Argus China Petroleum

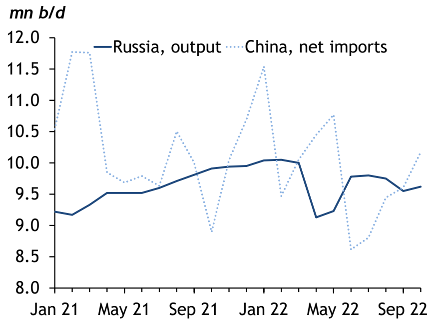
News and analysis on oil markets, policy and infrastructure

argusmedia.com

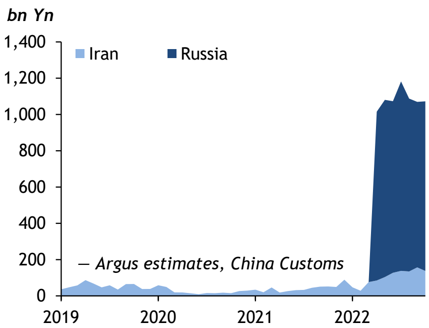
Volume XVI, 12 | December 2022

EDITORIAL: China's growing friendliness with Saudi Arabia comes at the same time as Beijing attempts to ditch the dollar

Russia, China: Crude



CNY crude trade settlement



CONTENTS

Yuan for all

China is determined to insulate itself from future US sanctions by developing an alternative financial ecosystem around its own currency, the yuan.

Beijing's official readout from President Xi Jinping's state visit to Saudi Arabia this month made no reference to western sanctions on Russia in response to its invasion of Ukraine. But it did not have to. His trip coincided with the 5 December ban on the provision of western financial services and shipping for non-price-capped Russian crude, and followed the freezing of around $300bn in Russian central bank assets in February. Top of Xi's talking points in Riyadh were measures explicitly aimed at mitigating Chinese vulnerability to similar sanctions. Russia and China produce and import, respectively, similar amounts of crude (*see graph*). The Opec group expects Chinese oil demand to grow by 500,000 b/d next year.

China will continue to import more crude and LNG from Gulf Co-operation Council countries, and increasingly carry out oil and gas trade settlement in yuan, Xi says. This is partly because the yuan has weakened by 12pc against the dollar this year, making dollar-denominated imports costlier. But it is also because Russia's fate highlights China's susceptibility to the dollar as a political tool.

In parallel with its growing energy dependence on the Mideast Gulf, China aims to expand its Belt and Road Initiative in the region. Beijing hopes recipient countries will use yuan loans to produce goods that can be sold back to China's growing middle class in yuan, consultancy Enodo Economics says in a paper on the currency's internationalisation. Beijing is promoting the use of a digital currency, the e-CNY, through its homegrown Cross-Border Interbank Payment System (CIPS). CIPS unifies an inter-bank messaging system — similar to the Swift platform from which Russia has been barred — with a cross-border trade settlement mechanism.

The petro-yuan

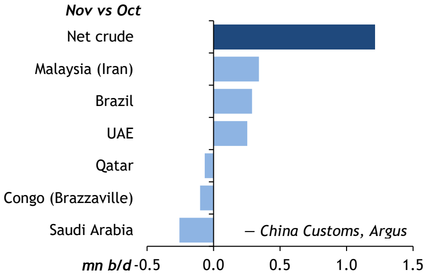
CIPS could allow China to carry out international transactions beyond the sight or reach of the US government but, for now, it still depends heavily on Swift messaging. China retains strict capital controls, swapping importers' dollar revenues for yuan. Its trade surplus is running 55pc above year-earlier levels in yuan terms, creating growing demand for dollars. Cuts to interest rates by China's central bank while the US raises them encourage investors to sell yuan and buy dollars. While China has slashed its US treasury bond holdings since the war, this may be because higher oil prices, not currency independence, have forced the central bank to sell US securities to meet domestic oil importers' dollar requirements.

Beijing has previously tried — and failed — to internationalise its currency. The launch of an indigenous crude futures contract, the INE, aimed to foster this, but it attracted little interest outside China. There is similarly little incentive, in commercial terms, for Mideast Gulf countries to ditch the dollar. Highly developed, liquid currency and derivative markets keep dollar transaction costs far lower than any alternative. But — in the case of Iran and Russia — sanctions provide a clear political incentive for switching. Their oil still prices in dollars but trades are now almost all settled in yuan, market participants say. China may have paid as much as Yn7.6 trillion ($1 trillion) of its own currency for crude this year (*see graph*). That represents just a fraction of China's total trade, but it is growing.

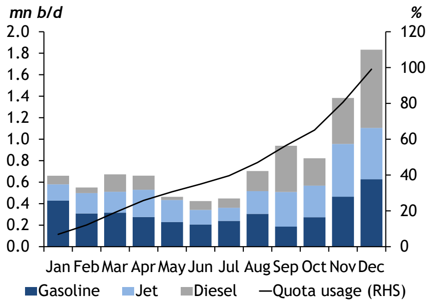
DEMAND

Refiners raced to use up their import quotas before the end of the year, but slim consumption led to strong products exports

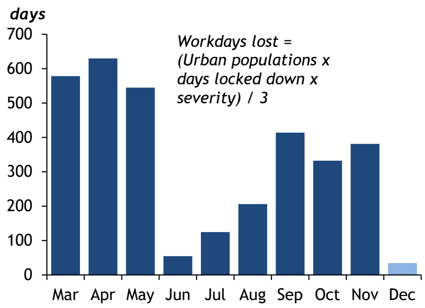
China crude imports



China: Transport fuel exports



Zero Covid: Lost workdays



Exports drive oil apparent demand rally

Chinese oil demand extended its rally into December and is on course to rebound strongly in 2023 — but a Covid-19 outbreak may quash short-term demand.

Crude imports rose and refinery runs remained high in November, building on October's gains. November's net crude imports of 11.38mn b/d were China's largest monthly haul since January. Imports from Iran via Malaysia hit a record 1.2mn b/d as Shandong independent refiners raced to use up their 2022 import quotas. Imports from Brazil rose by 290,000 b/d to 640,000 b/d. Sinopec began favouring Brazilian over west African medium sweet crude this summer, when November cargoes traded, as European demand drove up spot differentials for competing grades from west Africa (*see graph: China crude imports*). Apparent demand measured as the sum of domestic crude production and Chinese net oil imports — a key gauge of the country's impact on global markets — rose by 970,000 b/d month on month in November to 16.1mn b/d.

Chinese apparent oil demand has, historically, been strongest in the fourth quarter. This year is likely to be no exception. Refinery runs hit an 18-month high in November and remain elevated, at 14.4mn b/d, in December, *Argus* surveys show. Demand measured as refinery output plus net products imports, which better tracks domestic consumption, is on course to rise by a hefty 670,000 b/d this month, to 15.8mn b/d.

But actual consumption remains weak. Consumer spending shrank in real terms by 5.2pc in November from a year earlier. Property sector investment, on a year-to-date basis, was down by 8.6pc versus 2021. Surging exports of refined products fired the rally in crude runs (*see graph: Transport fuel exports*). Covid-19 lockdowns constrained economic activity and fuel demand in October-November. Mobility rose this month as Beijing scrapped its zero-Covid policy, but surging infection rates and self-quarantining are likely to cause oil demand growth to stutter (*see graph: Lost workdays*). The dramatic end to China's zero-Covid experiment also risks disrupting Chinese factory output — as employees cannot work remotely — threatening the battle against inflation beyond China's borders.

Loosen the purse strings

Oil demand is on course to fall to 14.7mn b/d this year, China's lowest since 2020 and down by 740,000 b/d from 2021. China's government concluded its central economic work conference (CEWC) on 16 December, where it laid out its economic priorities for next year. Few of the CEWC's hard targets have yet been disclosed but, in addition to striking a more emollient line towards China's embattled private sector, Beijing is expected to target a GDP growth rate of around 5pc for 2023. Efforts to boost domestic consumption, which have borne the brunt of this year's economic woes, feature prominently in the CEWC readout.

This sets the stage for a significant increase in oil demand from March, assuming the latest Covid wave subsides by then. *Argus* and the Opec oil exporter group both expect Chinese oil demand to grow by around 500,000 b/d next year, while energy watchdog the IEA expects demand growth of around 800,000 b/d.

Crude stocks are rebuilding in response to the torrent of December imports. Crude receipts in the first quarter are likely to remain high in response to favourable arbitrage economics in this year's fourth quarter. The threat of recession in Europe has depressed prices for crude cargoes trading now for February-March arrival to China — Atlantic basin imports look especially attractive. Mitigating this, Chinese exports of gasoline, diesel and jet fuel may remain high during the first quarter of 2023. But exports will shrink as domestic economic momentum builds.

SWEET CRUDE

Shandong crude receipts rise as Covid starts to bite

Chinese refiners have returned to the market for Russian crude after G7 trade sanctions caused a brief pause

Chinese crude receipts are on course to rise dramatically in December, largely because independent refiners need to use up their import quotas. But China's current Covid-19 outbreak is worsening, suppressing oil demand.

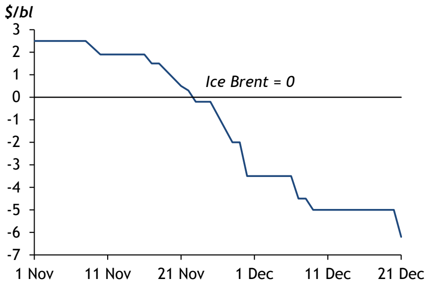
Crude receipts in Shandong province will hit 5.3mn b/d in December, the highest since March 2021, according to data from oil analytics firm Vortexa. Independent refiners must exhaust this year's quotas to qualify for their full entitlement next year, and they are already sitting on an early batch of 2023 quotas that the government issued in October and has encouraged them to use up as part of an economic stimulus initiative.

Independent refiners in Shandong continue to shun their former diet of sweet Atlantic basin crude in favour of discounted Iranian and Russian grades. And they are starting to return to the market for Russian ESPO Blend after a hiatus in the run-up to G7 sanctions coming in to play. The sanctions ban G7 countries from providing trade or financial services for Russian crude sold for more than $60/bl. ESPO Blend spot differentials have fallen $5/bl below Ice March Brent futures but cargoes arriving after 5 December — when the sanctions began — still have an implied value of $86.60/bl, making them ineligible for western services.

Kozmino terminal loadings peaked at 860,000 b/d in August but were far lower than this in the first half of December, Vortexa data show, suggesting that vessels have started to turn off their transponders. Even so, December loadings are likely to be lower than in November, because there are insufficient numbers of Aframax vessels prepared to carry Russian oil.

Chinese banks have resumed clearing services of payments for Russian crude and up to 20 cargoes from the January programme have traded, market participants say. But the state-owned firms that formerly accounted for most of China's ESPO Blend purchases on a fob basis at Kozmino have largely switched to buying on a delivered ex-ship basis, outsourcing the task of finding shipping and insurance to independent trading companies. Many of the Aframaxes that are arriving in Shandong are owned by Russian-UAE firm Sun Ship Management or Russian shipowner Fuga, according to Vortexa.

ESPO Blend delivered China

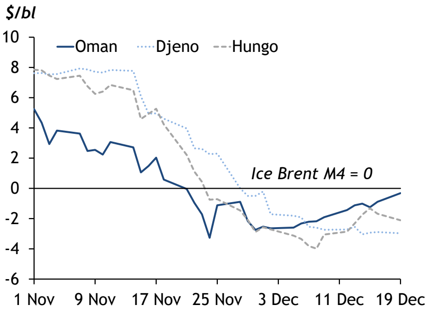


Sweet as you like

The main impediments to trading Russian crude for the Chinese market now are refiners' concerns about the creditworthiness of new trading firms that have emerged in the fob Kozmino market, their own access to credit and the outlook for demand. ESPO Blend trades far more promptly than Atlantic basin cargoes. And China's latest outbreak of Covid-19 may continue to depress domestic oil demand when cargoes from the January-arriving trade cycle arrive. The collapse of prompt relative to forward crude prices has reduced storage costs, but inter-month spreads are still lower than storage and credit costs.

Demand for February-arriving west African cargoes has been far more robust this month. Chinese companies stepped up purchases of Congolese Djeno and Angolan grades Cabinda and Nemba. Sweet crude prices have weakened relative to sour grades — the premium of Ice Brent futures to Dubai swaps shrank by $2.28/bl in December to $5.76/bl.

Delivered China spot differentials



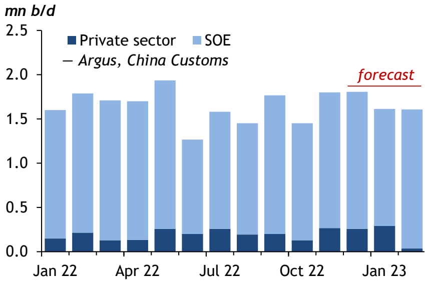
West African grades are especially weak, since an overhang of unsold December-loading cargoes spilled over into January. Medium sweet west African grades Djeno and Hungo are trading at levels far below medium sour Oman, and refining the latter incurs additional desulphurisation costs (*see graph: Delivered China spot differentials*). Weak spot differentials for Atlantic basin grades are, in turn, creating additional drag on ESPO Blend.

SOUR CRUDE

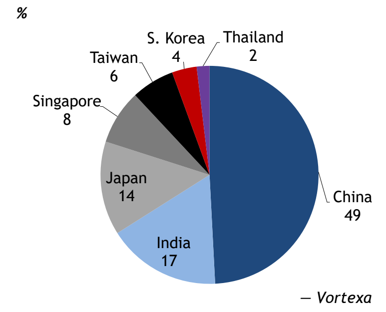
Refiners have been maximising crude buying this month to work through import allowances, but January imports are set to be low

Brent-Dubai EFS

China: Saudi crude imports



Upper Zakum destinations: 2022



China slows sour crude buying for early 2023

China has dropped its zero-Covid policy and oil demand is expected to rebound strongly. But an overhang of crude stocks is discouraging prompt crude buying.

Cargoes trading on Mideast Gulf spot markets now will load in February and arrive in March. Crude traded under term contracts will load in January and arrive in February. By the time these cargoes arrive, China's current surge of Covid-19 infections should have passed and the country ought to be pulling out of its prolonged demand slump. But Covid outbreaks are likely to still be very present during China's lunar new year holiday in January, exacerbating the seasonal downturn in crude processing that occurs then. Refiners typically build product stocks in the fourth quarter in preparation for low crude runs in January-March.

Sour crude marker Dubai has firmed in response to expectations that members of the Opec+ producer group will cut their exports — of mainly sour crude — next year. The premium of Ice Brent futures to Dubai swaps has fallen steadily since the group announced a 2mn b/d output cut in October (*see graph: Brent-Dubai EFS*). But lower requirements from China will probably have allowed Opec+ to cut output without depriving term customers of their desired crude volumes. Saudi Aramco will provide customers in Asia-Pacific with their requested volumes of January-loading term crude.

Independent refiners boosted year-end imports to ensure that they use up 2022 import allowances. Many had deferred crude buying in the second quarter, forcing them to make up volumes towards the end of the year. Rongsheng, which operates the 800,000 b/d ZPC refinery in east China, is already struggling to unload all of its December-arriving cargoes, and will cut imports of Saudi crude arriving in January. Fellow private-sector refiner Hengli is expected to cut its February-arriving imports of Saudi crude.

State-run Sinopec, China's largest refiner and consumer of Saudi crude, is already cutting crude runs as domestic diesel demand slumps. The Chinese oil giant reduced purchases as refining margins dropped in the second quarter and its purchases of Saudi crude have still not recovered to pre-lockdown levels. It may process as much as 400,000 b/d less next January than it did at the start of this year and take 100,000 b/d less Saudi crude in January-February 2023 than a year earlier (*see graph: Saudi crude imports*).

Spot, the dog

There has been similarly little evidence of a recovery in demand from Chinese refiners on the Mideast Gulf crude spot markets in December. Two-thirds of the crude Rongsheng bought this month was sweet west African crude. Rongsheng and Hengli more commonly buy UAE medium sour crude Upper Zakum, with China absorbing nearly half the grade's exports (*see chart: Upper Zakum destinations*). But Upper Zakum has been the grade most commonly delivered through pricing agency Platts' Dubai partials mechanism this month, suggesting that it is the lowest value of eligible grades used in the partials market.

Chinese demand is slim and it will take oil firms time to work through stocks accumulated over the past few months. But supply constraints and the expected demand rebound may cause prices to rally as April and May-arriving cargoes start to trade. Private-sector Shenghong is expected to seek a term contract with Saudi Aramco for its new 320,000 b/d refinery, although it is currently working down stocks after taking delivery of large amounts of Upper Zakum and delaying Lianyungang's start date. PetroChina's new 400,000 b/d Jieyang refinery — originally a joint venture with Venezuela's PdV — will now depend heavily on Mideast Gulf crude, as Venezuelan crude is increasingly heading to the US and Europe rather than China.

DOWNSTREAM

Several refiners cut run rates this month as spiking Covid-19 infections curbed already seasonally low domestic demand

Exports support December crude runs

Chinese crude runs edged down in December from November's 12-month high, as rising Covid-19 infections and a seasonal dip in demand pressured throughputs.

Chinese crude runs are likely to reach 14.37mn b/d in December, down by 140,000 b/d from 14.51mn b/d in November (*see graph: China crude runs*). This would still be considerably higher than the January-November average of 13.4mn b/d, as well as above the seasonal trend.

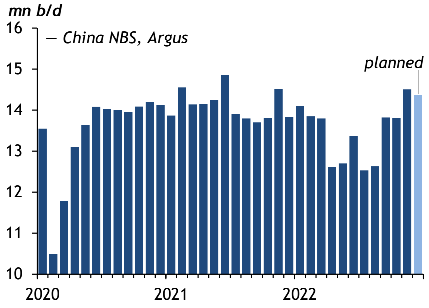
Chinese crude runs averaged four percentage points less than seasonal norms in April-August, as the government's zero-Covid policy suppressed economic activity and oil demand (*see graph: Crude runs as % of full year*). The government scrapped that policy in early December, but oil demand remains relatively slim. Much construction sector activity has paused in response to lower temperatures, as is usual at this time of year, causing diesel margins to weaken.

Seasonally low demand combined with concerns about the demand outlook because of spiking Covid infections have prompted state-controlled Sinopec, state-owned Sinochem's Quanzhou refinery and many of the country's independent operators to trim crude runs in December. Independent-sector crude throughputs fell by 120,000 b/d to 3.75mn b/d.

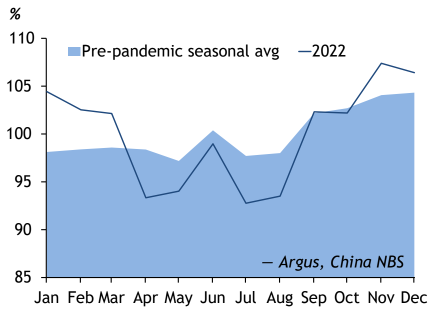
Sinopec cut throughputs by 160,000 b/d in December to 4.95mn b/d. It has no urgent need to boost crude runs ahead of the lunar new year public holiday in January, after buying diesel on the domestic spot market to replenish its inventory and stepping up gasoline purchases this month.

The firm's Anqing and Jingmen refineries in central China finished scheduled maintenance in the second half of December, bringing back 280,000 b/d of crude unit capacity and increasing runs by a combined 40,000 b/d. This was partly offset by lower throughputs at its 280,000 b/d Yangzi refinery in eastern Nanjing, as a result of a fire at its 300,000 t/yr naphtha-fed steam cracker on 7 December. The company also cut runs by 30,000 b/d at its north China refineries, where the current Covid outbreak is most severe.

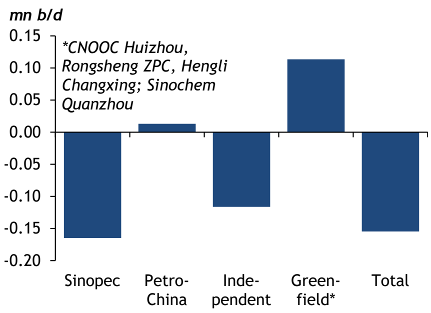
China crude runs



Crude runs as % of full year



Crude runs: Current vs previous



Export avenue

But state-controlled CNOOC has increased crude runs by 40,000 b/d month on month to around 630,000 b/d, and state-owned PetroChina has raised runs by 10,000 b/d from November to 3.3mn b/d.

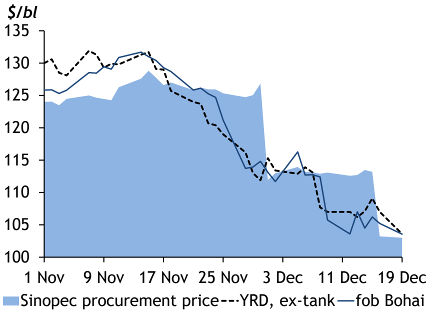
PetroChina steadily cut crude runs in December 2021-September 2022, in response to slipping domestic demand and limited export rights. But the government awarded a hefty fifth batch of products export quotas in September and PetroChina's crude runs rebounded by 150,000 b/d in the fourth quarter. It will export 340,000 b/d of gasoline in December, largely from refineries around Liaoning. PetroChina is slowly bringing on stream its new 400,000 b/d refinery at Jieyang in Guangdong province. Jieyang processed 70,000 b/d of crude in December — up from 45,000 b/d in November but still lower than the planned 160,000 b/d. Jieyang is expected to begin marketing refined products in the first quarter.

Petrochemical-focused plants are also running harder. Private-sector textile producer Shenghong, which started up its 320,000 b/d refinery at Lianyungang in early November, opened a 1.1mn t/yr naphtha-fed cracker on 1 December and a 900,000 t/yr mono-ethylene glycol plant on 6 December. But petrochemical margins are weak and Lianyungang will run at only 70pc this month, potentially not reaching nameplate capacity until February. Shanghai-listed Hengli has raised throughputs at its Changxing refinery by 30,000 b/d to 420,000 b/d, although it may trim run rates in January. Private-sector Rongsheng is running all four crude units at its 800,000 b/d ZPC refinery at slightly above nameplate capacity this month.

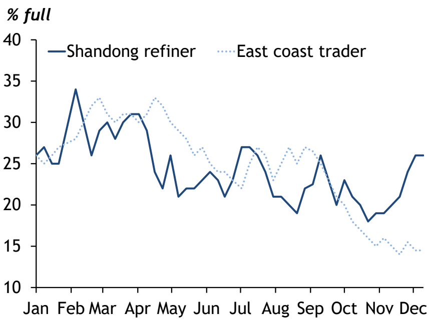
PRODUCTS

Refiners are sending diesel as far as northwest Europe as domestic consumption has dropped

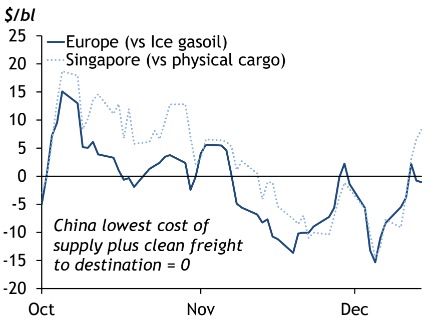
China: Diesel prices



Diesel inventories



Diesel: Exports economics



Diesel exports surge as Covid takes hold

Chinese oil companies are ramping up diesel exports as domestic demand slips. But a lack of clarity over the size of next year's diesel export quotas is slowing January shipments and will, potentially, force crude runs to fall.

Diesel exports may hit a record 730,000 b/d in December, up from a previously planned 660,000 b/d, *Argus* surveys indicate. A rise in Covid-19 infections following the end of China's zero-Covid policy is weighing on demand, exacerbating the effect of a seasonal downturn in diesel use by the construction sector.

Official data have underestimated the number of positive infections since most mandatory testing was abandoned in early December, but north China — Hebei and Beijing — are worst affected so far. Many haulage and delivery drivers have reported in sick in the capital, causing backlogs of undelivered goods. The movement of goods around China is slowing, and this will have knock-on effects outside China and fuel global inflation. China accounted for 30pc of global manufacturing output in 2021, its government estimates.

The drop in domestic diesel demand coincides with a rise in output. Chinese crude runs hit 14.5mn b/d in November and are likely to remain high at 14.4mn b/d this month, *Argus* surveys indicate. This suggests that China's refining system may produce as much as 800,000 b/d more diesel in the fourth quarter than in the preceding nine months. Diesel margins remain high, at around $31/bl — thanks in part to falling crude costs.

State-controlled Sinopec cut its third-party diesel procurement price to Yn7,400/t ($103/bl) on 16 December, and has emerged as a major buyer on the spot market (*see graph: Diesel prices*). Even so, stocks held by independent refiners in Shandong have risen to their highest since mid-September (*see graph: Diesel inventories*). Many provinces will, from 1 January, introduce strict limits on the trade of "dangerous chemicals", making it far harder for private-sector trading companies to operate. The latter are running down diesel inventories.

The big short

Sinopec plans to export as much as 280,000 b/d of diesel this month. State-owned Sinochem will export 140,000 b/d of diesel in December, up from an original plan of 100,000 b/d and more than its 300,000 b/d Quanzhou refinery usually produces — the shortfall will be met by domestic spot purchases.

Singapore cargo prices rose by $8.30/bl above the cost of Chinese supply by mid-December, as Chinese prices fell (*see graph: Export economics*). Singapore represents the single largest destination for Chinese exports, but around 120,000 b/d is going direct to Malaysia and the Philippines, according to data from oil analytics firm Vortexa. Diesel is also becoming attractive to ship as far as northwest Europe, which faces a shortage from February when the EU ban on Russian gasoil comes into effect. The cost plus freight to Europe of buying diesel on the Chinese spot market fell sharply to just $1/bl over Ice April gasoil on 16 December. When exporters price cargoes in China, they typically sell either Ice front or second-month gasoil futures contracts for the time that they will deliver it — currently the April futures contract.

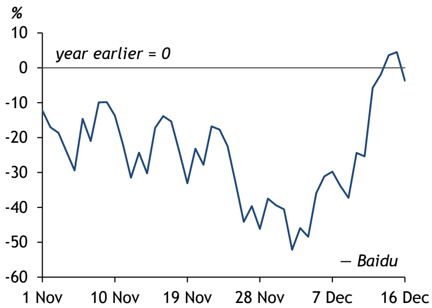
But China's ministry of commerce has not yet revealed its first batch of products export quotas for 2023. These are typically unveiled at the country's central economic work conference, which closed in Beijing on 16 December. Sinochem has booked fewer vessels loading in January than in December, because its export allowance remains unknown. Blocking refiners' overseas sales would have a knock-on effect on domestic crude runs, which rose in November-December largely in response to higher exports.

PRODUCTS

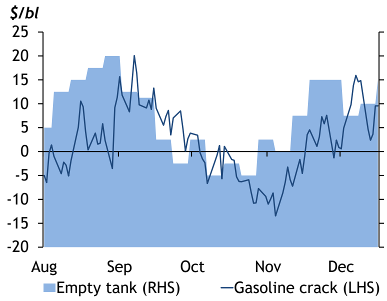
Gasoline rallies as China unlocks

Gasoline use rebounded early in the month but crashed back when Covid-19 infections forced people back inside their homes

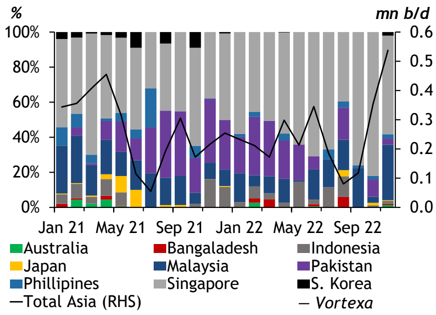
China migration index



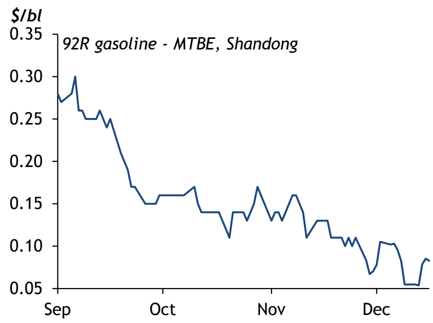
Gasoline crack spreads vs stocks



Chinese gasoline exports



China blending margin



Chinese gasoline margins have rallied sharply in response to the end of China's zero-Covid policy and a flood of exports.

Chinese gasoline margins averaged $11.18/bl over 1-19 December, up from a negative $3.53/bl in November. Margins rallied after Beijing announced at the start of December a shock U-turn on its policy of tracking and quarantining all infected citizens. The policy change followed a spike in infections in November that threatened to overwhelm the capital's centralised quarantine facilities, and a spate of protests in the country. The transport ministry removed the requirement for people travelling across regions to produce a negative PCR test, as well as scrapping the controversial "travel code" phone tracking app.

Mobility rebounded in the first half of December, rising above a month earlier for the first time since August (*see graph: China migration index*). Pump sales of gasoline surged by 20pc month on month at state-controlled Sinopec's retail stations in eastern Jiangsu and by over 40pc at state-owned PetroChina's retail outlets in western Chongqing, the companies say. But a fresh surge of infections later in December has forced mobility and pump sales back down.

Cross-province travel is likely to increase during China's upcoming 40-day spring festival, which runs from mid-January to late February, as migrant workers travel home for the lunar new year holiday. The volume of flights over this period is likely to approach a three-year high, travel booking website Qunar says.

But, for now, travel remains significantly below a year earlier. Lower gasoline yields and increased restocking are fuelling the run-up in margins. Refiners have been trimming gasoline output and ramping up exports of the fuel to use up their most recent batch of export quotas. Stocks of gasoline held by refiners in north China's Bohai bay and Shandong areas are as much as three-quarters empty (*see graph: Gasoline crack spreads vs stocks*).

Buy now, pay later

Few oil companies anticipated the speed at which the zero-Covid policy would unravel. Sinopec has increased third-party purchases of gasoline this month as it belatedly responded to the increase in demand. December traded volumes of gasoline in the Bohai market for the week ending 16 December rose by 20pc from a month earlier to over 120,000 b/d, with Sinopec the biggest buyer.

Sinopec's chief concern is supplying the domestic market. PetroChina is China's main gasoline exporter, with overseas sales from its Liaoning refineries running at over 220,000 b/d in December, for the second consecutive month. Rongsheng, the only private-sector oil firm with an export quota, will ship around 40,000 b/d this month from the Yushan Island terminal that serves its 800,000 b/d ZPC refinery in east China. Most Chinese gasoline exports are chartered for Singapore, but as much as 150,000 b/d will sail directly to Malaysia this month, data from oil analytics firm Vortexa indicate (*see graph: Chinese gasoline exports*).

China's road to gasoline demand recovery may not be a smooth one. The rebound in Chinese mobility tapered off, alongside gasoline margins, when infections spiked in Beijing in mid-December. Private-sector refiner Shenghong, which opened its 320,000 b/d refinery in November, suspended gasoline sales in December. The company has not completed a pipeline it aims to use to supply Henan province, and has instead offered cut-price gasoline on the spot market.

Other refiners have increased sales of blending components such as MTBE rather than finished gasoline, as gasoline's premium to MTBE shrank (*see graph: China blending margin*). Private-sector refiner Hengli, which does not have an export quota, shipped octane blending component MTBE to Malaysia this month.

PRODUCTS

China is aiming for passenger flight volumes to return to 90pc of pre-Covid levels by the end of next month, boosting jet fuel use

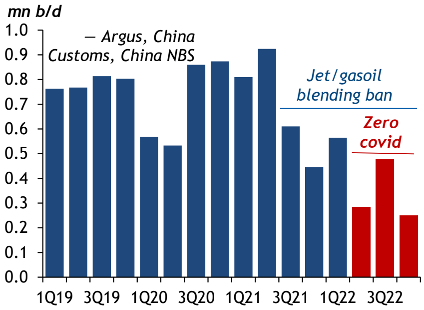
China jet fuel market pulls out of nosedive

China's zero-Covid policy has battered domestic jet fuel markets — but jet fuel is likely to be one of the strongest points of next year's expected demand recovery.

Jet fuel apparent demand — production minus net exports — is on course to fall to 370,000 b/d this year, down by nearly 40pc from 2021 (*see graph: Jet fuel apparent demand*). Consumption by China's civil aviation sector has fallen at a far slower pace — the country's air carrier fleet consumed around 170,000 b/d less in January-October this year compared with last year, when jet fuel used for blending is excluded (*see graph: Jet apparent demand vs aviation use*). The use of jet fuel as a blendstock for off-specification gasoil in 2020-21 inflates China's historical apparent demand data. Those data, from the Civil Aviation Administration of China (CAAC), take into account bonded storage sales to airlines plying international routes.

Domestic flights accounted for over 76pc of aviation jet use last year, as China's economic growth accelerated. But domestic air traffic's share of total air traffic fell to 66pc this year in response to Covid-19 lockdowns. China's airlines flew 23bn t/km less in domestic flights in January-October than they did in the same period the previous year, CAAC data show. The country lost 3.3bn working days to mobility restrictions in March-December, *Argus* surveys indicate.

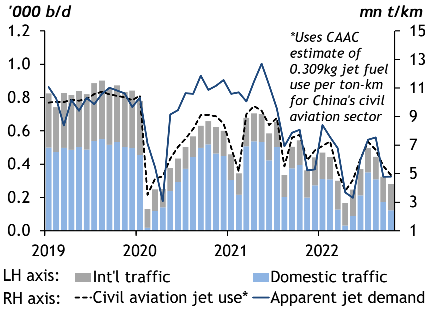
China: Jet fuel apparent demand



Beijing relaxed its Covid controls in December following public protests and the prospect of its centralised quarantine system becoming overwhelmed with coronavirus cases. The government now permits travel between provinces without the need for a negative PCR test and allows those with mild Covid symptoms to recuperate at home rather than in hospital. This is expected to spur a recovery in travel once the present wave of infections has passed.

Chinese provincial authorities are rolling out travel incentives such as discounts for end-of-year holiday travel and ahead of the new year holiday in January. Hainan, a popular tourist destination in south China, has launched a duty-free shopping event until 5 February. The seven-day average of domestic flights tracked by flight data provider RadarBox rose to 4,300 flights/d by 9 December, compared with 3,960 flights/d in the previous seven-day period. International travel demand may also rebound as Beijing is no longer grounding airlines if they are found to be transporting infected passengers. Vietnam Airlines resumed flights to China this month after a three-year hiatus.

Jet apparent demand vs aviation use



Loop-the-closed-loop

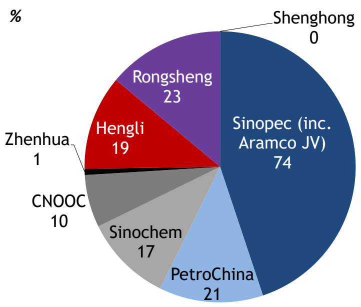
But jet fuel demand recovery has yet to materialise in strength. Crude runs ramped up in November, potentially boosting jet fuel supply by around 100,000 b/d at a time when much of the country was in lockdown. It has now unlocked, causing Covid-19 to rip through cities such as Beijing. Chinese oil firms may export 400,000 b/d of jet fuel in November-December, to balance the increase in supply with still-thin demand. They are also keen to use up export quotas awarded in late September — although jet fuel markets in Asia-Pacific are also relatively weak, with physical prices trading below swaps.

Energy watchdog the IEA expects jet fuel demand to bounce back strongly in 2023. That may be optimistic, as jet fuel can no longer be used for gasoil blending — a market that previously absorbed up to 200,000 b/d of China's jet fuel. Aviation-sector consumption rose by only 20,000 b/d in 2021, when China last emerged from a major lockdown, and stayed some way below pre-Covid consumption of 800,000 b/d in 2019. But CAAC remains bullish. As part of a three-stage plan, it has set a target of returning daily passenger flight volumes to nearly 90pc of 2019 levels by the end of January, according to Chinese aviation portal Carnoc.

GEOPOLITICS

Close to $30bn was pledged towards economic ventures between the two countries, covering a spectrum of sectors

Saudi term crude customers 2022



Aramco refinery JVs in China				*'000 b/d*
Refinery	**Cap.**	**Partners**	**Equity**	**Status**
Huajin*	300	North Huajin Chemical	Crude supply	Signed Mar 22, construction not started
Fujian	280	Sinopec, Exxon	Refinery 25pc, retail 22.5pc	Signed Aug 04, JV formed Mar 07
Yulong†	400	Shandong Energy	na	Signed Dec 22, MOU
Gulei	320	Sinopec	na	Signed Dec 22, framework agreement
ZPC	800	Rongsheng, Tongkun	9pc in ZPC, retail	Signed Feb 19, status unclear

**no equity confirmed. Up to 210,000 b/d crude supply. Originally 36:35:29 JV between Huajin, Aramco, Xincheng, respectively*
†refinery project not specified in agreement

Slew of Sino-Saudi pledges follow Xi's Riyadh trip

Chinese president Xi Jinping's three-day state visit to Saudi Arabia on 7-9 December sent a signal of stability to an oil sector adapting to the turmoil of an EU embargo on Russian seaborne crude imports and the attempted imposition of a G7 price cap on Russian seaborne crude sales. But, more significantly, it marked a broadening economic relationship between Beijing and Riyadh.

Energy has formed the bedrock of Saudi-Chinese economic relations since the 1990s. Saudi Arabia is a leading supplier of crude to China, the world's largest oil importer. Xi's trip comes as Saudi Arabia faces heightened competition in Asian oil markets from Russia, with which it leads the Opec+ oil exporter group. Moscow has been offering discounted crude to Asian customers as it shifts its oil exports away from Europe following Russia's invasion of Ukraine. But with the price cap and associated shipping insurance restrictions making importing Russian crude a riskier business, the reliability of Saudi supply is likely to underpin its Chinese market share as well as cross-border investment strategies.

Sino-Saudi downstream joint ventures include the 400,000 b/d Yasref refinery in Saudi Arabia — owned 50:50 by Saudi Aramco and China's state-run Sinopec — and the 280,000 b/d Fujian integrated refining and petrochemicals complex in China, in which Aramco has a 25pc stake. But Aramco has pursued several other projects in China over the last two decades, with limited progress.

The Saudi firm has now made a final investment decision on a new Chinese refining and petrochemicals tie-up with state owned North Huajin Chemical Industries. And among the energy deals announced during Xi's visit was an initial agreement between Aramco and China's state-controlled Shandong Energy — a shareholder in Shandong's under-construction 400,000 b/d Yulong refining project. The deal may involve crude supply and petrochemicals offtake and extends to co-operation across technologies related to hydrogen, renewables and carbon capture and storage, Aramco says.

Sinopec also signed a preliminary co-operation agreement with Aramco for a planned refinery project in Gulei, in China's southeast Fujian province. The framework agreement specified co-operation in the Gulei project's second phase, which involves building a 320,000 b/d refinery, a 1.5mn t/yr ethylene plant and other downstream derivatives. The project may open in 2025. Sinopec did not provide further details and the project has not yet received approval from the country's main economic planning agency, the NDRC. Sinopec already operates a 1mn t/yr cracker at the Gulei complex, which started up in August last year.

Well beyond oil

And Sinopec and Aramco have been joined by Saudi state-controlled petrochemicals producer Sabic in signing an initial agreement to co-operate on a liquids-to-petrochemicals project at the Yasref refinery. China's state-owned CNPC announced separately that its think-tank Etri has signed an agreement with Saudi think-tank Kapsarc to co-operate on a range of projects covering energy policy, energy transition, hydrogen energy, carbon capture, utilisation and storage, and China's Belt and Road Initiative.

Almost $30bn of Sino-Saudi agreements were touted in Riyadh during Xi's visit — ranging from electric vehicles and green energy to construction, cloud services, information technology and other sectors. This broad scope reflects an economic relationship that is pushing well beyond oil. Sinopec will continue to "implement a high-level opening-up policy and contribute to the implementation of the Belt and Road Initiative" and the realisation of Saudi Arabia's "Vision 2030" economic diversification programme, the firm says.

ENERGY TRANSITION

China's CO_2 emissions fell this year, but economic and political tensions could reverse this trend in the year ahead

China faces growing net zero challenges

China's path to net zero faces increasing challenges, as a possible rebound in energy demand, tensions with the US and slower-than-expected uptake in clean energy may cause fossil fuel use to grow next year.

China's CO_2 emissions — accounting for a third of global emissions — are projected to fall by 0.9pc on the year to 11.4bn t this year, compared with a rise of 1.5pc to 5.1bn t in the US. This comprises a 2.8pc year-on-year decline in emissions from China's oil sector, a 1.1pc fall from gas burn and a 7pc decline in emissions from cement production, according to a forecast by research organisation the Global Carbon Project. Even so, emissions from coal are on track to rise on the year by 0.1pc and there are signs that coal-sector emissions may rise further next year.

And falls in CO_2 emissions from other sectors may prove short-lived now that Beijing has scrapped its zero-Covid policy. This year's decline in oil-sector emissions was attributed to pandemic-led lockdowns. The removal of Covid-19 restrictions could result in a "significant rebound", according to Helsinki-based think tank the Centre for Research on Energy and Clean Air (CREA).

Hard-to-abate sectors such as steel, cement, concrete and chemicals account for nearly half of China's CO_2 emissions, but there is no clear timeline for offsetting these in the country's national emissions trading scheme. CO_2 emissions from the petrochemicals sector may not peak until 2035 unless China fast-tracks decarbonising measures such as carbon capture, utilisation and storage (CCUS), researchers at Peking University say.

And tensions with the US are rising again, exacerbating China's energy security concerns and encouraging deeper dependence on coal in the power sector. The two sides are at least talking about the environment again — US secretary of state Antony Blinken is slated to discuss climate co-operation if he visits China early next year. But China, like the EU, accuses the US of violating World Trade Organisation rules through its Inflation Reduction Act.

Hard-to-abate sectors such as steel, cement, concrete and chemicals account for nearly half of China's CO_2 emissions, but China has no clear timeline for offsetting these

Winding path to decarbonisation

Russia's war in Ukraine is driving up gas prices and boosting coal use over gas. This could slow China's coal-to-gas conversion as many provinces may have to turn to coal for heating this winter, state-owned oil firm CNPC says. China is still, periodically, roiled by acute power shortages — a stark reminder that the country continues to require coal power to supplement its intermittent renewable power output. Southwest Guizhou province is seeking feedback on draft regulations for renewables projects to bundle output with coal in a "renewable plus coal" power model.

China is the world's largest hydrogen producer, according to Paris-based energy watchdog the IEA, but little is currently being used to decarbonise the transport sector. Production is emissions intensive as it is mainly from coal. Demand could grow faster if emissions are reduced by coupling hydrogen production with CCUS. But CCUS would add to China's already-high green transport fuel production costs. State-controlled refiner Sinopec has produced sustainable aviation fuel commercially but production costs of Yn40,000/t ($5,731/t) make it over five times the cost of domestically-produced conventional jet fuel, Sinopec says. China is making rapid inroads in the new energy vehicles market, which has so far not been explicitly targeted by US export controls.

China has not set an absolute cap on carbon emissions, although it is aiming for a peak before 2030. But reaching carbon neutrality is a bigger challenge, CREA says. Instead of aiming to peak CO_2 emissions early, or minimise the level of peak emissions, industries may "make use of the time before emissions are due to peak to develop and expand, including in ways that increase emissions", it fears.

ENERGY TRANSITION

Greater use of new energy vehicles and slowing population growth will stem China's oil demand in the coming years

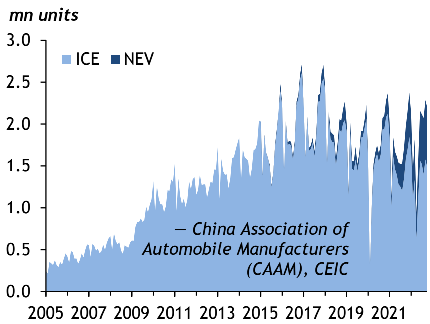
China NEV growth to hasten oil demand peak

Faster-than-expected growth in China's new energy vehicle (NEV) market will contribute to a peak in oil demand before 2030, according to the latest forecast from state-owned CNPC's research institute Etri. But energy security concerns could lead to crude production being sustained at the same level for longer than expected.

Etri's forecast looked at three scenarios — sustainable transition with fossil and non-fossil fuels complementing each other, energy independence with advancements in domestic clean energy technology, and renewable energy acceleration with large-scale deployment of hydrogen, wind and solar power, as well as increased energy storage and power-sector modernisation.

China's primary energy demand will plateau at about 6.18bn t of coal equivalent by around 2035 under the sustainable transition scenario, the think-tank says. Etri's forecast this time last year suggested a peak of 6bn t of coal equivalent by 2030-35. Industrial energy demand is likely to peak during 2025-30 and then fall by 1.7pc/yr over 2030-60, as China scales down its growth of heavy industries.

China: Vehicle sales



Electricity and renewable power sources will meet more of China's incremental energy demand from 2030, as the country steps up its production and use of NEVs. NEVs — including battery electric and plug-in hybrids — have entered a "new market-driven stage", where sales are growing at a faster pace than expected, Etri says. It previously forecast that 50pc of China's total auto fleet would be NEVs by around 2042 but Etri now expects that 50pc of China's vehicles will be NEVs before 2040. NEVs accounted for 40pc of passenger car sales in China in January-October, up from 18pc a year earlier (*see graph*). Chinese state-owned oil firms see NEVs as the biggest threat to gasoline demand growth — sales are forecast to rise to 6.5mn units this year, the China Passenger Car Association says, and 8.4mn units in 2023.

Paris-based energy watchdog the IEA expects China to lead electric vehicle sales through to 2030. The agency's latest *Renewables 2022* report this month forecast that China will install almost half of new global renewable power capacity over 2022-27 as growth accelerates in the next five years, despite a phase-out of wind and solar power subsidies.

Oil output extended

Oil demand is expected to peak at 18.2mn b/d before 2030 because of rapid NEV growth, largely unchanged from the institute's forecast last year. Oil demand may fall this year by 740,000 b/d to 14.7mn b/d, *Argus* estimates.

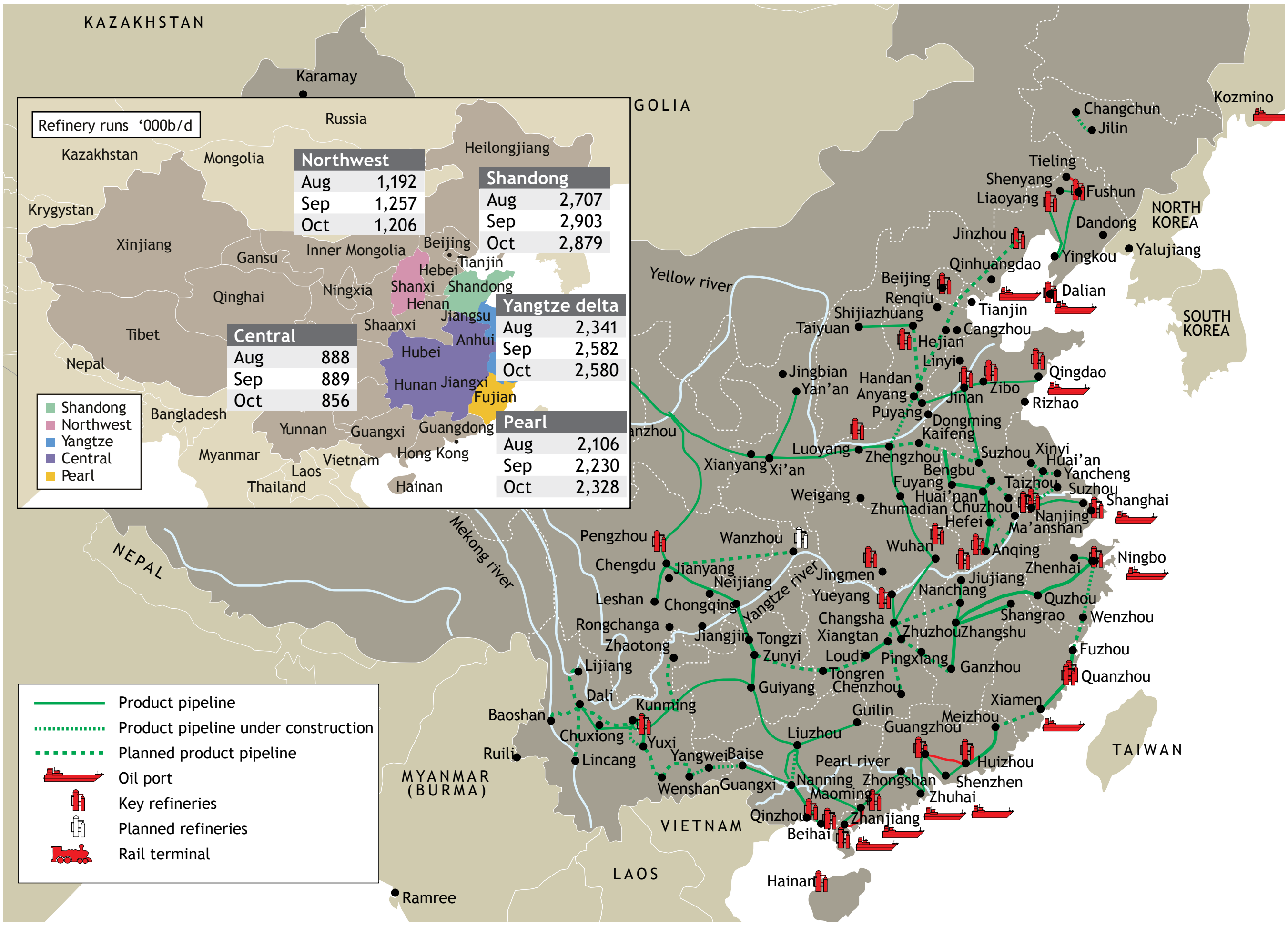
The government's increasing emphasis on energy security requires oil companies to prevent domestic crude production from falling. Etri's latest forecast predicts that China's crude output will stabilise at 4mn b/d and will not begin to decline until 2040 — five years later than its previous forecast indicated. This suggests that Chinese state-owned firms must continue devoting large amounts of capital expenditure from now until 2040 to offsetting declining output from older fields. Crude output rose on the year by 100,000 b/d in January-October to 4.05mn b/d, and imports fell on the year by 330,000 b/d to 9.94mn b/d as demand faltered.

China's slowing population growth may stifle economic output, further eroding energy demand. Population growth will peak before 2025, compared with 2030 in last year's forecast. The rate of urbanisation will be slower than expected and reach 78pc by 2060, compared with an earlier forecast of 80pc by 2060, Etri says. India is poised to overtake China as the most populous country globally next year, Washington-based think-tank Pew Research Center says. China's population will decline from 1.43bn this year to 1.31bn by 2050 and fall below 800mn by 2100, according to Pew estimates.

PRODUCTS

Refinery production						’000 b/d
	Refinery runs	Gasoline	Jet-kerosine	Diesel	Fuel oil	LPG
Nov	14,513	3,805	595	4,092	918	1,549
Dec	13,830	3,689	483	4,059	904	1,406
Jan 22	14,105	3,787	749	3,796	902	1,551
Feb	13,848	3,718	736	3,726	885	1,523
Mar	13,796	3,741	668	3,738	767	1,608
Apr	12,607	3,115	460	3,547	791	1,482
May	12,696	3,164	387	3,532	852	1,591
Jun	13,368	3,285	556	3,577	1,000	1,588
Jul	12,530	3,231	649	3,337	978	1,640
Aug	12,636	3,281	729	3,378	992	1,448
Sep	13,823	3,379	647	4,264	983	1,542
Oct	13,803	3,370	619	4,532	816	1,542

China downstream infrastructure



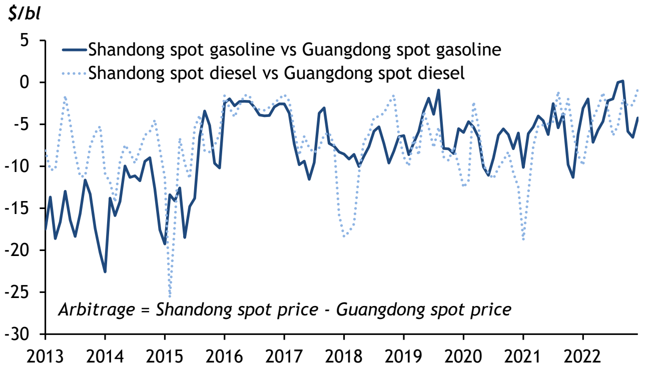
PRODUCT PRICES

Djeno vs Tupi: Shandong refining netbacks

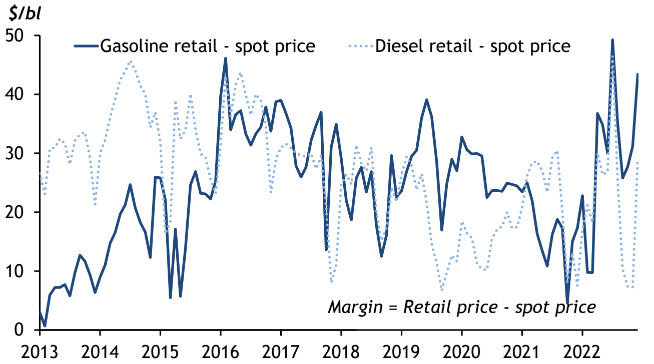
Date	Djeno-Tupi (import cost)	Tupi refining margin	Switching opportunity
Mar 22	1.45	11.29	3.00
Apr 22	2.18	-19.67	0.13
May 22	0.97	-17.40	1.66
Jun 22	1.96	-7.78	1.68
Jul 22	2.12	-28.31	1.47
Aug 22	-0.11	-27.47	0.85
Sep 22	-0.14	-18.11	-0.66
Oct 22	0.85	-17.06	-2.93
Nov 22	0.80	-16.39	1.87

Calculation compares the delivered ex-ship cost of Djeno and Tupi; their respective GPW refining margins based on gasoline, diesel and fuel oil prices/yields; and the profit/loss to be made from switching from Djeno to Tupi

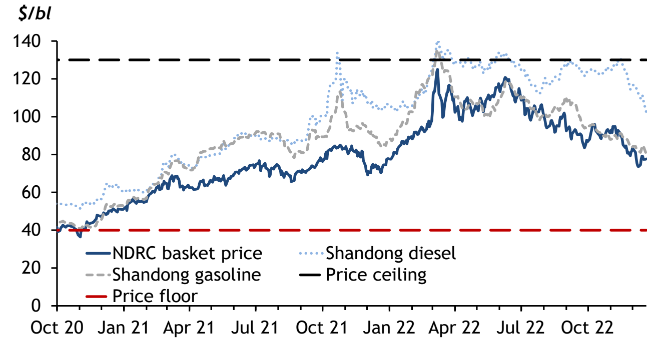
Shandong-Guangdong arbitrage



Gasoline and diesel retail margins



NDRC crude basket vs spot prices



Chinese retail price caps *Yn/t*

	92 Ron gasoline^		10ppm diesel^	
	16 Dec	16 Nov	16 Dec	16 Nov
Northeast: Heilongjiang	9,410	10,330	8,385	9,270
Jilin	9,410	10,330	8,385	9,270
Liaoning	9,410	10,330	8,385	9,270
North: Beijing‡	9,445	10,365	8,420	9,305
Tianjin	9,410	10,330	8,385	9,270
Hebei	9,410	10,330	8,385	9,270
Shanxi	9,480	10,400	8,440	9,325
Hohhot	9,425	10,345	8,400	9,285
East: Shanghai	9,425	10,345	8,390	9,275
Jiangsu	9,465	10,385	8,425	9,310
Zhejiang	9,465	10,385	8,440	9,325
Shandong	9,420	10,340	8,395	9,280
Central: Hubei	9,435	10,355	8,410	9,295
Hunan	9,475	10,395	8,470	9,355
Henan	9,430	10,350	8,405	9,290
Anhui	9,460	10,380	8,435	9,320
Jiangxi	9,465	10,385	8,445	9,330
South: Guangdong	9,490	10,410	8,455	9,340
Fujian	9,485	10,405	8,450	9,335
Hainan	9,555	10,475	8,520	9,405
Guangxi	9,555	10,475	8,520	9,405
Southwest: Chongqing	9,625	10,545	8,595	9,480
Chengdu, Sichuan*	9,630	10,550	8,620	9,505
Chongqing, Sichuan*	9,625	10,545	8,595	9,480
Guiyang, Guizhou*	9,590	10,510	8,545	9,430
Kunming, Yunnan*	9,620	10,540	8,575	9,460
Northwest: Xinjiang	9,190	10,110	8,280	9,165
Xi'an, Shaanxi*	9,395	10,315	8,395	9,280
Xining, Qinghai*	9,375	10,295	8,430	9,315
Gansu	9,395	10,315	8,405	9,290
Ningxia	9,415	10,335	8,385	9,270

**Prices are for the listed city, not the province. NDRC guidelines stipulate that the highest wholesale prices must be at least Yn400/t below maximum retail prices. ‡Beijing has stricter vehicle emissions standards. Prices listed are for China 4. ^Prices apply to fuel compatible with China 4 vehicle emissions standards.* *— NDRC*

Shandong independent/official price comparison *$/bl*

		18 Nov	25 Nov	2 Dec	9 Dec	16 Dec
Gasoline, 90 Ron						
Lijin*	Ex-refinery prices	133.81	132.19	132.29	131.49	132.41
	± NDRC wholesale cap	-32.08	-30.84	-36.16	-31.18	-27.59
	% of wholesale cap	80.66	81.08	78.53	80.83	82.75
Dongming†	Ex-refinery prices	135.97	135.84	134.86	132.71	135.49
	± NDRC wholesale cap	-29.92	-27.19	-33.59	-29.96	-24.52
	% of wholesale cap	81.96	83.32	80.06	81.58	84.68
Diesel, 500ppm						
Lijin*	Ex-refinery prices	165.50	159.15	161.52	155.63	147.85
	± NDRC wholesale cap	-2.17	-5.46	-8.56	-7.97	-13.06
	% of wholesale cap	98.71	96.68	94.97	95.13	91.88
Dongming†	Ex-refinery prices	169.26	162.91	161.52	158.38	151.92
	± NDRC wholesale cap	1.60	-1.70	-8.56	-5.21	-9.00
	% of wholesale cap	100.95	98.97	94.97	96.81	94.41
Crude price						
Shengli**	Ex-field prices	103.82	103.86	107.31	108.50	106.72

*Independent differential to NDRC price caps assumes a Yn400/t wholesale discount to retail cap. *The 70,000 b/d Lijin refinery runs a blend of imported straight-run fuel oil and domestic crude, producing China 6 standard gasoline and diesel since January 2018. †Dongming has halted production of 89R gasoline. **Sinopec produces 540,000 b/d of heavy, sour Shengli crude in Shandong. Since November 2015, it has set prices retrospectively.*

PRODUCT MARKETS

Independent refiner crude import quotas *'000 b/d*

Refinery	Province	CDU	Quota max	2021 1st&2nd	2022 1st&2nd
Hengli	Liaoning	400	400	340	400
Rongsheng	Zhejiang	800	800	340	600
ChemChina	Shandong	466	400	291	257
Huajin	Liaoning	120	166	141	166
Dongming	Shandong	150	150	150	150
Panjin North Asphalt	Liaoning	140	140	105	0
Hongrun	Shandong	114	106	106	106
Wanda Tianhong	Shandong	100	88	75	75
Wonfull	Shandong	116	83	58	0
Qingyuan	Shandong	164	81	57	0
Xinhai	Hebei	120	74	63	74
Yanchang	Shaanxi	348	72	61	54
Lijin	Shandong	70	70	60	70
Hengyuan	Shandong	70	70	70	0
Tenglong Aromatic	Fujian	127	69	60	80
Jingbo	Shandong	70	66	56	66
Haiyou	Shandong	70	64	45	0
Jincheng	Shandong	118	60	51	60
Dongfang Hualong	Shandong	60	60	45	60
Qingyishan	Shandong	60	60	42	0
Dongying Lianhe	Shandong	118	56	48	48
Yatong	Shandong	70	55	55	47
Luqing	Shandong	164	52	52	52
Kenli	Shandong	60	50	43	43
Shenchi	Shandong	52	50	43	50
Wudi Xinyue	Shandong	48	48	34	48
Hubei Jinao	Hubei	100	46	39	46
Jiangsu Xinhai	Jiangsu	60	46	39	46
Henan Fengli	Henan	52	44	44	44
Qirun	Shandong	44	44	44	44
Shengxing	Shandong	44	44	44	44
Haike Ruilin	Shandong	46	42	42	36
Chengda New Energy	Shandong	60	42	42	42
Zibo Xintai	Shandong	44	40	40	40
Wantong	Shandong	130	39	39	39
Zhonghai Jingxi	Shandong	46	37	26	0
Rizhao Lanqiao	Shandong	70	36	36	27
Hualian	Shandong	80	34	29	29
Fuyu	Shandong	44	33	28	0
Qicheng	Shandong	70	32	27	32
Kelida	Shandong	44	30	30	30
Yuhuang	Shandong	60	29	0	0
Haike Chemical	Shandong	44	19	19	19
Zhanjiang Dongxing	Guangdong	100	26	0	0
PetroChina International	na	na	30	17	12
Dalian Jinyuan	Liaoning	44	16	16	16
Sinochem Energy	Shandong	na	18	13	0
Khorgos PetroChina Int.	Xinjiang	na	16	9	6
Sinopec Int.	na	na	16	8	0
Huayue Group	Shandong	na	7	7	5
Guangxi PetroChina Int.	Guangxi	na	11	7	0
Alashankou PetroChina Int.	Xinjiang	na	12	6	4
CNOOC Beijing Trading	Beijing	na	12	4	0
Erlian City Gaolu	Inner Mongolia	na	3	3	4
CPC Fuel oil	na	na	na	0	0
China Unit. Eng. Trading	na	na	na	3	3
Lianhe	Heilongjiang	na	na	2	0
Lianhe	Fujian	na	2	2	2
Zhenhua	na	na	2	1	0
Baota	Ningxia	150	43	0	0
Shenghong	Jiangsu	320	318	0	159
Total		**5,847**	**4,562**	**3,157**	**3,234**

— China Ministry of Commerce

Product prices* (week ending)

	25 Nov	2 Dec	9 Dec	16 Dec
China	*Yuan/t*			
HSFO (cracked) fob south China barges (STS)	6,164	6,070	5,918	5,830
	$/t			
VLSFO 0.5% 380 Zhoushan Bunker dob	647.20	643.70	614.30	582.20
HSFO 180 c+f south China (month 1)	409.27	389.54	376.18	378.63
HSFO 180 c+f south China (month 2)	407.17	387.29	376.88	378.73
HSFO 180 c+f south China (month 3)	409.02	390.04	379.63	379.48
South Korea/Japan	*$/t*			
HSFO 180 fob South Korea	409.25	389.55	376.20	378.60
Naphtha c+f Japan	699.60	673.25	633.98	632.73
Singapore	*$/bl*			
Gasoil 0.5%	118.51	115.48	106.64	110.76
Gasoil 0.005%	119.69	116.05	108.62	113.95
Gasoil 0.005% diff to MOPS	2.46	1.42	0.98	1.18
Gasoil 0.001%	120.19	116.55	109.12	114.42
Gasoil 0.001% diff to MOPS	2.96	1.92	1.48	1.65
Gasoline 92R	91.32	86.79	82.28	83.02
Naphtha	74.12	70.92	65.89	65.52
Jet-kerosine	116.75	114.35	104.90	108.90
HSFO 180 ($/t)	398.25	378.55	365.20	367.60

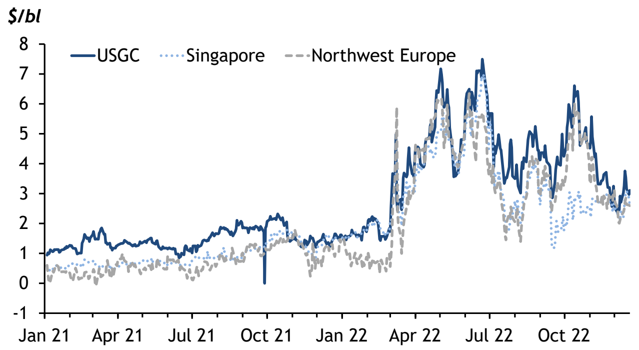
*$1 = Yn 6.96302 16 Dec *Average weekly prices*

Product prices *$/bl*

	Jul 22	Aug	Sep	Oct	Nov	Dec*
Singapore						
Gasoil 0.005%	144.76	139.23	128.58	136.76	127.11	112.51
Gasoil 0.005% diff to MOPS	2.22	0.83	1.53	4.93	3.23	1.08
Gasoil 0.001%	145.27	139.73	129.08	137.25	127.61	112.99
Gasoil 0.001% diff to MOPS	2.72	1.33	2.03	5.42	3.73	1.56
Gasoline 92R	116.35	107.25	93.79	91.16	93.11	83.85

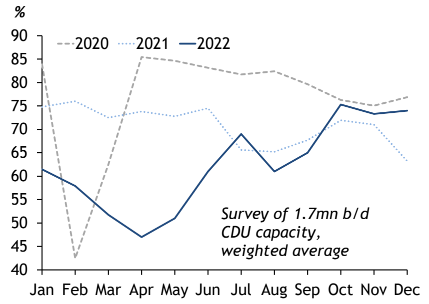
** month to date*

Regional refining margins



PRODUCTS

Shandong independent run rates



Gasoline demand supports Shandong crude runs

Shandong independent-sector crude run rates edged higher in December. The end of Covid-19 restrictions and rising product exports have boosted gasoline margins.

The weighted average crude unit utilisation rate of 15 Shandong independents surveyed by *Argus* rose to 74pc in December, higher by one percentage point from November. This increased their crude use by around 10,000 b/d, to 3.4mn b/d. The lifting of travel restrictions has improved gasoline market sentiment.

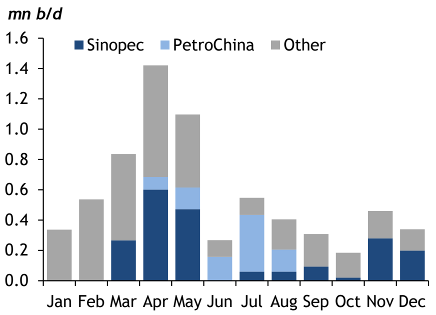
Dongying-based independent Wanda raised run rates at its 100,000 b/d Tianhong plant to around 80pc, up by 10 percentage points from November. Wanda has begun selling gasoline cargoes loading in February. Refiner Fuhai's 118,000 b/d Lianhe and 80,000 b/d Fuhai refineries raised run rates by five percentage points month on month, to 75pc. Fuhai sold at least 12,000 b/d of 92 Ron gasoline in December to buyers including state-run Sinopec.

Private-sector Jincheng's 118,000 b/d refinery in Zibo city lowered its operating rate by five percentage points. This follows an increase in reported Covid-19 infection rates at the plant. Its delayed coking unit remains closed for maintenance.

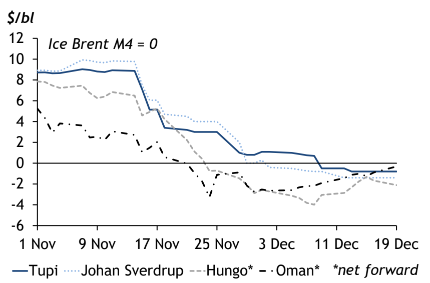
Independent Hengrunde reduced operating rates at its 44,000 b/d refinery in Dongying by 15 percentage points to 65pc this month. Henrungde has reduced diesel production to 12,000 b/d from around 15,000 b/d in November, in response to a seasonal downturn in construction-sector demand. The 44,000 b/d Shengxing refinery completed maintenance and resumed operations in mid-December. No other plants have turnarounds planned this month. Independent refineries Chengda and Haike Chemical shut as part of Shandong's Yulong refinery consolidation plan in September but some secondary units continue to produce gasoline.

CRUDE

China CDU shutdowns



Crude delivered China



IEA outlook curbs crude price falls

Atlantic basin benchmark North Sea Dated fell by $1.16/bl to $79.02/bl over 28 November-16 December. Mideast Gulf medium sour benchmark Dubai fell by $2.26/bl to $74.57/bl in London trade.

Paris-based energy watchdog the IEA raised its outlook for global oil demand, preventing further price falls. The agency says it was surprised by recent resilient oil consumption data and revised higher its forecasts for demand growth this year and next. The oil market is heading into a period of significant uncertainty at a time of low global stocks, raising the possibility of a price rally, the IEA says.

China's purchases of some long-haul cargoes rose in November. Exports of Libyan crude to China for November-loading increased to 153,000 b/d from 64,000 b/d in October. November-loading Iraqi Kirkuk blend crude marketed by the Kurdistan Regional Government sailed to China for a second consecutive month at 33,000 b/d, broadly steady from October.

But North Sea crude exports to China dipped in November. Nearly 200,000 b/d made the voyage to China in November, according to oil analytics firm Vortexa, on three very large crude carriers (VLCCs) — two 2mn bl cargoes of Forties and one of medium sour Johan Sverdrup. This was down from around 266,000 b/d in October, when two VLCCs with Forties and two with Johan Sverdrup went to China.

China continues to buy Russian crude, although Russian seaborne exports since 5 December have fallen against full-month November shipments. Combined Baltic and Black Sea Urals crude loadings over 5-14 December were down by 24pc, at 1.27mn b/d compared with November. Exports of ESPO Blend from Russia's far east port of Kozmino were 27pc lower over 5-14 December at 604,000 b/d, according to Vortexa. Around 37pc of the volumes are moving to China.

CRUDE MARKETS

Crude Prices							$/bl
Benchmark	**Basis**	**Jul 22**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec***
North Sea Dated		112.63	99.63	89.76	93.11	91.10	80.22
Ice Brent M1		105.13	97.59	91.11	93.19	91.41	80.85
Ice Brent M2		100.93	96.29	89.93	91.37	90.45	81.04
Ice Brent M3		98.14	95.07	88.49	89.60	89.48	80.93
IFAD Murban		105.96	98.06	92.45	93.53	90.90	79.65
Dubai swap M1		97.59	94.10	88.24	88.93	84.42	75.76
Dubai swap M2		93.83	91.63	85.50	86.35	83.36	75.10
Dubai swap M3		91.08	90.04	83.47	84.39	82.62	74.96
DME Oman M1		103.21	97.00	90.80	90.79	86.15	76.67
WTI Cushing		99.84	91.57	83.86	87.26	84.78	75.50
Brent-Dubai EFS	Dubai	11.33	6.07	5.61	6.93	8.05	5.65
China/Asia Pacific	**Basis**	**Jul 22**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec***
Djeno des Shandong	Ice Brent	7.20	5.55	4.16	5.97	4.14	-2.61
ESPO Blend des Shandong	Ice Brent	-1.00	0.50	1.17	1.94	1.02	-4.71
Johan Sverdrup des Shandong	Ice Brent	10.00	6.38	4.36	7.21	5.67	-0.93
Oman des Shandong	Ice Brent	-9.51	-9.86	-9.95	-9.50	-9.64	-10.50
Tupi des Shandong	Ice Brent	10.25	6.12	4.68	6.93	5.02	0.03
ESPO Blend fob Kozmino	Dubai swap	-17.10	-9.27	-3.76	-1.64	-4.31	-5.70
WTI CFR South Korea	Dubai swap M2	14.00	9.23	8.27	9.97	10.90	8.46
North Sea	**Basis**	**Jul 22**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec***
Urals CIF NWE	North Sea Dtd	-29.57	-25.00	-21.17	-19.83	-25.69	-31.76
Forties fob NWE	North Sea Dtd	4.99	1.86	-0.33	0.41	0.98	1.08
Johan Sverdrup fob NWE	North Sea Dtd	3.67	3.51	-1.63	-0.87	-2.46	-5.79
Mideast Gulf	**Basis**	**Jul 22**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec***
Basrah Medium fob Iraq	OFP	0.30	0.30	0.56	1.00	1.00	1.00
Basrah Heavy fob Iraq	OFP	-0.50	-0.50	-0.50	-0.38	0.00	0.00
Upper Zakum fob UAE	Dubai swap M2	9.29	5.03	5.42	4.79	2.83	1.34
Murban fob UAE	Dubai swap M2	12.14	6.53	6.95	7.29	7.53	4.55
West Africa	**Basis**	**Jul 22**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec***
Bonny Light fob Nigeria	North Sea Dtd	7.42	3.99	1.80	1.87	-0.13	-0.32
Cabinda fob Angola	North Sea Dtd	5.00	4.83	1.73	2.09	0.78	-1.92
Girassol fob Angola	North Sea Dtd	6.52	6.43	2.45	2.50	1.67	-1.64
Djeno fob Congo	North Sea Dtd	-0.21	-0.83	-2.36	-2.27	-3.85	-6.65
Doba fob Chad	North Sea Dtd	2.12	2.45	-0.21	-0.07	-0.03	-3.18
Americas	**Basis**	**Jul 22**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec***
WCS fip Houston	Nymex CMA	-8.92	-9.20	-12.19	-17.62	-17.09	-12.99
WTI fob Houston	Ice Brent	2.83	-1.78	-1.96	-1.36	-4.08	-4.42
Castilla Blend fob Colombia	Ice Brent	-7.03	-7.59	-8.44	-10.87	-14.12	-17.15
Medanito fob Argentina	Ice Brent	-0.15	0.69	-4.59	-6.69	-5.60	-8.11

** month to date*
Calendar month average

OIL MARKETS

Spot crude: Des Shandong				$/bl
Date	Grade	Delivery	± Ice Brent	Outright
30 Nov	Djeno	Feb 23	-0.50	84.10
7 Dec	Djeno	Feb 23	-2.50	77.34
14 Dec	Djeno	Feb 23	-3.20	77.20
21 Dec	Djeno	Feb 23	-3.20	77.19
30 Nov	ESPO Blend	Jan 23	-3.50	81.29
7 Dec	ESPO Blend	Jan 23	-4.50	75.20
14 Dec	ESPO Blend	Jan 23	-5.00	75.56
21 Dec	ESPO Blend	Jan 23	-6.20	74.32
30 Nov	Tupi	Feb 23	0.80	85.40
7 Dec	Tupi	Feb 23	0.80	80.64
14 Dec	Tupi	Mar 23	-0.80	79.44
21 Dec	Tupi	Mar 23	0.70	80.87
30 Nov	Johan Sverdrup	Feb 23	0.00	84.60
7 Dec	Johan Sverdrup	Feb 23	-0.70	79.14
14 Dec	Johan Sverdrup	Mar 23	-1.40	78.84
21 Dec	Johan Sverdrup	Mar 23	-0.60	79.57
30 Nov	Oman	Jan 23	-10.50	74.29
7 Dec	Oman	Jan 23	-10.50	69.20
14 Dec	Oman	Jan 23	-10.50	70.06
21 Dec	Oman	Jan 23	-10.50	70.02

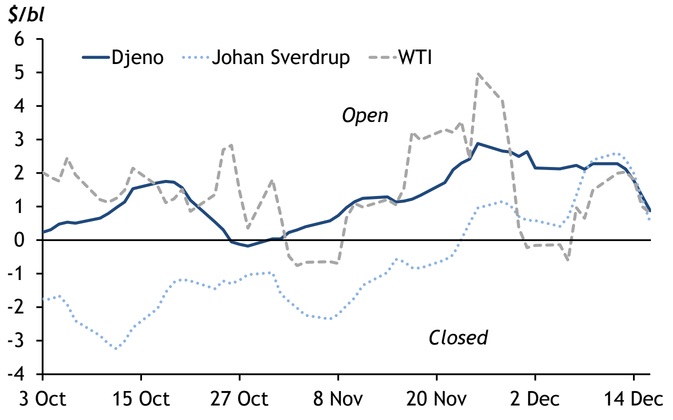
Formula pricing					$/bl
	Sep 22	Oct	Nov	Dec	Jan 23
Saudi Arabia fob Ras Tanura to Asia-Pacific: average Oman/Dubai					
Arab Super Light	+12.15	+9.15	+9.15	+9.15	+7.35
Arab Light	+9.80	+5.85	+5.85	+5.45	+3.25
Arab Medium	+7.75	+3.75	+4.00	+3.20	+2.10
Arab Heavy	+6.00	+2.20	+2.45	+1.25	-1.25
Iran: fob Kharg Island: average Oman/Dubai					
Iranian Light	+9.50	+5.55	+5.65	+5.35	+3.15
Iranian Heavy	+6.30	+2.30	+2.60	+1.85	+0.75
Iraq to Asia-Pacific: average Oman/Dubai					
Basrah Medium	+5.10	+1.40	+1.70	+0.90	-0.50
Basrah Heavy	+0.50	-2.50	-2.10	-3.25	-5.05
Kuwait: average Oman/Dubai					
Kuwait	+7.80	+3.80	+4.00	+3.20	+2.10
Yemen: North Sea Dated					
Masila	na	na	na	na	na
Nigeria: North Sea Dated					
Bonny Light	+5.91	+1.91	+1.74	+0.31	-0.50

Chinese gasoline/diesel prices				$/bl, exc. Tax
	30 Nov	07 Dec	14 Dec	21 Dec
Argus China Diesel (Bohai)	113.7	112.5	104.5	101.0
Argus China Diesel (YRD)	111.9	113.1	107.1	102.9
Bohai-YRD freight (diesel)	2.8	2.9	2.9	2.7
Bohai-YRD arbitrage, diesel	4.6	2.3	0.3	0.8
Argus China Gasoline (Bohai)	84.1	89.0	83.6	79.2
Argus China Gasoline (YRD)	83.1	86.2	84.3	81.8
Bohai-YRD freight (gasoline)	2.5	2.5	2.6	2.4
Bohai-YRD arbitrage, gasoline	3.5	5.3	1.9	-0.2

Prices are a volume-weighted average of deals done for fuels meeting the China 6 national standard in the Bohai / Yangtze river delta (YRD) markets, net of tax

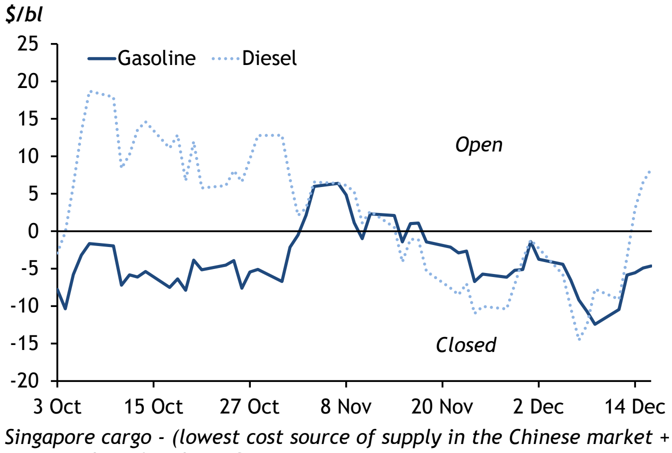
Official selling prices						$/bl
	Jun 22	Jul	Aug	Sep	Oct	Nov
Middle East						
Oman						
Oman MOG	102.40	107.22	112.93	103.21	97.00	90.80
Asia-Pacific						
Indonesia						
Minas	119.50	109.09	98.30	91.12	93.45	90.84
Duri	130.79	125.32	105.74	94.86	97.87	96.28
Malaysia						
Tapis	128.89	119.59	111.75	102.58	100.38	99.19
Opec basket	**117.72**	**108.60**	**101.90**	**95.32**	**93.57**	**89.73**
Japanese Crude Cocktail	116.92	116.38	112.46	110.86	na	na

Crude arbitrage: Atlantic basin to China



1) Djeno/Johan Svberdrup DES Shandong - Djeno/Johan Sverdrup fob N'Kossa/Mongstad + DFL + time spread + VLCC freight to China. 2) Murban fob UAE netforward to China - WTI fob Houston netforward to China

Product arbitrage: China to Singapore



Singapore cargo - (lowest cost source of supply in the Chinese market + 35,000t clean freight to Singapore)

REFINERY THROUGHPUTS

Refinery throughputs, Dec 22 (plan)										
	Province	Owner	Capacity†		Crude sources	Shut-downs	Dec (plan)			± Nov
			mn t/yr	*'000 b/d*		*'000 b/d*	*'000t*	*'000 b/d*	*% util.*	*'000 b/d*
Northeast*			**102.7**	**2,050**	**Local, some Russian rail**	**0**	**6,643**	**1,561**	**76**	**-69**
Dalian (PetroChina)	Liaoning	PC	20.5	410	Daqing, Russian rail, West Africa	0	1,254	295	72	-8
Daqing petrochemical	Heilongjiang	PC	9.5	190	Local (Daqing), some Russian rail	0	645	152	80	-8
Daqing refining & chemical	Heilongjiang	PC	5.5	110	Local (Daqing), some Russian rail	0	402	95	86	-4
Fushun	Liaoning	PC	11.5	230	Local (Daqing 85%, Fushun 15%)	0	684	161	70	-7
Harbin	Heilongjiang	PC	5.0	100	Daqing, Russian rail 20%	0	331	78	78	+1
Jilin petrochemical	Jilin	PC	10.0	200	Local (Daqing, Jilin), Russian rail 20%	0	739	174	87	-8
Jinxi	Liaoning	PC	6.5	130	Domestic, Imports 10%	0	431	101	78	-3
Jinzhou	Liaoning	PC	9.0	180	Domestic, Imports 30% (Chad, Russia etc)	0	478	113	63	-15
Liaohe, Panjin	Liaoning	PC	5.2	100	Local (Liaohe)	0	389	88	88	-3
Liaoyang	Liaoning	PC	10.0	200	Local (Liaohe, Daqing) Russian rail 20%	0	688	162	81	-6
Wepec Dalian	Liaoning	W	10.0	200	Mideast sour imports only	0	603	142	71	-8
Northwest*			**60.8**	**1,224**	**Xinjiang, local, Kazakh rail/pipeline**	**0**	**3,427**	**813**	**66**	**-19**
Changqing, Xianyang	Shaanxi	PC	5.0	100	Local (Changqing)	0	369	87	87	-2
Dushanzi	Xinjiang	PC	15.8	320	Xinjiang, Kazakh (40pc)	0	620	148	46	+2
Karamay	Xinjiang	PC	5.0	100	Xinjiang	0	419	99	99	-6
Lanzhou	Gansu	PC	15.9	320	Xinjiang, local	0	872	207	65	-5
Tahe	Xinjiang	S	4.7	94	Local (Tahe)	0	344	80	85	-10
Urumqi	Xinjiang	PC	9.4	190	Xinjiang, Kazakh	0	534	128	67	+0
Xian	Shaanxi	S	2.5	50	Local (Yanchang)	0	0	0	-	+0
Yumen	Gansu	PC	2.5	50	Xinjiang, local	0	268	64	128	+2
North*			**55.7**	**1,099**	**50:50 seaborne imports:domestic**	**0**	**2,820**	**657**	**60**	**-41**
Beijing Yanshan	Beijing	S	13.5	270	Daqing, some imports	0	631	149	55	-8
Cangzhou	Hebei	S	3.6	71	Domestic 50%, Imports (Oman etc) 50%	0	205	48	68	-4
Dagang	Tianjin	PC	5.1	98	Local (Dagang)	0	391	89	91	-7
Huabei, Renqiu	Hebei	PC	10.2	200	Local (Huabei)	0	178	41	21	-2
Shijiazhuang	Hebei	S	8.1	160	Local (Huabei), Russian rail 30%	0	447	105	66	-8
Tianjin	Tianjin	S	15.2	300	Local (Dagang) 50%, Imports (sweet) 50%	0	968	225	75	-12
East*			**131.6**	**2,608**	**2/3 imports**	**0**	**9,053**	**2,113**	**81**	**-45**
Jinan	Shandong	S	8.3	160	Local (Shengli)	0	444	100	63	-5
Qilu, Zibo	Shandong	S	18.8	370	Local 50%, Imports (ME, Waf) 50%	0	938	218	59	-5
Qingdao	Shandong	S	10.0	200	Imports only (Mideast sour crude)	0	866	204	102	-3
Qingdao Petrochemical	Shandong	S	5.0	100	Imports only (Mideast sour crude)	0	280	66	66	+0
Yangtze river delta			89.5	1,778	2/3 imports	0	6,524	1,525	86	-32
Gaoqiao, Shanghai	Shanghai	S	13.1	260	Imports (sweets) 50%, local	0	957	224	86	-5
Jinling, Nanjing	Jiangsu	S	19.0	378	Imports 50%	0	1,677	392	104	-4
Shanghai (Jinshan)	Shanghai	S	16.1	320	Imports (light & medium) 75%	0	1,039	243	76	-6
Yangzi, Nanjing	Jiangsu	S	14.1	280	Imports (sours) 60%, Shengli	0	934	218	78	-6
Zhenhai, Ningbo	Zhejiang	S	27.2	540	Imports; over 2/3 sour	0	1,917	448	83	-11
Central*			**55.2**	**1,092**	**40-50% imports (Angola etc)**	**199**	**2,826**	**659**	**60**	**-18**
Anqing	Anhui	S	9.1	180	Imported sours, Shengli, Daqing	129	62	14	8	+14
Changling, Yueyang	Hunan	S	11.7	230	Shengli 60-70%, imports	0	696	162	70	-39
Jingmen	Hubei	S	5.7	112	Domestic 50%, imports 50%	70	116	27	24	+27
Jiujiang	Jiangxi	S	10.0	200	Shengli (60-70%), imports	0	739	174	87	+0
Luoyang	Henan	S	8.1	160	Imports (Oman/Russia) 50%+, domestic	0	482	112	70	-14
Wuhan	Hubei	S	8.6	170	Domestic, imports	0	606	141	83	-5
Yueyang Petchem (Baling)	Hunan	S	2.0	40	Shengli, Daqing, imports	0	126	29	73	-1
South*			**77.7**	**1,564**	**100% imports**	**0**	**5,199**	**1233.0**	**79**	**-12**
Fujian, Quanzhou	Fujian	S	14.0	280	Imports (Yemen, Oman etc)	0	773	182	65	-14
Hainan	Hainan	S	8.0	160	Imports (Mideast, Angola)	0	645	152	95	+0
Qinzhou	Guangxi	PC	11.5	240	Imports (Light, sweet Angolan/Australian)	0	747	184	77	+0
Pearl river delta			44.2	884	100% imports	0	3,033	715	81	+2
Guangzhou	Guangdong	S	15.7	314	Imports (Angola, Oman etc)	0	893	211	67	+0
Maoming	Guangdong	S	23.5	470	Imports (Mideast sour crude)	0	1,736	409	87	+0
Zhanjiang Dongxing	Guangdong	S	5.0	100	Imports (Libya, Angola etc)	0	403	95	95	+2
Southwest			**23**	**460**			**1,626**	**383**	**83**	**+16**
Anning	Yunnan	PC	13.0	260	Imports (Mideast Guilf)	0	938	221	85	+10
Pengzhou	Sichuan	PC	9.7	200	Imports /Light, sweet Kazakhstan)	0	688	162	81	+6
Total Sinopec*			**322.3**	**6,401**		**199**	**18,925**	**4,397**	**69**	**-457**
Total PetroChina*			**220.4**	**4,408**		**0**	**12,324**	**3,288**	**75**	**-11**
Total above 47 refineries			**483.7**	**10,097**		**199**	**29,967**	**7,036**	**70**	**-204**
Total China*†◊			**836.7**	**16,734**		**339**	**60,853**	**14,330**	**86**	**-175**
PetroChina + S'pec % of total China				**65**				**54**		
Above 47 refineries % of total China				**60**				**49**		

**China total and company totals include plants not listed. Regional totals are for listed plants only. PC total includes refineries under CNPC and Wepec. †China total refinery capacity includes 46 major PC/S-owned plants identified as well as 730,000 b/d of, smaller plants operated by the two oil giants. ◊ Additionally, it includes CNOOC's Huizhou refinery in Guangdong and 10 of the country's largest teakettle refineries totalling 1.36mn b/d.*
PC=PetroChina W=Wepec S=Sinopec

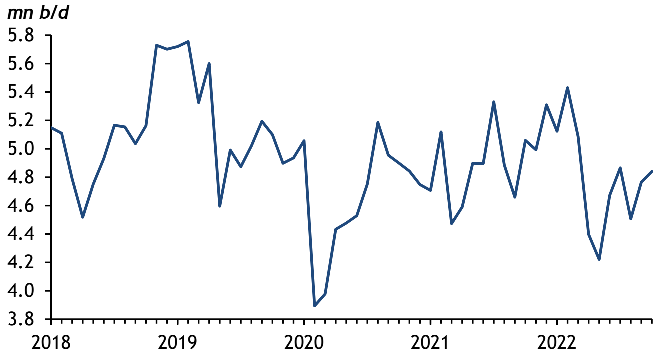
REFINERY THROUGHPUTS

Refinery throughputs, Oct 22	Oct 22			Sep 22			Jan-Oct			± 2021	
	'000t	*'000 b/d*	%util.	*'000t*	*'000 b/d*	%util.	*'000t*	*'000 b/d*	%util.	*'000 b/d*	%
Northeast*	**6,983**	**1,641**	**80**	**6,792**	**1,650**	**81**	**64,384**	**1,543**	**75**	**-101**	**-7**
Dalian (PetroChina)	1,306	308	75	1,365	332	81	13,009	312	76	-39	-13
Daqing petrochemical	670	158	83	609	148	78	6,654	160	84	-20	-13
Daqing refining & chemical	430	101	92	407	99	90	3,927	94	86	-26	-28
Fushun	713	168	73	775	189	82	6,858	165	72	+15	+9
Harbin	331	78	78	325	79	79	2,982	72	72	+2	+3
Jilin petrochemical	773	182	91	732	178	89	6,235	150	75	+44	+29
Jinxi	447	105	81	454	111	85	4,253	102	79	+6	+6
Jinzhou	548	129	72	493	120	67	5,431	130	73	-5	-4
Liaohe, Panjin	424	96	96	368	86	86	3,286	76	76	-11	-15
Liaoyang	713	168	84	748	182	91	6,962	167	84	+4	+2
Wepec Dalian	628	148	74	518	126	63	4,786	115	58	-72	-63
Northwest*	**3,667**	**869**	**71**	**3,797**	**929**	**76**	**32,986**	**798**	**65**	**-56**	**-7**
Changqing, Xianyang	386	91	91	386	94	94	3,552	85	85	-12	-14
Dushanzi	637	152	48	682	168	53	7,011	171	53	+10	+6
Karamay	459	109	109	473	116	116	3,934	95	95	-10	-11
Lanzhou	950	225	70	972	238	74	8,134	197	62	-34	-17
Tahe	361	84	89	370	89	95	2,723	65	69	+2	+3
Urumqi	549	131	69	594	146	77	5,843	142	75	+5	+4
Yumen	326	77	154	319	78	156	1,791	43	87	-19	-44
North*	**2,973**	**692**	**63**	**2,778**	**667**	**61**	**31,153**	**739**	**67**	**-43**	**-6**
Beijing Yanshan	654	154	57	655	159	59	6,724	161	60	-30	-19
Cangzhou	211	49	69	210	50	70	2,103	50	70	+4	+8
Dagang	429	98	100	411	97	99	4,120	96	98	+37	+39
Huabei, Renqiu	186	43	22	85	20	10	3,285	77	39	-65	-84
Shijiazhuang	461	108	68	393	95	59	4,107	98	61	-18	-18
Tianjin	1,033	240	80	1,024	246	82	10,813	256	85	+30	+12
East*	**8,712**	**2,034**	**78**	**8,612**	**2,078**	**80**	**80,365**	**1,914**	**73**	**-109**	**-6**
Jinan	458	103	64	566	132	83	4,391	101	63	-12	-12
Qilu, Zibo	905	210	57	908	218	59	8,243	195	53	+9	+5
Qingdao	876	207	104	878	214	107	8,641	208	104	+12	+6
Qingdao Petrochemical	276	65	65	329	80	80	2,694	65	65	0	0
Yangtze river delta	**6,195**	**1,449**	**82**	**5,931**	**1,434**	**81**	**56,397**	**1,345**	**76**	**-118**	**-9**
Gaoqiao, Shanghai	890	208	80	958	232	89	8,389	200	77	-25	-13
Jinling, Nanjing	1,570	367	97	1,502	363	96	15,216	363	96	+25	+7
Shanghai (Jinshan)	953	223	70	847	205	64	6,686	159	50	-100	-63
Yangzi, Nanjing	958	224	80	881	213	76	7,403	177	63	-38	-22
Zhenhai, Ningbo	1,825	427	79	1,744	421	78	18,702	446	83	+20	+5
Central*	**3,633**	**846**	**78**	**3,138**	**755**	**69**	**36,086**	**857**	**79**	**-12**	**-1**
Anqing	564	131	73	606	5	3	5,801	137	76	-8	-6
Changling, Yueyang	805	187	81	779	5	2	8,363	198	86	+74	+37
Jingmen	339	79	71	0	0	0	3,757	89	79	-23	-26
Jiujiang	662	156	78	641	156	78	5,960	143	72	-10	-7
Luoyang	550	128	80	533	128	80	4,827	114	72	-27	-24
Wuhan	592	137	81	580	139	82	6,236	148	87	-14	-10
Yueyang Petchem (Baling)	121	28	70	0	0	0	1,142	27	68	-3	-11
South*	**5,098**	**1,210**	**77**	**4,836**	**1,186**	**76**	**52,524**	**1,271**	**81**	**-122**	**-10**
Fujian, Quanzhou	785	185	66	782	191	68	7,183	173	62	-43	-25
Hainan	612	144	90	565	138	86	4,786	115	72	-24	-21
Qinzhou	756	186	78	732	186	78	7,562	190	79	-16	-8
Pengzhou	654	154	77	616	150	75	7,010	174	84	+2	+1
Pearl river delta	**2,946**	**695**	**79**	**2,756**	**671**	**76**	**32,993**	**793**	**90**	**+133**	**+17**
Guangzhou	907	214	68	826	201	64	10,629	256	81	+22	+9
Maoming	1,657	391	83	1,565	381	81	18,678	449	96	+124	+28
Zhanjiang Dongxing	382	90	90	366	89	89	3,686	89	89	-13	-15
Southwest	**1,537**	**362**	**79**	**1,450**	**353**	**77**	**15,746**	**384**	**82**	**+14**	**+4**
Anning	883	208	80	833	203	78	8,736	210	81	+12	+6
Pengzhou	654	154	77	616	150	75	7,010	174	84	+2	+1
Total Sinopec*	**20,555**	**4,840**	**76**	**19,585**	**4,766**	**75**	**199,317**	**4,753**	**75**	**-65**	**-1**
Total PetroChina*	**14,262**	**3,359**	**76**	**13,847**	**3,369**	**76**	**135,319**	**3,249**	**74**	**-198**	**-6**
Total above 47 refineries	**31,066**	**7,292**	**72**	**29,953**	**7,265**	**72**	**297,498**	**7,122**	**71**	**-443**	**-6**
Total China*†◊	**58,617**	**14,406**	**88**	**56,808**	**13,658**	**84**	**554,558**	**13,317**	**82**	**-740**	**-6**
PetroChina + S'pec % of total China		**57**			**60**			**60**			
Above 47 refineries % of total China		**51**			**53**			**53**			

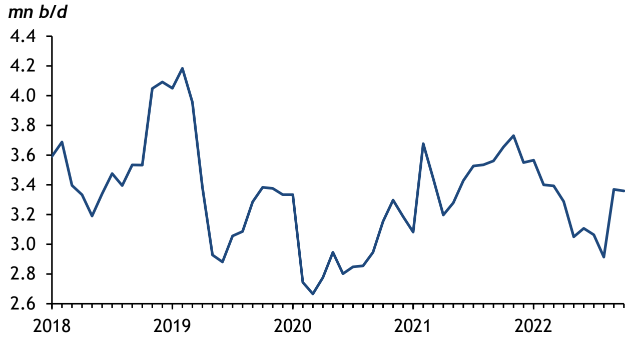
**China total and company totals include plants not listed. Regional totals are for listed plants only. PetroChina total includes refineries under CNPC and Wepec. †China total refinery capacity includes 46 major PetroChina/Sinopec-owned plants identified as well as 730,000 b/d of, smaller plants operated by the two oil giants. ◊ Additionally, it includes CNOOC's Huizhou refinery in Guangdong and 10 of the country's largest teakettle refineries totalling 1.36mn b/d.*

REFINERY THROUGHPUTS

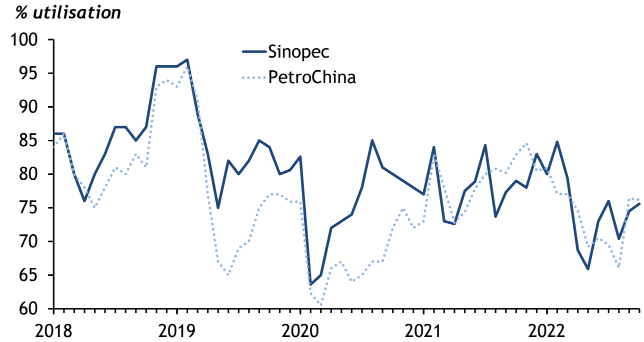
Sinopec total runs



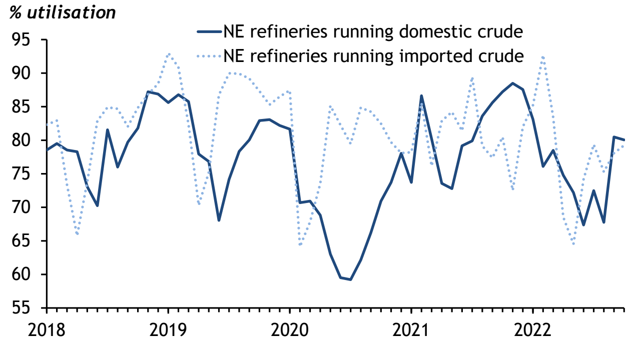
PetroChina total runs



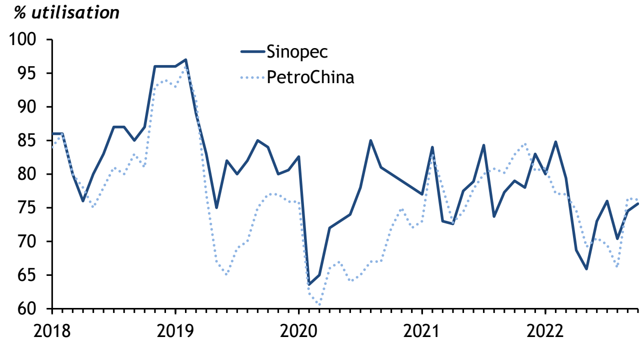
Sinopec vs PetroChina runs



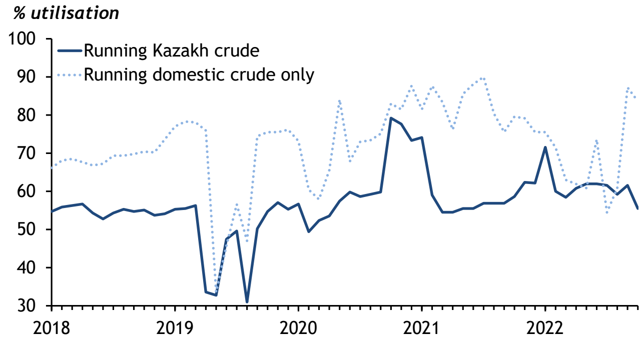
Domestic vs import economics



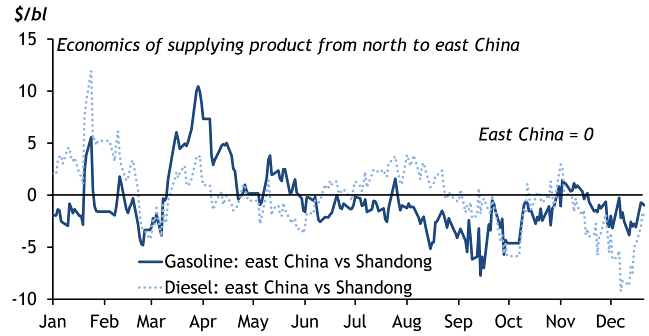
Sweet vs sour imports



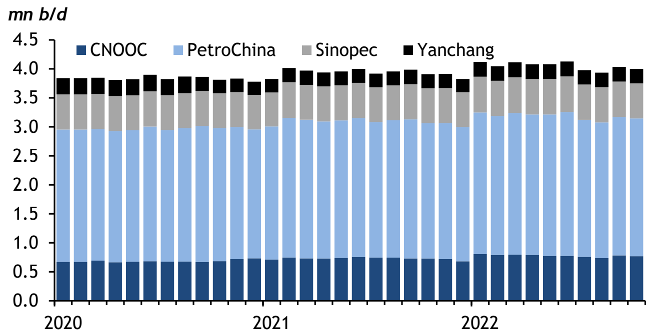
NW China refinery runs



China: Fuel arbitrage



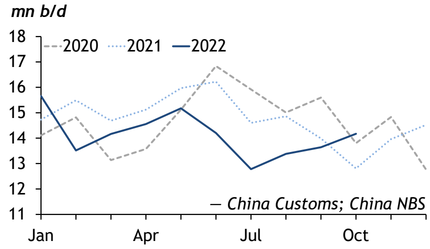
China: Crude production



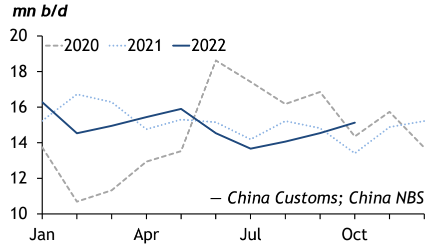
MAP AND GRAPHS

China crude infrastructure

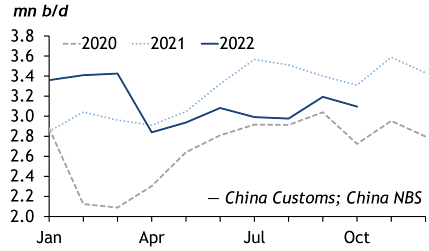
Crude apparent demand



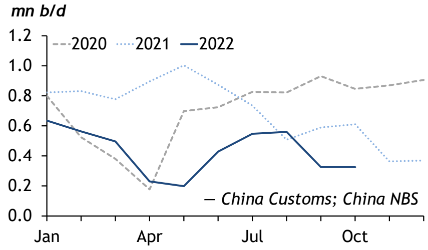
Petroleum apparent demand



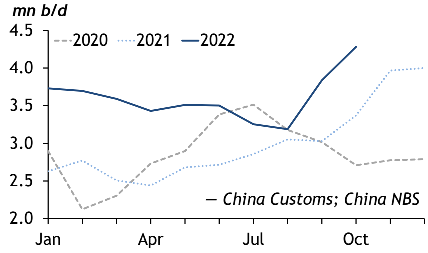
Gasoline apparent demand



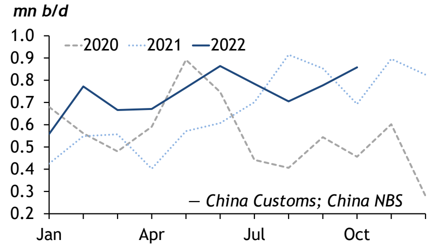
Jet-kero apparent demand



Diesel apparent demand



Fuel oil apparent demand



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- Crude imports and apparent oil demand
- Crude import quotas
- Crude production by province / company
- Crude storage capacity
- Crude throughputs survey
- INE crude stocks
- LNG supply and demand
- Oil company results
- Power data
- Refinery expansions
- Refining margins
- Refinery runs / output by province
- Shandong independent CDU capacity
- Shandong oil infrastructure map
- Spot crude trade
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- Zero Covid

Argus *China Petroleum* is published by Argus Media group

Registered office
Lacon House, 84 Theobald's Road,
London, WC1X 8NL
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ISSN: 1753-6286

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