started an oil-price war in late 2014, most people believed US shale was doomed. In reality, the giant oil majors suffered most – burdened by expensive mega-projects, Chevron Corp, BP Plc and the rest struggled to adapt to the fall in energy prices.

Slowly, those companies figured out how to survive in the lower-for-longer price era. They cut costs and, more importantly, learned how to stop them from rising again. In an industry that favoured tailored solutions for every project, companies started to talk about standardisation. At closed-door sessions in Davos, Switzerland, Big Oil bosses didn't waste time on self-important talk, but instead discussed how to share the design of anything from underwater valves to pumps.

Nearly five years after the crash, the cultural change is starting to work. The world's major energy companies have managed to press the reset button, allowing them to make profits today similar to what they did in a world of \$100-plus a barrel oil prices.

"Big Oil has been able to re-emerge from this downturn stronger and lower on the cost curve," said Michele Della Vigna, the top oil industry analyst at Goldman Sachs Group Inc, who had been a critic of the majors.

The level of spending at the world's eight largest integrated oil and gas companies fell last year to \$118bn, down 45% from a pre-crisis peak of \$215bn in 2013, according to data compiled by Bloomberg News.

But their business model has changed a lot in the process. The reliance on multibillion dollar projects in far-flung corners of the world has been reduced and the majors are pouring billion into Texas's Permian Basin, once dominated by independent exploration and production companies. Other strategies include trying to build new projects closer to existing ones and reusing old infrastructure to reduce costs. They've also re-discovered the joys of integration, investing in refineries and petrochemical plants that make money even when prices are low.

To the surprise of many in the industry, lower costs haven't translated into slower development. In fact, projects have often come ahead of expectations.

The industry got a lot of help from its suppliers. According to Exxon Mobil Corp, the cost of 3D seismic technology, used to find underground reservoirs, and the deep-water rigs needed to exploit them has fallen more than 50% from the 2013 level.

The new era means combining projects that pay back quickly, whether in US shale or elsewhere, with some traditional larger projects. In the oil industry, it's a model called short-and-long oil cycle, because some projects pay back in as little to two-to-three years, compared to as long as 10 years for conventional projects.

"Big Oil now wants a diversified portfolio with short-and-long cycle oil," said Daniel Yergin, the oil historian that this week hosts the annual CERAWEEK energy conference in Houston. "Before the oil crisis in 2014-15, the mere concept of short-cycle oil didn't exist in Big Oil."

Short-cycle oil has a one big advantage over mega-projects:

companies can dial them up and down quickly to respond to changes in oil and gas prices.

The other significant change is natural gas. Big Oil had already embraced gas before the crisis, with companies like Exxon investing in massive projects in Qatar. But today some executives suggest gas is gaining the upper hand. "Gas is the fastest growing hydrocarbon," said Bernard Looney, chief executive for upstream at BP. "It's the future."

Despite the significant reduction in spending and much lower energy prices, returns haven't suffered, according to data compiled by Bloomberg. The biggest oil companies posted return-on-capital-employed – a traditional yardstick used by investors – of about 8.7% last year, higher than the 8.4% of 2014.

LNG Canada CEO sees no scenario that would stop its project



Bloomberg/Vancouver

The head of LNG Canada said he does “not see a single scenario” that would stop the nation’s largest infrastructure project from getting built, dispelling concerns that the \$30bn gas export facility is at risk of mounting opposition from pipeline foes.

The liquefied natural gas project in northern British Columbia was approved by Royal Dutch Shell Plc and four Asian partners in October after obtaining the support of the province and 20 First Nation groups. But it continues to face a legal challenge disputing the constitutionality of the project’s approval, as well as protests by a group of indigenous holdouts.

“I do not see a single scenario that would cause the construction of this pipeline to be stopped,” Andy Calitz, LNG Canada’s chief executive officer, said in an interview in Vancouver.

TransCanada Corp is planning to build the pipeline that will carry the gas from western Canada’s prolific Montney shale formation to the coastal export facility in Kitimat. The whole project – including the gas fields, pipeline and liquefaction terminal – fall within British Columbia and was authorised by

the provincial regulator.

But a private citizen in Smithers, Michael Sawyer, mounted a legal challenge saying the pipeline is a federal undertaking and should have sought approval from the National Energy Board. The federal regulator agreed in December to consider the jurisdictional challenge and has requested evidence from the parties involved with final oral arguments set for March.

"It's a complex world – the paths are not clear," Calitz said. Any decision by the federal regulator could later be appealed in the courts. "But what I am clear about is that this pipeline, by the time that happens, will be in advanced construction."

Separately, TransCanada is seeking to sell a stake in the pipeline project. That move was long contemplated and doesn't indicate that there are growing concerns about the project's risks, Calitz said.

"It has always been a part of the financing strategy for the project," Calitz said. "It has no impact on either the construction or the capacity or any other aspect of the project."