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Risks, Rewards for Industry on Display at COP27

Oil companies should take clear signals from the first few days of COP27 in Egypt: the low-carbon energy transition is marching forward despite recent global challenges. While the need for more supply in the near term is evident, oil and gas companies cannot lose sight of both short- and long-term targets to decarbonize. In fact, many delegates and speakers argued that today's energy crisis has accelerated the transition in some ways by moving momentum toward hydrogen, renewables, and energy efficiency. Many policy signals are moving in that way: Ukraine officials have an active presence at COP27 and are arguing the Russian invasion underscores the need to avoid dependence on fossil fuels. Representatives from the Middle East — and North African countries like COP27 host Egypt — are not only making a case for the continued need for oil and gas supplies, but also showing an eagerness to help supply Europe with low-carbon sources, including low-cost solar and clean hydrogen produced from cheap renewables.

Natural gas is still considered a platform of the energy transition — but that platform is teetering, as evidenced by clashing views at COP27 and conversations on the sidelines. Some government officials and companies are insisting gas is still needed to keep meeting energy demand, especially as energy access expands in Africa and demand swells in other developing nations. Others, especially the growing community of green-minded financial experts, say time is up for new bets on gas. An adviser to the hugely influential Glasgow Financial Alliance for Net Zero, James Vacarro, told Energy Intelligence that gas will remain a transition fuel in certain regions, but that time is running low to make lasting use of any new gas assets on the road to net zero. Investing in new gas would "lock yourself

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Shippers Pick Sides Around Russian Oil Divide

Looming restrictions on Western insurance and shipping services for Russian oil sales have the tanker industry worried about increased market turmoil. Gibson shipbrokers estimate that about 200 out of the 366 Aframax/LR2 and Suezmax tankers that have been observed loading in Russian ports — 55% of which were controlled by EU, G7 or Western countries — will quit the Russian oil trade. Unless Russia decides to sell its oil under the G7 price cap system — which Moscow says will not happen — the expectation is many shipowners will avoid this trade after the measures take effect on Dec. 5, which will limit the supply of vessels. For other, opportunistic shipowners, however, transporting sanctioned Russian barrels could become as lucrative as the shadow oil trade from Iran and Venezuela that has emerged after US harsh sanctions were levied on these two countries in recent years. The new restrictions will create more friction by essentially reducing shipping tonnage when global oil flows must be redirected on longer-haul routes as more Russian oil heads to Asia and other destinations instead of the EU. This will prompt a net increase of ton-mile demand and, by extension, of freight rates. If a shipper decides to commit assets to the sanctioned Russian trade, its tankers will become unavailable to the oil traded deemed legitimate by the West. "The balance of tonnage in both the Russian and non-Russian trading fleets will be critical for the strength of the mainstream crude markets," Gibson said. And there is no relief in sight from newbuild tankers through 2023 — the order books for both product and crude tanker newbuilds are low, mainly because rates since 2020 have been poor.

Traders say a fleet of ships preparing to store and move Russian crude to Asia is "growing by the week." This shadow armada has swelled from 70 to 257 ships since November 2020, according to Poten & Partners, while BRS Brokers estimates it at around 270 vessels. Nearly all European shipping companies will turn their back on business that is not compliant, Russel Hardy, CEO of top oil trading giant Vitol, reckons. That means much of the Russian oil trade will rely on older vessels from non-EU shipowners with higher risk profiles, including companies based in Liberia, the United Arab Emirates or Vietnam, which have been sailing off the radar. Poten warns that the late surge in second-hand tankers sales has increased the number of vessels with minimal repairs or maintenance that would otherwise be scrapped, boosting the average rogue fleet age to more than 15 years. Arranging insurance is complicated by the illicit nature of the trade, the difficulty to use reputable crew managers, and the recurrent changes in the vessels' name and ownership. Countries interested in buying Russian oil may set up insurance structures that lack the same financial backing as the international group of protection and indemnity (P&I) insurance. Whether these new insurers will respond to an incident that causes environmental pollution is questionable, said Kiran Khosla, legal expert at the International Chamber of Shipping.

Russian producers are expected to pull out all stops to maximize output since shut-ins will damage wells. Traders expect the Russian fleet to operate less efficiently, multiplying ship-to-ship transfers to fudge the final destination of crude shipments. Shipbrokers confirm that very large crude carriers (VLCCs) sold to Asian or Mideast buyers could potentially be used for trans-shipment operations in international waters. Meanwhile, Russian sellers are relocating their trading and shipping business out of EU or G7 reach. Dubai has emerged as a new hub of Russian oil trading and shipping, having the dual advantage of being out of the EU jurisdiction and close enough to the strategic Asian markets. Lukoil's trading and shipping arm Litasco moved staff from its Russian oil trading desk there earlier this year. A subsidiary of Russia's state-owned Sovcomflot has also moved to Dubai, where it gets safety certification for its tankers from the Indian Register of Shipping to carry on business with India, which has become a big buyer of Russian crude. Rosneft will use its Rosnefteflot subsidiary, formerly a support company tasked with ship towing, refueling, or inspection, to find options for crude transportation to Asia, Latin America and Africa.

New Government Raises Hopes for Iraq's Upstream

After a year of political turmoil, Iraq has a new government and a new oil minister, Hayan Abd al-Ghani, and foreign investors are awaiting the green light to launch potentially transformative energy projects. TotalEnergies is confident that its Ratawi megaproject, agreed in September 2021, can now move ahead quickly. Abd al-Ghani knows it well, having previously headed the South Gas Co. (SGC) and the Basrah Oil Co. (BOC), the French major's two local partners in the project. Iraq also desperately needs to capture more flared gas, which is a key component of it. Other projects await final approval too, like Sinopec's Mansuriyah gas development, also awarded last year. There's even talk of a gas bid round. But investors still must navigate a difficult operating environment that could yet nix their plans. Iraq's vast potential is not in doubt. Indeed, the oil ministry will soon publish a new and independently certified audit of the country's oil and gas reserves based on 300 prospects and leads identified by the state-run Oil Exploration Co. (OEC), which could raise existing estimates by 70%, says Mohammed Mazeel, the ministry's head of reservoirs and field development. Iraq's gas resources remain in focus. There is thought to be another 20 trillion cubic feet around the 4.5 Tcf Akkas field, Mazeel tells Energy Intelligence. The ministry — which is actively encouraging investors to develop Akkas — is open to discussing any proposals. "[There is] less risk in Iraq in exploration … than in other countries. Yes, we have our bureaucracy, rules and regulations that are difficult. But that can be [negotiated]," he insists.

A top priority for Iraq's oil ministry is to eliminate its flaring problem and plug the gas supply deficit. The new minister has already stressed the need for progress on projects being carried out by foreign firms like Shell and China National Petroleum Corp. (CNPC), which together aim to capture around 1.5 billion cubic feet per day of associated gas in the next few years. Total's gas

development sits at the heart of that plan, Abd al-Ghani acknowledges. Part of a multi-layered $10 billion energy project, it aims to capture 600 million cubic feet per day from six oil fields in Basrah. SGC chief Hamza Abd al-Baqi says he hopes work will begin within two months of completing negotiations with Total. However, significant outstanding issues must be resolved in these talks, notably the foreign partners Total wants to bring into the project and the Iraqi government's proposed — and non-contributing — 40% stake. That could be a stumbling block, says a source close to the project. It will be a crucial test of the minister's ability to reach agreements with international oil companies (IOCs) — in this case one that is far more important to Iraq than to Total. If agreed, the four components of the project — the oil field development, the gas capture, the water injection and the solar plant — will be implemented concurrently. "It is a kind of precondition for the Iraqis, because they need the water to sustain the [oil] production … for the whole area, they need to stop the flaring, they need to increase the power supply to the country. So they need some deliverables quite quickly," says the source.

IOC interest in Iraq's oil sector is a shadow of what it once was, with the US majors particularly conspicuous by their absence. The ministry remains hopeful that others will continue to invest, among them Lukoil. While the Russian company is not specifically targeted by sanctions, Western restrictions on trade and finance with Russia could make it more difficult for Lukoil to access the capital needed for projects like the development of its 430,000 barrels per day West Qurna-2 field. Lukoil does not currently see it as a priority and says the terms must be renegotiated given the low profitability of the project. It agreed to a remuneration fee of just 85¢ per barrel after-tax — the lowest of all Iraq's foreign operators. Infrastructure constraints are another obstacle — and Lukoil is yet to build the Tuba-Fao pipeline that would help resolve the problem. Abd al-Ghani has acknowledged the need to increase Iraq's export capacity by accelerating projects to install pipelines, storage and pumping stations. The West Qurna-2 expansion also remains on the agenda. But Lukoil has failed to get a development plan approved for its giant Eridu discovery in Block 10, which could see production reach 250,000 b/d by 2027-28. In a further sign of investor discontent, Inpex CEO Takayuki Ueda last week described it as a "headache project," saying the Japanese firm would consider divesting its 40% stake if progress was too slow.

PDO Has Big Role in Oman's Transition

Like larger oil- and gas-producing nations in the Middle East, Oman is keen on diversifying its economy away from hydrocarbons and thriving in the energy transition. It recently set a net-zero target by 2050 for Scope 1 and 2 "operational" emissions that dovetails with its economic diversification plan, known as Vision 2040, under Sultan Haitham bin Tariq al-Said. Oman has a smaller hydrocarbon endowment than neighboring Mideast Gulf states and its reserves are harder to access. But oil revenues still account for almost 35% of its GDP, which means it will not rapidly abandon hydrocarbons. Indeed, like bigger producers Saudi Arabia and the United Arab Emirates, Oman plans to expand its production in the coming years and use oil and gas revenues to fund its transition plans, which are focused on hydrogen, renewable power and carbon capture and storage (CCS). Oman is the largest Arab oil producer that is not a member of Opec, but it does belong to the broader Opec-plus alliance. The economic diversification plan would promote more renewable energy projects that would help meet the country's domestic demand while freeing up more of its oil and gas for export. To oversee and follow up on carbon neutrality plans, Sultan Haitham recently set up the Oman Center for Sustainability. Oman aims to become a top producer and exporter of green hydrogen, with a targeted annual output of about 1 million-1.25 million tons by 2030. "In Oman we are blessed with natural resources like the sun, wind and potential to produce green hydrogen — that's why our net zero strategy is multipronged," said Ali Al-Riyami, a consultant and former official at Oman's energy ministry.

Oman's commitment to renewables was on display this week at COP 27 when its sovereign wealth fund, Oman Investment Authority, signed an agreement with Saudi Arabia's ACWA Power to potentially invest in the 1.1 gigawatt Suez Wind Energy project in Egypt. The project has geostrategic and political importance for Oman given the regional partners involved, including the UAE and Egypt. But this does not mean Oman will neglect its upstream oil and gas sector. "If we go forward to 2050, there will be more energy demand. It would be foolish of us to assume that the... requirement is going to go down, and we'll be able to meet all the world's demand with renewables etc. We need to be a little more realistic," Oman's energy minister, Salim bin Nasser Al Aufi, said this week in an interview with CNBC in Sharm-el-Sheikh, Egypt, where COP27 is being held.

As its biggest oil and gas producer, Petroleum Development Oman (PDO) will shoulder plans to expand output while decarbonizing. "We know that we will go on growing our core hydrocarbon business in oil and gas, but we will also do that in a more sustainable fashion. We will do that by reducing our own emissions associated with hydrocarbon production," Managing Director

Steve Phimister told Energy Intelligence in an interview. PDO will also expand into new areas to make the transition — not to become a major producer of renewable energy or green hydrogen — but in areas more synergistic with its core competencies like carbon capture and storage (CCS) and blue hydrogen. PDO is 60% owned by the Omani government but also has non-state shareholders in Shell (34%), TotalEnergies (4%) and Thai company PTTEP's Partex unit (2%). It is the largest oil and gas producer in Oman, accounting for about 70% of overall output. The company currently produces some 750,000 barrels per day of crude oil and condensate, which is set to increase to about 800,000 b/d by 2025, including 100,000 b/d of condensate, Phimister said. CCS efforts will start with enhanced oil recovery, he said, and then will move into projects "for our own Scope 1 and 2 emissions."

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into these pathways to dependency," he warns. Gas is "no longer a bridge fuel," leading environmental, social and governance expert and Climate Bonds Initiative head Sean Kidney tells Energy Intelligence, "because we've seen these terrible spikes of methane in the last ten years." That's happened in many places — from the US' Permian Basin, to Turkmenistan and Indonesia, and now Russia.

Still, the industry and oil-producing countries have secured more clout in the climate narrative in Egypt, in a shift from many recent COPs that took place in European cities. This has played out in more invitations to express their views on the transition and greater opportunities to exhibit concrete ways they are advancing low-carbon solutions — notably with a huge Saudi exhibition hall and conference showcasing its green initiatives. Oil companies are also being welcomed — if not urged — to join the growing hydrogen market, with hydrogen proving to be a huge source of optimism from nearly every stakeholder group at the summit. And companies seem equally enthusiastic. Petronas CEO Tengku Muhammad Taufik told a COP27 event that "demand is indeed emerging" for hydrogen, including in some of its key markets like Japan and South Korea. The company also sees ways it can enter the hydrogen sector with advantages from the start, by drawing from its experience with ammonia and hydrogen production at refineries. "The chemistry is not the challenge; it's the scaling up," he cautioned.

Broadly speaking, this year's talks are a litmus test for climate action at a time when all nations are struggling with rising energy costs, crippling inflation, and supply chain obstacles. A defining issue of the official UN negotiations will be so-called loss and damage, which is rooted in the idea that past and present carbon emissions of wealthier nations have contributed to climate-related damage in less developed countries, which therefore deserve compensation, as the thinking goes. This issue has flared up this year in the midst of severe floods in Pakistan and Nigeria, and small island nations have long argued that their thinning coastlines are putting their entire future in question. Agreement was reached on Sunday to include compensation for "loss and damage" in the official agenda for COP27, but it's unclear how that discussion will shape up between now and COP's conclusion at the end of next week. Many are also looking for developed nations to dole out more climate finance to developing countries. But the emerging consensus is that other players — like multi-development banks — must help wealthy governments reach the $100 billion and beyond they had promised but thus far failed to fully meet.

Energy Gridlock Likely in US After Elections

Tuesday's US midterm elections look likely to change the mood in Washington, but not the way some predicted. Republicans appear poised to take a slim majority in the House of Representatives and are locked in a dead heat with Democrats over control of the Senate — far from the "red wave" some strategists were expecting before the election. Former US President Donald Trump was briefly expected to announce his run for the 2024 presidential race this week, and may yet do it soon, but many candidates he favored for national election did not prevail in this cycle. For some Republicans, that raises questions about the candidacy of Trump, a staunch supporter of fossil fuels who promoted US "energy dominance" while in the White House from 2016-20.

Throughout the campaign season, Republicans regularly tried to hammer US President Joe Biden and Democrats for high energy prices — a key driver of inflation over the last year. But Democrats didn't appear to pay a big political cost. The White House playbook on energy involved releasing strategic stocks at unprecedented rates to help tame prices; hammering the oil industry over record profits and low investment levels; and increasing spending on the energy transition — strategies they could stick to now. Oil companies "are really doing the country a disservice," Biden said Wednesday, pointing to low levels of investment and prices at the pump that have not fallen at the same rate as crude prices. Gasoline prices came down from their June highs — when regular retail topped out at a nationwide average of $4.84 per gallon, according to the US Energy Information Administration. The nationwide average published Monday stood at $3.63/gal, a notable drop that may have taken some sting out of Republican attacks on Democrats' energy policy. The Biden administration may be able to take some credit, having sold off nearly 180 million barrels of crude from the Strategic Petroleum Reserve since March. The move irked Opec-plus — contributing to its decision to cut headline production by 2 million bbl per day last month — and has added further problems to already strained US-Saudi relations.

The massive package of low-carbon tax cuts passed through the Inflation Reduction Act (IRA) in August looks here to stay — at least for two more years. But there will likely be oversight hearings from a Republican House aimed at scrutinizing energy transition policies, including how the landmark legislation is enacted. Attacking the IRA in a meaningful way will be very difficult if Republicans do not manage to win control of both chambers, and even then it might be confined to narrow aspects of the bill, such as the methane fee. The fate of Senate control may not be known for several days and possibly as late as Dec. 6 due to three too-close-to-call races. The Biden administration still needs to make key decisions, such as overhauling the tax code, to enact the IRA — with many observers expecting oversight hearings on how those are structured or the specifics of Department of Energy loan and grant programs. Republican control may provide a modicum of relief for oil executives at major firms, who are not likely to be hauled up for oversight hearings on high prices or their climate strategies as they were over the past two years.

A divided government is very unlikely to enact major new climate or energy legislation. Republicans do not have a firm energy transition policy, which leaves little middle ground. US conservative lawmakers have very little appetite to address climate change. The top policy recommendation on the House Republican climate platform released earlier this year was to increase US oil and gas output.

Democratic lawmakers have a narrow window to pass legislation before the new class of lawmakers arrives in Washington, but it's not clear that key issues for the energy sector — permitting reform and a bill that could allow the US to sue Opec states and its allies — will get air time. If a Dec. 6 runoff Senate race in Georgia decides the fate of that chamber, lawmakers will have just weeks to consider must-pass defense spending legislation that could include the so-called "Nopec" measure. A permitting reform bill spearheaded by swing Democrat Joe Manchin still faces challenges on both sides of the aisle, even if it has White House support, and lawmakers have other priorities.

US Crude Flows to Asia Get a Boost

US crude flows to Asia are poised to surge in the final months of the year and into early 2023 in response to the recent opening of the arbitrage window for US oil. The upswing comes after the trade cooled a bit in the first nine months of 2022, when Northeast Asia's top three crude buyers — China, Japan and South Korea — together imported 513,000 barrels per day of US crude, down 118,000 b/d compared to the same period last year, according to official data. While politics and lingering trade issues still help inform China's approach, market factors like the discount of US crudes to global competitors and this year's realignment of global crude flows, are influencing buying habits in the region more. Chinese imports of US crude plunged by 50%, or 141,000 b/d, to 144,000 b/d in January-September. compared to the same period in 2021. Trading sources said the drop is likely a reflection of last year's figures being inflated by China's desire to meet the terms of a trade war truce that it struck with the previous US administration of President Donald Trump. "It's more of a gesture," one source noted. But China-US tensions have risen this year, stoked by disputes over Taiwan and Russia's invasion of Ukraine, and he added that US arbitrage economics have not been compelling for Chinese refiners for much of this year. These days, it "has to make economic sense to buy" US crude for China's refiners, said a Chinese market source. South Korea has been Asia's most consistent buyer of US crude, importing 354,000 b/d in the first nine months, up by 19,000 b/d from a year ago. South Korean refiners generally enjoy additional benefits over other Asian buyers when it comes to US crude. A free trade agreement with Washington and Seoul's freight rebates — designed to encourage refiners to diversify their crude sources — help reduce their costs.

Traders say around 40 million to 60 million bbl of US crude are expected to arrive in Asia in November and December, equivalent to around 1.33 million to 2 million b/d. Another nearly 30 million bbl of US crude are pointed at Asia and expected to arrive in January, equivalent to nearly 970,000 b/d, one added. Buyers in recent months include refiners in South Korea, China, Taiwan, Japan, India, Singapore and Thailand. US benchmark crude West Texas Intermediate (WTI) hit a $9 per barrel discount to international marker Brent in late October and the differential remains around $7/bbl. The wide arbitrage window is the result of a confluence of factors. US crude production has been increasing, and exports hit a weekly record of 5.1 million b/d on Oct. 21, as the end of peak US refinery turnaround season in September-October freed up more crude for export. Planned refinery maintenance in Europe, which has soaking up US barrels as it backs out Russian Urals, also reduced demand there. In addition, US Strategic Petroleum Reserve releases put downward pressure on the spot price differentials of US crude, while Mideast and Asia-Pacific crudes were more expensive in comparison.

China has been a major buyer, with Unipec snapping up at least 7 million to 9 million bbl of North American crude arriving in January, the equivalent of 233,000-300,000 b/d. But the US arbitrage window is narrowing due to a jump in freight rates, which is now making Mideast crudes more attractive for Asian refiners. Traders say the US arbitrage for both light, sweets and heavy, sour Mars is still workable but less profitable. Unipec, the trading arm of China's biggest refiner Sinopec, has recently bought around 3 million bbl of US heavy, sour Mars crude, 2 million to 4 million bbl of light US crudes and at least 2 million bbl of Canadian sours, traders said. These volumes load in November and arrive in Asia in January. Unipec is also thought to have bought 67,000-200,000 b/d for November and December arrival, traders said. Overall, Chinese buying of US crude for November and December arrival is likely around 100,000-200,000 b/d, traders suggested.

No Signs That Shackles Will Come Off Shale

The shackles of capital discipline that have restrained US oil production growth this year won't be lifted anytime soon. Investors continue to demand tight capital discipline and robust cash distributions from US exploration and production (E&P) companies, and the industry's new operating mode — often referred to as Shale 3.0 — may be here to stay regardless of how high oil prices might go. In practice, this means publicly traded E&Ps must adhere strictly to a new financial performance standard that privileges low leverage, free cash flow, and generous capital return programs ahead of capital expenditure increases geared toward production growth or acquisition of prospective acreage. This contrasts sharply with investor expectations from prior years when growth was the priority, both in output and acreage.

Companies that follow Shale 3.0's rules are rewarded with higher stock valuations and easier access to capital, while those that violate them are quickly punished. Oklahoma City-based Devon Energy's recent experience is a case in point. By the old way of doing things, Devon did relatively well during the third quarter, racking up earnings per share of $2.18 compared to analysts' consensus estimates of $2.12, and generating $1.5 billion in free cash flow. All good, but Devon also said its fourth-quarter capex would come in at $845 million to $915 million — about 12% above analysts' consensus expectations — largely due to oilfield inflation, while production guidance of 640,000 – 660,000 barrels of oil equivalent per day was nearly 2% below forecasts. Its stock price was summarily slammed. Worse, the variable component of Devon's quarterly dividend came in low, putting the total payout to investors in the third quarter at $1.35/share, down from the second quarter's $1.55/share payout — but still over 60% better than what the company paid in dividends a year prior. Devon's stock price has fallen from above $77/share prior to releasing its third-quarter results to around $67/share recently. What goes for Devon goes for the entire sector, and the boards of public E&Ps have recognized this by keeping capex budgets low and returns ample.

While good for investors, Shale 3.0 poses problems for consumers hard hit by rising energy prices since prospects for significant production growth under such constraints are limited. This situation is also unlikely to change due to how scarce capital for E&Ps has become. Investors remain scarred by the capital destruction and poor returns E&Ps demonstrated during last decade's shale boom, when chasing growth at any cost was the name of the game. With supply chain and labor issues persisting, a recession looming, and energy transition pressures continuing to bear down, investors are likely to milk the sector for cash more than ever as investment strategies now become more defensive and focused on value and income over growth. Investors have taken notice of the energy sector's strong returns, with its weighting in the S&P 500 now above 5% compared to its low of 2.3%. But those raising money for the sector say that about two-thirds of the old pool of large investors that used to be available are simply gone. Whether these former investors turned away due to poor performance by E&Ps last decade or are concerned about new environmental, social and governance (ESG) reporting requirements matters not. The remaining investors — a hodgepodge of private equity outfits, family offices, and regional US banks — want to see returns, as well as attainable exit ramps for positions they see as difficult to get out of. Instead of entering a position in an E&P with a "buy and flip" attitude, sector fundraisers say the new mentality is "buy and flog." Shale giant Pioneer Natural Resources has warned that many US oil production forecasts are too high for 2022 and 2023. US output has been stuck in a 11.9 million-12.1 million b/d range for the last six-plus months, according to the US Energy Information Agency (EIA). EIA now expects production to average 11.83 million b/d this year, up 580,000 b/d from 2021, and 12.31 million b/d in 2023 — putting growth next year at 480,000 b/d, down from its previous forecast of 610,000 b/d.

PDO Boss Pursues 'Cost and Carbon Competitive' Strategy

Steve Phimister was named Managing Director of Petroleum Development Oman (PDO) in April of 2021. Before taking the top job at the sultanate's biggest oil and gas producer, he served in a number of roles at Shell for nearly 30 years. He sat down with Energy Intelligence for an exclusive interview at the recent Adipec conference in Abu Dhabi. Edited highlights follow.

Q: In terms of your day-to-day business, while keeping in mind the energy transition that's unfolding, how would you describe PDO's business strategy?

A: PDO has always been essential to the Omani economy. It's a hydrocarbon dependent economy currently, although His Majesty's Vision 2040 is, of course, about economic diversification. But you also have to finance that economic diversification, and that comes principally from the oil and gas industry. And PDO, of course, is the major player in that. So, first and foremost, we know that directly through producing revenue for the country, but also indirectly through the supply chain, creating jobs and opportunities, local content. We have both an economic and a social contribution. And we will go on doing that. That's the first key thing — that we know our role in the economy and that we will continue to do it. We know that we will go on growing our core hydrocarbon business in oil and gas, but we will also do that in a more sustainable fashion. We will do that by reducing our own emissions associated with hydrocarbon production. That's for sure. At the same time, we will start to look at growing new value chains and new investments in new energies. We know that the energy system needs to be secure. For the nation, we know it has to be affordable, and we know that it has to be sustainable, clean. That means investing in an abated or a sustainable fashion in oil and gas whilst developing the new energy portfolio.

For that, in PDO, we've defined three key pillars to our strategy. The first is what we call cost and carbon competitive. For our product to be desirable, it needs to be competitive, not only on cost and value to the consumer and affordability, but also on the carbon. So, are we addressing our own emissions? And for that, we have a decarbonization roadmap in place. We have set a net zero target for 2050 for our own Scope 1 and 2 [emissions], which is consistent with the nation's target. But we've also put in place an interim measure to have our own emissions in PDO by 2030 — we've got to go from about 12 million tons a year of emissions down to about six. And we think we have pretty much line of sight to that now through our decarbonization roadmap by 2030. So, that cost and carbon competitive element is key because that's about our existing business today, and continuing to produce in a sustainable fashion for the good of the country.

Our second leg of the strategy is to diversify and differentiate the portfolio for its longevity. We know that the world doesn't stand still and that these macro parameters are going to change maybe carbon prices. We don't know what's going to happen with product prices, it's a cyclical world. So, our external macro environment is going to force us to essentially avoid having stranded assets. We cannot afford to have stranded assets. Because the future of the money account economy, whilst it diversifies, we still need oil and gas revenue. So, we want to build robustness. If you know that carbon prices will come in and grow, if you know that oil prices will be volatile, you know that the regional and the global gas market will change as renewables become more prevalent, and that we'll need to invest more in gas, we will grow — we will evolve our portfolio to be resilient to these factors. That's the second leg of strategy.

The third leg is to then develop and grow in the new energies environment, in the new energy space. In PDO, we're very focused on what we call the adjacencies. We don't see ourselves suddenly become a super-duper renewable power generator or a major green hydrogen player — that's not our role. There are others who would do that. But where PDO can play a significant role for Oman is in CCS (carbon capture and storage) and also in blue hydrogen. We have a number of partnerships and work is going on in both CCS and hydrogen. The CCS will start from enhanced oil recovery and enhanced gas recovery using CO2 that will move into CCS for our own Scope 1 and 2 emissions, and we'll also be looking to partner with other industrial customers to help them with decarbonization. That includes partnerships potentially with blue hydrogen producers. We have conversations going on with different players within Oman right now on all of these fronts. So that's a third leg which is more organic. We stick to really sustainable, strong growth in our core business but in an innovative, sustainable fashion and then organically grow these adjacent.

Q: Have you set any particular targets that you can mention in terms of what you are planning on implementing going forward and any particular development projects that you are working on?

A: We haven't set a specific target just yet, for one good reason: we want to move in line with the nation's objectives for net zero. Shortly after His Majesty announced the net zero 2050 target, PDO was a major player in establishing what's called the net zero labs. What we've done together with the minister of energy and minerals, the Vision 2040 implementation office, and a number of other ministries, including the environmental authority, we established these labs — they're called essentially glorified workshops — and what they do is to bring different sectors together to start planning on their decarbonization roadmap. Energy and oil and gas is one of them. We're working closely with all the energy and oil and gas plants. And we've also been facilitating industry and agriculture and other sectors because the objective for Oman is to build a sector-based decarbonization plan to achieve net zero.

So, we want to move in lockstep with that, and in time with that, and it's not yet clear how quickly or how far we will grow our own CCS requirement into third-party use. At some point, I still plan on ammonia fertilizer, LNG—they're all going to need some level of CCS services. The question is, how much by when—what we don't want to do is to get ahead of ourselves. We're working together with those partners to define that trajectory. But we've been now working for some time, and studying what I call the 'sources and sinks,' so when we've mapped out where all the sources of CO2 are, in a month, we've looked at how we would transport CO2 and we've looked at the sinks. So, where can we use that CO2 for enhanced oil recovery, where have we got sequestration sites. We have already identified locations within our portfolio and Block 6, so we've mapped that out. That gives us a bit of a head start. We've also been working with some technology providers and third parties on capture technology, and been looking obviously at the transportation and storage side and distribution. There's a lot of optimization needed in infrastructure. And no one company alone can do that. So, you need a partner and to get together in workshops to figure out what does this look like, which way round we're going to do it. We're quite ambitious in terms of timeline and scale. But we want to make sure that it's tailored to what Oman needs, and not just what PDO thinks. What I do know is the economics require us to go at scale. So, I don't see us doing CCS just for PDO's Scope 1 and 2. I think we're going to need the scale from other industrial users to make it cost effective.

Q: Sort of what Abu Dhabi has started doing, scaling up its CCS?

A: In the region, in Saudi Arabia and in the UAE, you see early movers in the system. We think that there's something similar that can be done by bringing together all these key players within Oman.

Q: Can you break down what you expect the production mix of PDO to look like in terms of oil and gas, clean energies?

A: It's a bit early to be definitive. What I do know is that we will remain a predominantly oil and gas player for some time to come. That is our core role. We're going to do that differently, with the sustainability I've spoken about. But we will look to grow some of those new value chains. We're part of the 'Hy-Fly Alliance,' the hydrogen alliance, and within that we're doing quite a number of pilots around hydrogen and natural gas. If you look at Vision 2040 and the objective around renewable power within Oman, we have similar objectives ourselves. We are essentially a power company with oil roots; we generate up to 2 gigawatts for our own consumption. At the moment, only about 10% of that is renewables from our own solar farms. But we have an aspiration to get to 50% renewable power consumption by 2030, and that will come through wind and solar principally. And we're also running trials in direct hydrogen firing, for example. We've got technology advancements in combined cycle gas turbines, efficiencies in reducing demand and energy consumption. We're a steam generator, because we do a lot of steam flood. We're using concentrated solar. We will grow our renewable systems for decarbonizing our hydrocarbon production. Two-thirds of PDO's emissions come from power generation or fuel. I'm burning high-value gas. So, what I would like to do is push that natural gas towards higher value products, such as LNG or blue hydrogen. And we can bring the CCS, that's what we've been doing a lot of studies on. We can bring the CCS for blue hydrogen. We're bringing the CCS to help, for example, Oman LNG. So, it all starts to piece together. PDO may never produce blue hydrogen, but we may partner with others producing hydrogen while we provide CCS. And what we know is, we have to continue generating the revenue that is required for the country, for Vision 2040 and diversification.

Q: Where is PDO at in terms of oil and condensates production?

A: We are at about 750,000 barrels a day of oil and condensate. By 2025, we will be at 700,000 b/d of oil plus 100,000 b/d condensate. So, by 2025, we should be at around 800,000 b/d liquids. We've got significant growth going on at the moment through our major projects. We've completed recently Rabab Harweel. We're not expecting new major projects in the next couple of years, but we've got a lot of smaller projects and a lot of what we call well and reservoir management. We're also going to add significant production just through efficiency drive — by applying digital technology and optimizing our production systems, we can sweat the assets significantly further, we're still drilling 900 wells a year. In the last year, we've added two new exploration rigs. We're at 5,122 drilling units and about the same work over units. So, we're adding a lot of barrels through workovers, through the hoists as well as drilling new wells. And we've upped our exploration in both oil and gas. I'm very optimistic about gas exploration. And we're going to need more gas, although we see a lot right now available. The view is that if you look at any of the forward projections, we will be gas short in the country again, so I think that shift to renewable power at a national level is critical — not only consumers like ourselves shifting to renewables, but the actual power system moving to renewable which is, of course, part of His Majesty's vision Vision 2040, which is talking now about 45% renewable power. That will liberate a significant amount of gas for higher value products, whether it's in hydrogen, ammonia, LNG, export markets. That's something that looks like the first major step in industrial diversification to the economy, for fertilizers and the like, so it's really important. I think that we move quickly on that journey and companies like PDO can help stimulate that. We have the capability, the technical capability, the competence for people, the assets, we have the backing and the finances to really capitalize on that. What we need is a master plan for the country.

Q: Gas was short in Oman and that suddenly flipped the other way. How will that change again, as you mentioned?

A: There are a number of major gas players such as BP and you've also seen Shell now come in to Block 11. So, there's a lot of new players in the last few years, in the non-associated gas. The gas system is in balance. But over time, if you have a look at the ministry's forecasting work, that gap starts to open up again. But like everything, there's a lot of assumptions behind that. What would be the pace of transition from gas-fired power to renewable power in the nation? Are we going to grow a major blue hydrogen business as a precursor to green that will consume gas? Are we going to extend or expand LNG? Most of the scenarios show a growing gas gap again, which is why we're investing heavily. We will do more gas exploration.

What's New Around the World

COUNTRIES

ANGOLA — Exxon Mobil has flagged the first discovery in almost 20 years on Angola's deepwater Block 15. The US major did not provide an estimate of the scale of the discovery but said the Bavuca South-1 well encountered 30 meters (about 100 feet) of high-quality hydrocarbon-bearing sandstone. The well was drilled as part of a redevelopment project on Block 15, which is expected to deliver about 40,000 b/d of oil production. The news confirms that while Exxon has been scaling back in West Africa, it is still engaging selectively in the region. Exxon played a big role in Angola during the boom years up to 2008, making 17 discoveries on Block 15 before 2004. But in 2006 it relinquished part of the block and since then it has kept a relatively low profile in Angola, keeping the market guessing as to whether it would maintain a presence there or make an exit. Angola is a mature oil producer, with the government doing its best to slow declining output. Energy Intelligence estimates that it produced a little over 1 million b/d in October, down from almost 1.9 million b/d in 2008. Output from Block 15 — which produces Mondo and Saxi-Batuqe crude — sank to 56,000 b/d last year from around 530,000 b/d in 2010.

UAE — Abu Dhabi National Oil Co. (Adnoc) has reached out to potential partners for an equity position in its planned new LNG export terminal to be built in the emirate of Fujairah. The new facility, which will make the United Arab Emirates the Mideast Gulf's second-largest exporter of the super-cooled fuel, is set to come online by around 2026. "It is an extremely aggressive timeline," said one source at an international oil company interested in joining the project, adding that Adnoc had reached out to potentially interested parties. Adnoc declined to comment. The project is moving ahead at a time when world energy markets are in upheaval and global LNG demand is on the rise. Interest in gas supplies from Abu Dhabi has come from countries including Germany and Austria in recent months as European states and companies adjust to the fallout from Russia's Ukraine invasion on energy markets. Adnoc has existing liquefaction capacity of 5.8 million tons/yr located on Das Island about 160 kilometers off the coast of Abu Dhabi. The 9.6 million ton/yr Fujairah expansion would lift Adnoc's capacity to around 15.4 million tons/yr, and place the UAE ahead of neighboring Oman, which has around 11 million tons/yr of liquefaction capacity.

Opec-Plus Output Dips in October

Opec-plus crude production dipped by 110,000 b/d last month to 44.62 million b/d. Output by the 19 members with a monthly quota fell by 60,000 b/d to 38.57 million b/d, which is less than the 100,000 b/d the alliance had wanted to cut for the month. Compared with September, Saudi output declined by 60,000 b/d to 10.99 million b/d, while Russia saw a slight decrease of 40,000 b/d to 9.72 million b/d. Only two countries posted monthly gains — Iraq and Kazakhstan — both of which raised output by 90,000 b/d but still finished the month under their required target. The total shortfall for October was 3.5 million b/d, generally the same level as August-September.

Compliance With Opec-Plus Production Cuts

Opec	Base	Oct Ceiling	Oct Production	Target	Compliance Rate
Saudi Arabia	11,500	11,004	10,989	-15	101%
Iraq	4,803	4,651	4,498	-153	107
UAE	3,500	3,179	3,188	9	102
Kuwait	2,959	2,811	2,811	0	104
Nigeria	1,830	1,826	947	-879	389
Angola	1,529	1,525	1,032	-493	248
Algeria	1,057	1,055	1,058	3	93
Congo (Br.)	325	325	222	-103	NA
Gabon	187	186	227	41	NA
Eq. Guinea	127	127	85	-42	-73
Opec 10	**27,817**	**26,689**	**25,057**	**-1,632**	**127**
Iran	3,296	NA	2,550	NA	NA
Venezuela	1,171	NA	615	NA	NA
Libya	1,114	NA	1,205	NA	NA
Opec 13	**33,398**	**26,689**	**29,427**	**-1,632**	**127**

Non-Opec	Base	Oct Ceiling	Oct Production	Target	Compliance Rate
Russia	11,500	11,004	9,718	-1,286	107
Mexico*	1,753	1,753	1,677	0	NA
Kazakhstan	1,710	1,706	1,450	-256	43
Oman	883	881	893	12	56
Azerbaijan	718	717	551	-166	138
Malaysia	595	594	385	-209	362
Bahrain	205	205	206	1	100
South Sudan	130	130	160	30	NA
Brunei	102	102	76	-26	178
Sudan	75	75	73	-2	NA
Non-Opec 9	**15,918**	**15,414**	**13,512**	**-1,902**	**107**
Combined 19*	**43,735**	**42,202**	**38,569**	**-3,534**	**120**
Opec-Plus 23	**51,069**	**NA**	**44,616**	**NA**	**NA**

In '000 b/d. Opec and non-Opec compliance based on crude oil only. Mexico no longer has a quota but nominally is a member of the non-Opec alliance. Source: Opec, government data, Jodi, Energy Intelligence.

Global Supply Flattens in October

Production of hydrocarbon liquids worldwide was virtually dead-flat in October at 100.71 million b/d, Energy Intelligence's assessment shows. Opec-plus' output ticked up by 16,000 b/d to 52.42 million b/d, while producers not aligned with the alliance cranked out 45.95 million b/d, down 18,000 b/d on September. US production was unmoved at 19.44 million b/d, while Canadian output grew 130,000 b/d to 5.4 million b/d. In Opec-plus, core Opec members saw a decline of 230,000 b/d, led by Angola, to 34.69 million b/d.

World Crude Oil and Other Liquids Supply

('000 b/d)	Sep'22	Oct'22	Chg.	Crude Oct	Other Oct
Non-Opec-Plus	**45,964**	**45,945**	**-18**	**32,595**	**13,350**
US	19,442	19,444	1	12,000	7,444
Canada	5,275	5,405	131	4,400	1,005
Brazil	4,224	3,865	-360	3,089	776
Colombia	765	773	8	755	18
Norway	1,831	2,031	200	1,779	252
UK	886	892	7	813	79
Egypt	663	667	4	552	114
Qatar	2,148	2,135	-13	613	1,523
China	4,147	4,227	80	4,122	105
India	765	759	-6	578	181
Indonesia	786	786	0	605	181
Other Non-Opec-Plus	5,033	4,963	-70	3,290	1,673
Opec-Plus	**52,402**	**52,418**	**16**	**44,616**	**7,802**
Opec	**34,923**	**34,694**	**-230**	**29,427**	**5,267**
Saudi Arabia	13,297	13,204	-93	10,989	2,215
Iraq	4,467	4,560	93	4,498	62
Iran	3,445	3,411	-35	2,550	861
UAE	4,241	4,238	-3	3,188	1,050
Kuwait	2,982	2,981	-1	2,811	170
Nigeria	1,140	1,151	11	947	204
Libya	1,237	1,281	44	1,205	76
Algeria	1,516	1,519	3	1,058	461
Angola	1,209	1,071	-138	1,032	39
Other Opec	1,388	1,278	-110	1,149	129
Non-Opec	**17,479**	**17,724**	**245**	**15,189**	**2,535**
Russia	11,269	11,204	-65	9,718	1,486
Kazakhstan	1,472	1,674	202	1,450	224
Azerbaijan	681	704	23	551	153
Mexico†	1,899	1,917	18	1,677	240
Oman	1,097	1,113	16	893	220
Malaysia	557	578	21	385	193
Other Non-Opec	503	534	30	515	19
World Supply	98,366	98,363	-3	77,211	21,152
Refinery gains	2,373	2,348	-25	0	0
Total World	**100,738**	**100,711**	**-27**	**77,211**	**23,500**

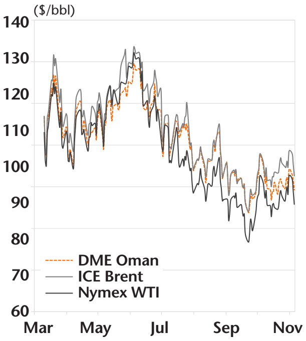
*Other liquids include natural gas liquids, biofuels, gas-to-liquids, coal-to-liquids, refinery additives. †Mexico nominally is a member of the Opec-plus alliance but has no production quota. Source: IEA, EIA, Jodi, government and trade data, Energy Intelligence.

Marketview

For the Fickle

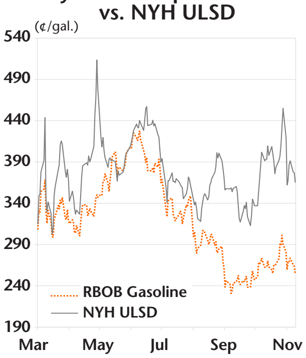
A wider risk-off mood has brushed off the market inertia and pulled oil prices lower, with Brent recoiling by nearly $6 per barrel over the past week. The North Sea benchmark was trading around $92.50 at mid-session on Thursday.

Prompt Crude Oil Prices



Source: Nymex, ICE, DME

Nymex Prompt Gasoline vs. NYH ULSD



The oil market has shifted its attention again to macroeconomic signals. And a critical one is the lack of a decisive pivot in China's zero-Covid-19 policy, which means oil demand in the world's biggest crude importer will remain under threat. A new surge of Covid cases in the port city of Guangzhou and in the capital Beijing has sparked alarm again, prompting fresh concerns about the country's ability to regain economic momentum fast enough. Goldman Sachs analysts do not expect a China reopening until the second quarter of 2023.

The "live with the virus" approach that has been advocated by most countries is still being rejected by the Chinese government. Market consensus now points to China lifting its Covid-19 protocols only slowly and gradually. "It is easier to impose than to remove, because removal requires consensus when nobody wants to take responsibility if things go wrong," a trader said. During his recent visit to China, German, chancellor Olaf Schulz secured BioNTech/Pfizer vaccine access for German expatriates. Some analysts interpreted the deal as a sign that China does not believe in the efficacy of its own vaccine.

With the world's largest oil buyer still playing on the sidelines, market sentiment remains fickle.

"The price action in a number of commodity markets could also be a reaction to Russian orders for a withdrawal of its troops from Kherson in Ukraine," analysts at global bank ING wrote in a note. But the majority of analysts remain convinced that the war has not been a big driver of the oil market since June. Price moves now are less about an ebbing and flowing geopolitical risk premium than a knee-jerk response to other market indicators, notably those pointing to an accelerating inflation or to a deeper recession.

For the moment, the latest evidence does not point to worsening US inflation. The US consumer price index (CPI) slowed below expectations in October, to 7.7%, its lowest since January 2022 and 0.5 percentage points below September. Energy costs increased by 17.6%, less than in September — but still very much fuelled by gasoline prices, which account for more than 50%-75% of the monthly CPI swings. And unlike Europe, where inflation is now in the double digits, the US is far less dependent on imports for its energy supply.

Fixed income markets are now trying to figure out whether the US Federal Reserve's rate policy has reached peak bullishness and the next hike will be smaller than 0.75 percentage points. If anything, oil prices may have taken comfort in these latest readings. But as PVM Oil analyst Tamas Varga noted, "it is worth remembering that the EU oil boycott and the G7 price cap are less than a month away, consequently the downside could be limited."

EIA Latest to Downgrade Demand

The US Energy Information Administration (EIA) expects oil demand growth to be less robust next year due to weakening economic indicators. Global demand is seen rising by 1.2 million b/d year-to-year to average 101 million b/d in 2023, down from the 1.5 million b/d increase predicted in last month's forecast. The EIA's downward revisions mirror the increasingly gloomy outlook among major forecasting agencies, which in recent months have focused on high consumer prices, rising interest rates, a strong US dollar and growing economic uncertainty. Meanwhile, the agency did not change its forecast for Brent crude prices, which it sees averaging $95 per barrel next year, down from $102/bbl in 2022.

PIW Market Indicators

($/barrel)	Nov 7-Nov 9	Oct 31-Nov 4	Oct 10-Oct 14
Spot Crude			
Opec Basket	$95.51	$94.40	$95.62
UK Brent (Dtd.)	96.44	95.98	94.36
US WTI (Cushing)	88.75	89.13	88.97
Nigeria Bonny Lt.	100.03	98.34	99.08
Dubai Fateh	91.63	91.00	93.29
US Mars	85.21	84.42	86.61
Russia Urals (NWE)	74.65	72.51	71.28
Crude Futures			
Brent 1st (ICE)	95.31	95.78	93.83
Brent 2nd (ICE)	93.85	94.00	92.15
B-wave (ICE)	96.43	95.50	94.18
WTI 1st (Nymex)	88.84	89.14	88.49
WTI 2nd (Nymex)	87.91	88.02	87.29
Oman 1st (DME)	90.67	91.45	92.40
Oman 2nd (DME)	89.15	89.98	90.48
Murban 1st (ICE)	94.00	94.87	95.07
Murban 2nd (ICE)	92.28	93.00	92.89
Forward Spreads			
Brent (1st-Dtd.)	-$1.13	-$0.21	-$0.54
Brent (2nd-1st)	-1.46	-1.78	-1.68
WTI (2nd-1st)	-0.93	-1.12	-1.20
WTI (3rd-2nd)	-1.08	-1.30	-1.31
Oman (2nd-1st)	-1.52	-1.47	-1.92
Oman (3rd-2nd)	-0.33	-1.87	-2.60
Murban (2nd-1st)	-1.72	-1.87	-2.18
Murban (3rd-2nd)	-1.76	-1.98	-2.20
Grade Differentials			
WTI-Brent (1st)	-$7.40	-$7.53	-$6.53
WTI-LLS	-3.47	-2.72	-3.18
WTI-Mars	+3.53	+4.71	+2.37
Brent(Dtd)-Dubai	+4.81	+4.98	+1.08
Brent(Dtd.)-Urals	+21.79	+23.47	+23.08
Brent(Dtd.)-Bonny Lt.	-3.59	-2.35	-4.72
Term Crude Formulas			
Arab Lt.-US (c.i.f.)	$93.04	$92.25	$94.24
Arab Lt.-Europe (Med)	96.43	95.50	96.88
Arab Lt.-Far East (f.o.b.)	98.13	97.83	100.17
Nigeria Bonny Lt.	96.44	95.98	96.27
Arab Light Gross Product Worth			
Rotterdam	$101.59	$104.41	$111.72
US Gulf Coast	103.88	108.15	109.16
Singapore	97.99	94.69	94.44
Gross Product Worth & Margins			
Rotterdam			
UK Brent GPW	$112.80	$116.75	$116.35
UK Brent Margin	+13.17	+18.91	+20.10
US Gulf Coast			
Mars GPW	97.61	100.82	101.20
Mars Margin	+12.29	+16.30	+14.49
Singapore			
Oman GPW	96.98	94.29	93.03
Oman Margin	+2.60	+0.02	-3.35
US Nymex			
WTI 3-2-1 Crack	+$36.58	+$40.59	+$41.10
Refined Products			
Rotterdam ($/ton)			
Eurobob Gasoline	$934.17	$952.22	$954.42
Gasoil (0.1%)	1020.17	1094.75	1132.70
Fuel Oil (0.5%)*	620.58	604.00	613.50
US Gulf Coast (¢/gal)			
RBOB Gasoline	243.46¢	259.13¢	259.29¢
ULS Diesel	360.71	389.03	400.13
Fuel Oil (0.5%, $/ton)	$663.00	$664.20	$671.80
Singapore ($/bbl)			
Naphtha	$76.37	$75.34	$73.75
Gasoil (0.05%)	135.20	133.20	136.23
Fuel Oil (0.5%, $/ton)	700.67	697.20	746.20

*ARA fuel oil prices for 1% sulfur fuel oil (LSFO) have been discontinued as the market becomes increasingly illiquid. The new 0.5% sulfur fuel oil (VLSFO) specs reflect the transition to new emissions standards set by the International Maritime Organization effective Jan. 1 2020. Latest week's data are preliminary. For GPW and margin calculations, see Refining Profitability Methodologies on the Energy Intelligence website in Reference Tools Publication Methodologies. Spot prices from Thomson Reuters. Opec basket source, Opecna. 3-2-1 crack spread for 3 parts crude, 2 parts gasoline, and 1 part heating oil. PIW Numerical Datasource subscribers can download all indicators in Excel worksheets.