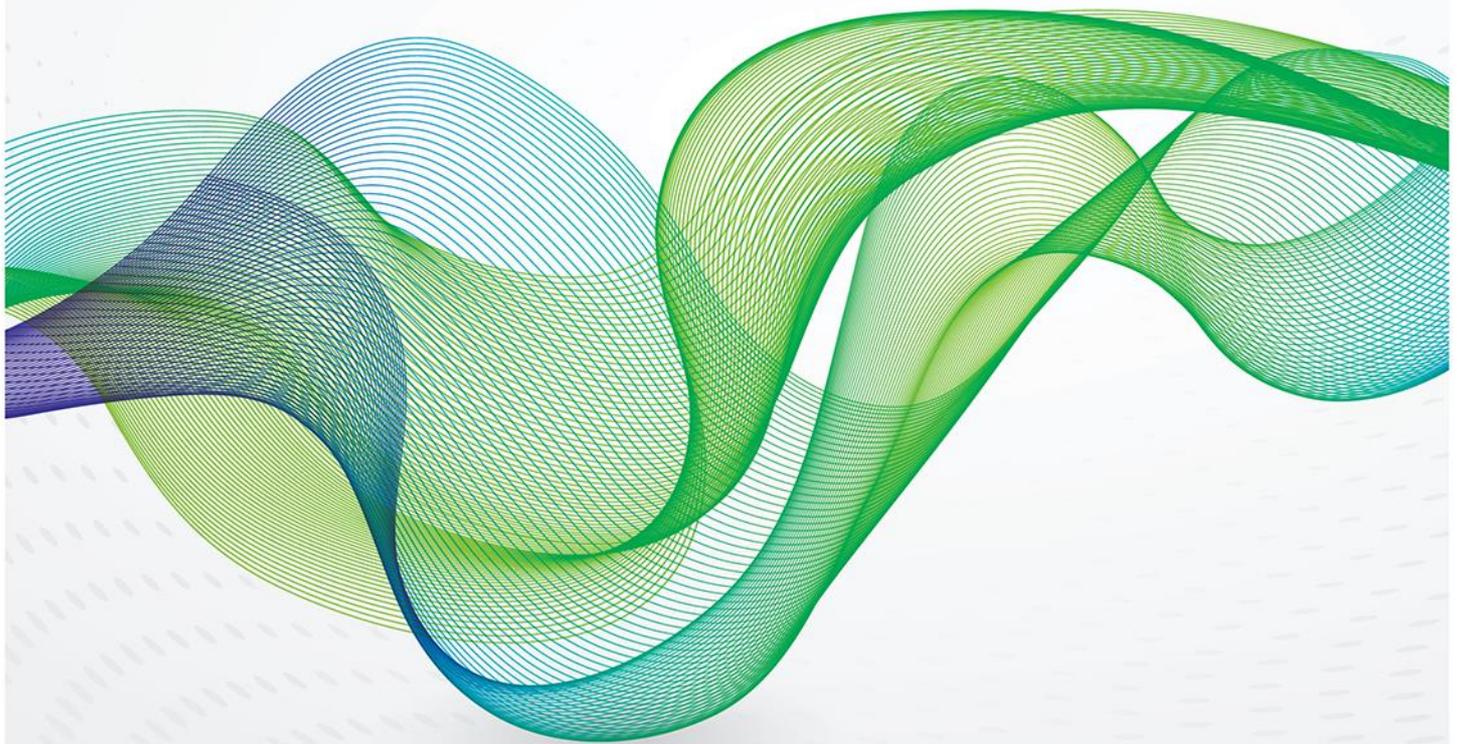


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China: the 'new normal'



OXFORD ENERGY COMMENT

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1. Introduction

Over the past decade, China has become a key driver of global oil demand growth. As China's GDP growth increased at double-digit rates, oil demand growth increased by an average 0.5 mb/d between 2003 and 2012.¹ Over the same period, China accounted for two-thirds of global oil demand growth. Thus, any changes in China's energy profile and oil consumption habits can send shock waves through the global oil markets.

In 2014, Chinese oil demand increased by 0.27 mb/d (2.7 per cent), broadly on par with 2013's growth and the slowest pace of expansion in the past two decades. The question is whether 2014 was a blip, or the beginning of a deeper change. In this comment we argue that 2014 is a harbinger of things to come. As the government moves to rebalance the economy and implements an aggressive environmental agenda, oil consumption in China will become more efficient, leading to slower demand growth rates. Thus, any outsized expectations of Chinese oil demand growth are likely to be disappointed in 2015, and weigh on global crude prices. We also argue that the structural shift in the Chinese economy heralds not only slower demand growth, but also a shift in product demand and the structure of the refining industry, with important implications for global trade flows of crude oil and refined products.

2. The 'new normal' of growth

The 'new normal' of Chinese growth, as trumpeted by President Xi Jinping, suggests slower economic growth rates and a shift away from energy-intensive sectors, including overcapacity industries such as steel, coal, and construction. The government will now champion new priority sectors such as higher quality manufacturing, agricultural modernisation, and healthcare. This, combined with policy efforts to reduce energy intensity, will lead to significantly slower oil demand growth rates than witnessed in the past.

As the government charts a new macroeconomic trajectory, markets will need to adjust to new ways of thinking. For example, when the Chinese government sets its economic growth target, this is no longer an aspirational bottom line; it is the ceiling. While the 8 per cent GDP growth target was overshoot consistently in the past, a 7.5 per cent target (perhaps even 7 per cent) should be seen as the higher end of the expected range going forward. Already for 2014, China's GDP growth was 7.4 per cent, missing the official 7.5 per cent target.² The outlook for 2015 is much the same: slower growth, increased efficiencies, and greater volatility in the monthly data. Indeed, the government's official GDP growth target, which will be announced in March, is likely to be set at around 7 per cent.³ Sustaining domestic growth has become more challenging in the context of slower global economic growth, tight liquidity, and an ongoing anti-corruption campaign, which is dampening official appetite to approve large and energy-intensive infrastructure projects.

As a result, Beijing is now gearing up for a monetary easing cycle in order to sustain growth levels at around 7 per cent. On 21 November, China's central bank, the People's Bank of China (PBoC), announced it was lowering benchmark interest rates by 25 basis points for one-year deposit rates, to 2.75 per cent, and by 40 basis points for the one-year lending rate, to 5.6 per cent.⁴ At the same time, the PBoC announced it would allow banks to offer deposit rates at 20 per cent above

¹ EIA International energy statistics, <http://www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=5&pid=5&aid=2> and CEIC data

² The Wall Street Journal, 'China Confronts 'New Normal' of Slower Growth', 20 January 2015.

³ Reuters, 'China plans to set 2015 growth target at 'around 7 percent' – sources', 28 January 2015.

⁴ Bloomberg Business, 'China's PBOC Cuts Interest Rates for First Time Since 2012', November 21 2014.

the benchmark rate, up from 10 per cent.⁵ While the move was greeted with enthusiasm by markets, it is unlikely to deliver a significant boost to growth. It was aimed at averting a collapse in corporate credit appetite, but, more importantly, it was a precursor for further interest rate liberalisation. Indeed, the rate cut came as the economic slowdown seemed to be going too far. Private sector investment was slowing, inflation was falling, and the targeted liquidity injections initiated by the central bank throughout the second half of the year were not being passed on to corporate borrowers. In short, real borrowing costs weren't coming down as fast as the government would have liked them to. The international context may have also contributed. Leaders at the G-20 in Australia in November 2014 pledged to boost global growth, which remains 'slow, uneven and not delivering the jobs needed'.

Yet the impact of monetary easing on China's economic growth will be limited. It will stimulate credit and economic activity, especially for the property sector and large state-owned enterprises (SOEs), and the pick-up in building will provide some support to the industrial sector (and therefore be positive for diesel demand), but its overall impact on GDP growth rates will be muted. Further rate cuts—both interest rates and reserve requirement ratios—are likely in the coming months. However, their impact on credit growth and economic growth will also be modest given that demand for loans from local governments will remain subdued in light of the central government's restrictions on borrowing and its ongoing efforts to clean up local government debt. The rate cut aims to reduce the cost of their existing debt, not spur significant new loans. Moreover, Chinese banks are also more cautious about their lending, and shadow banking is now actually shrinking. With China's total debt-to-GDP ratio already above 250 per cent,⁶ the government will not want to expand leverage as quickly as it has in the past. In addition, the government's environmental agenda will lead to a more determined push to consolidate overcapacity in heavy industry and cap coal consumption. No amount of easing will propel banks to lend massively to heavy industries such as steel and cement; the traditional drivers of oil demand growth and of China's economic growth in general.

Market reluctance to come to terms with the country's economic slowdown—the 'new normal'—or their disbelief in the leadership's ability to manage it, will continue to feed bearish sentiment. Moreover, as the government loosens the reins of the state-led economy and allows a small and selective number of defaults, especially as it tries to clean up local government debt, the conventional wisdom that everyone in China is too state-connected to fail will be challenged. This will rattle confidence further.

3. Less oil-intensive growth

Not only does all this point to slowing Chinese GDP growth, it also implies a more moderate growth in oil use than before. Already, China's oil intensity—the amount of crude oil required to generate a unit of real GDP growth—has declined at an annual rate of 3-6 per cent over the past decade⁷ and, in light of the government's efficiency targets, it is likely to continue to drop. This transformation is in large part policy-induced. In 2005, Beijing set a target of reducing energy intensity by 20 per cent by 2010 and achieved a 19.1 per cent reduction. In the current five-year plan, Beijing is aiming for an additional 16 per cent reduction by 2015⁸, compared to 2010, and is on the way to reaching this goal too. Finally, over the past year, concerted efforts to rebalance the economic structure have generated a quasi-recession in heavy industry and a gradual shift toward services. This marks a radical departure from the growth model of the past 35 years. Yet

⁵ The Economist, 'China's interest rates: The right call', 21 November 2014

⁶ Financial Times, 'China debt tops 250% of national income', 21 July 2014.

⁷ Andrew Batson, 'China Update: Slower Oil Demand is No Puzzle', Gavekal Dragonomics, November 12, 2014.

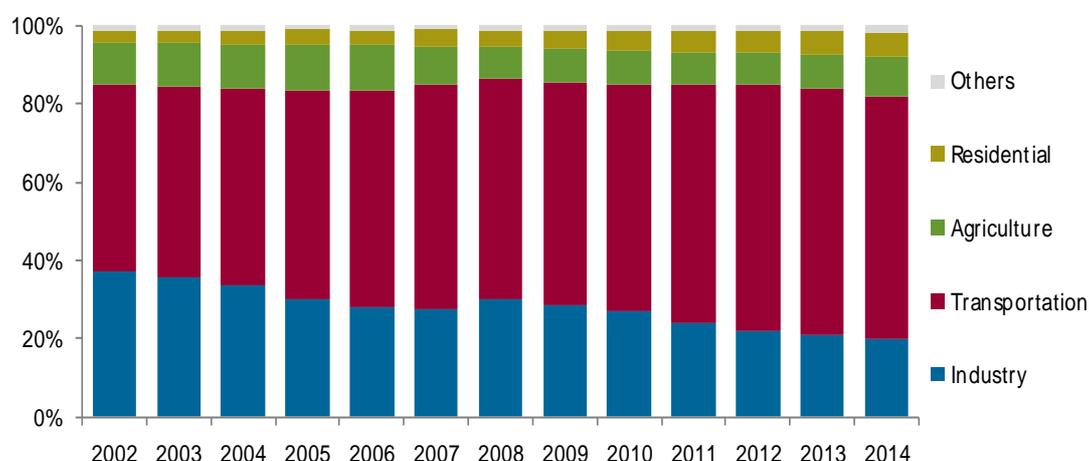
⁸ Reuters, 'China to beat energy intensity target in 2014 – Xinhua', 25 December 2014.

it has been deemed necessary by China's new leaders, President Xi Jinping and Premier Li Keqiang, who have consolidated power more substantially than their predecessors and now have considerable political clout to implement their reform agenda.

Diesel demand and industry

The structural shift in the Chinese economy heralds not only slower oil demand growth, but also a shift in product demand. Within China's product demand barrel, diesel has been the star product, closely correlated as it is to heavy industry and coal demand. Diesel use increased from 1.4 mb/d in 2000 to an estimated 3.5 mb/d in 2014, representing one-third of Chinese oil demand.⁹

Figure 1: Diesel demand by sector



Source: CEIC, China Matters

The most common use for diesel has been road transportation. Chinese officials and industry sources estimate that two-thirds of this has been used to transport coal from producer provinces in Northern China to coastal consumer hubs.¹⁰ Since the mid-2000s, when the Chinese government mandated that all trucks should run on diesel, demand has surged. Over 700,000 trucking operators (compared to 7,000 in the US) found employment transporting manufactured goods and commodities, especially coal that was shifting from the overburdened rail system to trucks.¹¹ As a result, the massive growth in heavy industries, which drove up coal demand for power generation, has also contributed to the inexorable rise of China's oil demand. Diesel has also been used as a back-up fuel for power generation. In 2004 and 2008, following power shortages in the cold winter months, diesel use surged. Then again in 2010, when local governments rationed coal-fired power use in a bid to reach environmental targets, small industrial and residential users switched on their diesel generators.

Yet after more than a decade of 8 per cent annual average growth rates¹², diesel demand growth started slowing in 2011 and declined in 2013 for the first time. Industries that boomed throughout the 2000s, such as construction, coal, ship-building, steel, and cement, started feeling the crunch

⁹ CEIC data, IEA,

¹⁰ Based on private interviews with government officials and industry people, Beijing, 2014.

¹¹ The Economist, 'The Flow of Things', 12 July 2014.

¹² CEIC data

of tighter credit, a policy-induced correction in the real estate sector, and efforts to reduce overcapacity in heavy industry. This has inevitably taken its toll on diesel demand.

This trend is likely to consolidate. First, current efforts to cap coal consumption will impact diesel demand as less coal needs to be transported. The government's *Action Plan for the Prevention and Control of Air Pollution*, issued in September 2013, aims to reduce the concentration of PM10 (particulate matter of 10 micrometers or less) by 10 per cent from 2012 levels in cities nationwide by 2017. Certain regions have tougher targets: the Beijing-Tianjin-Hebei belt is required to reduce PM2.5 concentration by 25 per cent by 2017, while the target stands at 20 per cent for the Yangtze River Delta and at 15 per cent in the Pearl River Delta. As a result, Beijing, Tianjin, Hebei, and Shandong will reduce their coal consumption compared to 2012 by a combined 83 mn tons¹³.

Alongside the economic restructuring, slower activity in the property sector will ripple through to other heavy industries, further dampening diesel demand. This will be further compounded by government policies aimed at curbing overcapacity. In May 2014, the Ministry of Industry and Information Technology issued guidelines to cut 28.7 Mt of steel production capacity (compared to total capacity of 779 Mt in 2013), 12 Mt of coking coal capacity (out of 527 Mt), 19 Mt of iron (almost 5 per cent of consumption in 2013 at 398 Mt), and 50 Mt of cement (only 2 per cent of total production) in 2014. Tighter liquidity for these sectors in particular, as banks become more reluctant to back new projects, will squeeze out smaller industrial actors and encourage consolidation. This should further weigh on diesel demand growth as industrial use represents 20 per cent of diesel demand (see Figure 1).

Finally, the Chinese government has also been trying to ease some of the infrastructure bottlenecks that have contributed to the surge in diesel demand for coal transportation. By 2015, much of the investment in large-scale, highly-mechanized coal mines and coal-dedicated rail transport throughout China's coal-producing regions will be complete. Furthermore, as the Chinese economy caters to higher value-added industries and more affluent consumers, the government will increase its efforts to offer more reliable power supplies. China's grid companies are introducing smart grids and metering systems, which allow for additional savings and efficiencies in electricity use. The roll-out of ultra-high-voltage (UHV) power lines also allows for more power from north-western and south-western provinces—rich not only in coal but also in wind, solar, and hydro power—to be transferred to the eastern parts of the country where the largest population centres are located. In April 2014, Beijing approved 12 new UHV lines, which are expected to become operational by the end of 2017.¹⁴ These UHV lines will greatly reduce diesel demand for coal trucking, but, in the unlikely event this should encounter technical issues, the pick-up in diesel demand for back-up generation will be steep and sudden.

Though all these factors combined suggest that diesel's slowing growth is irreversible, efforts by the Chinese government to spur domestic consumption will ensure diesel consumption does not fall off a cliff. Transportation of manufactured goods is picking up on the back of rising domestic consumption and e-commerce, as well as improved roads. Therefore, diesel demand will likely emerge from its current slump and increase modestly as domestic consumption bubbles along. This will be a far cry from the 8 per cent growth rates of the past, and, according to government advisors, will be around 2-3 per cent going forward.

Gasoline demand and transportation policies

Gasoline demand, on the other hand, is thriving on transport demand. The rise of automobile sales has led to steady increases in gasoline consumption. From 0.87 mb/d in 2002, gasoline use

¹³Action Plan for the Prevention and Control of Air Pollution, p. 7 (Chinese)
<http://www.mep.gov.cn/gkml/hbb/bwj/201309/W020130918412886411956.pdf>

¹⁴ SGCC press release, China Enters a Golden Era of Developing UHV, 16 May 2014

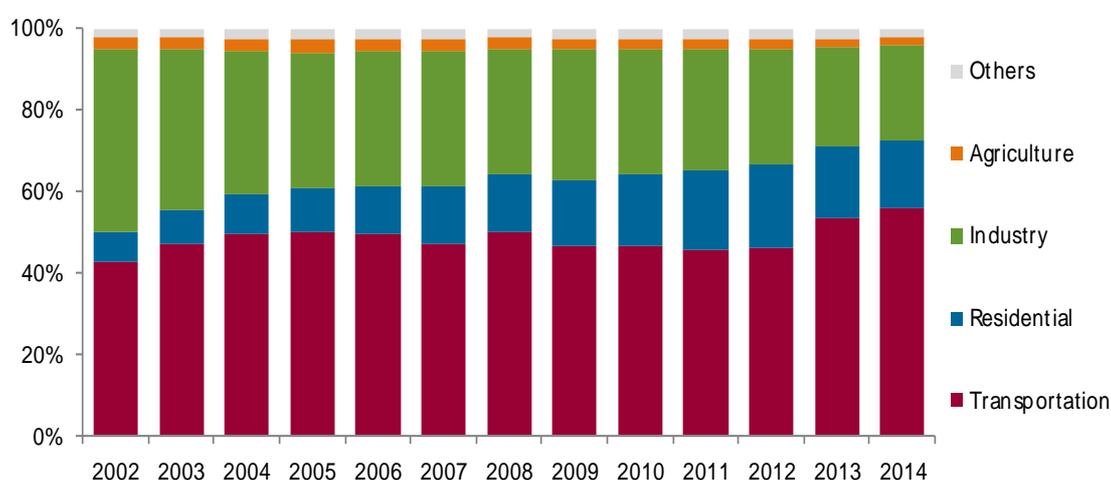
has almost tripled to an expected 2.4 mb/d in 2014.¹⁵ Gasoline will continue to catch up with diesel, but it will not replicate its meteoric rise.

Car sales have risen fourfold in less than a decade, reaching 22 million units in 2013 according to the Chinese Automobile Association of Manufacturers (CAAM).¹⁶ However, sales growth has slowed from a 25 per cent average growth rate registered between 2002 and 2010, to just under 7 per cent in 2013. In 2014, according to CAAM, sales increased 6.9 per cent year-on-year, slower than CAAM's initial expectation of an 8.3 per cent growth. With the association expecting a 7 per cent increase in 2015, a new trend-line could be emerging. Yet even rising car sales do not mean gasoline consumption growth will be as dynamic as diesel demand has been, particularly as poor road infrastructure and congestion will limit the actual miles driven. So while car ownership will support rising gasoline demand, the pace is unlikely to skyrocket.

Whether gasoline demand grows above 7 per cent a year or stays closer to 5 per cent will depend on implementation of Beijing's transportation policies. The government has introduced a series of policies aimed at slowing demand for oil and tackling environmental degradation. These have included promoting electric vehicles and natural gas vehicles (NGVs), as well as mandating increased fuel economy in conventional vehicles.

New energy vehicles (NEVs) will certainly struggle to reach the government's target of 500,000 NEVs on the roads in 2015, since only 17,600 such vehicles were purchased in China in 2013. The fourfold increase in 2014 to 74,000 units¹⁷ is remarkable, but still not enough to hit the 2015 target. While NEVs will become part of the urban landscape, and will slightly dampen demand for gasoline, penetration rates promise to be slow due to a lack of infrastructure and limited consumer appetite.

Figure 2: Gasoline demand by sector



Source: CEIC, China Matters

¹⁵ CEIC, IEA Oil Market Report, Energy Aspects

¹⁶ Xinhua, 'China auto sales see double-digit growth', 10 January 2014, http://china.org.cn/business/2014-01/10/content_31142654.htm, and www.caam.org.cn

¹⁷ Xinhua, 'North China to establish new energy vehicle manufacturing base', 16 January 2015, <http://english.mofcom.gov.cn/article/newsrelease/counseloroffice/westernasiaandaficareport/201501/20150100868448.shtml>

Natural gas vehicles (NGVs) may have a better chance. Beijing is now aiming to more than double the number of NGVs in China by 2015, from just under 2 million units to 5.1 million units, hoping to displace around 0.39 mb/d, or roughly 5 per cent of gasoline and diesel consumption.¹⁸ Even though limited gas supplies, price differentials, and infrastructure constraints may slow implementation of the government's plan, NGVs will, over time, start to make a dent in gasoline demand. The drop in global crude oil prices certainly complicates the outlook for fuel switching, but government support for the NGV agenda will likely remain robust, either through direct subsidies to NGVs or by limiting the deceleration of domestic gasoline and diesel prices (see below).

Finally, fuel economies in conventional vehicles will also slow the pace of gasoline demand growth. Past efforts to increase fuel economies in China have already cut gasoline demand by 1 per cent¹⁹. With a government committed to its reform agenda, and with greater political capacity to implement change than in the past, additional fuel economies will be introduced, further capping the increase in gasoline growth. The IEA estimates gasoline demand in 2014 will increase by 6.7 per cent compared to 2013 before slowing to 6 per cent²⁰ in 2015, or perhaps even lower if Beijing's policy efforts are implemented in earnest.

Lower global oil prices are unlikely to alter this fundamental trend

Currently low oil prices could incentivize greater consumption. In September, for example, China's oil demand grew by 7.5 per cent year-on-year. But this surge in demand, while reflective of a slight pick-up in demand, was mostly driven by bargain hunting destined for stockpiling. Chinese traders take advantage of arbitrage opportunities, which in turn mops up some of the excess barrels on the market and supports prices.

However, lower global crude prices do not filter through to Chinese consumers quite as quickly. The oil pricing mechanism reform introduced in March 2013 allows Chinese product prices to track global oil prices more closely, but they start from a government-set benchmark.²¹ Gasoline prices for Chinese drivers are consistently higher than for their peers in the US. Moreover, the fluctuations in the domestic market are still less pronounced. Between June and December, when global prices fell by 55 per cent, Chinese retail diesel and gasoline prices only declined by 25 per cent.²² Moreover, Beijing has also increased the consumption tax on gasoline, naphtha, solvent oil, and lubricating oil three times since November²³—the first such increases in five years. This has contributed to the slower pace of deceleration in domestic retail prices and serves as testament to the government's resolve to combat pollution. Funds collected from the tax will be used to promote NEV development. According to an official statement:

'... increasing the fuel consumption price to a suitable level can not only help to curb pollution, reduce emissions, guide rational consumption demand, promote efficient usage of oil, but also can help the development of a new-energy industry.'²⁴

¹⁸ China oil and petrochemicals, 'The next five years will be the golden age of natural gas vehicle development in China', 15 October 2014 (Chinese)

¹⁹ Oliver, Hongyan H., Kelly Sims Gallagher, Donglian Tian, and Jinhua Zhang, 'China's Fuel Economy Standards for Passenger Vehicles: Rationale, Policy Process, and Impacts' Discussion Paper 2009-03, Cambridge, Mass.: Belfer Center for Science and International Affairs, March 2009.

²⁰ IEA Oil Market Report, November 2014

²¹ For more details, see Fattouh, B. Carolina Santos de Oliveira, Anupama Sen (2015), 'Gasoline and Diesel Pricing Reforms in BRIC Countries – A Comparison of Policy and Outcomes', OIES Research Paper, WPM 57.

²² Author's calculations in early January 2015, based on Brent crude prices and Reuters, 'TABLE-China's retail gasoline, diesel prices since 2013, 12 January 2015.

²³ Clyde Russell, 'Oil price plunge should prompt new fuel taxes in Asia', Reuters, 23 January 2015

²⁴ 'China to Increase Fuel Tax to Curb Pollution, Carbon Emissions', Bloomberg, 28 November 2014,

Finally, the March 2013 pricing mechanism applies to global prices between \$80 per barrel and \$130 per barrel. If global oil prices fall below this threshold, then the NDRC prerogative of price-setting kicks in once again. The effect of lower oil prices on end-users will be limited, given the government views tackling environmental degradation as a central policy priority. Given that emissions from the transportation sector represent almost a quarter of China's greenhouse gas emissions, increasing the fuel efficiency of China's auto fleet, raising fuel quality standards, and promoting fuel-switching in the transportation sector are all high on the government's list of priorities. Furthermore, in order to encourage refiners and industry to support these policy goals, Chinese consumers and drivers will be expected to shoulder a greater share of the cost burden over time. To be sure, this burden will vary among Chinese provinces, with the more affluent coastal provinces more likely, and able, to pay higher prices.

4. China: a net products exporter

The slowdown in demand growth and changing demand patterns are also having their impact on the refining industry. Major Chinese oil companies are likely to slow the pace of refinery expansions where possible in 2015, which may see the lowest rate of capacity expansion in nearly a decade (see Figure 3). Meanwhile, downstream earnings at Sinopec and PetroChina, the two biggest Chinese refiners, are apparently rosy, while fat marketing profits are offsetting poor profits at refineries amid a glut of capacity. Depressed global crude prices help margins slightly, but do not offset dwindling profits, which are also due to the costly fuel quality upgrades Sinopec and PetroChina must undertake through the end of the year. With marketing margins coming under pressure as the government raises fuel consumption taxes to offset some of the recent fall in oil prices, both firms are pushing their refineries to become more profitable. Sustaining capacity utilisation of 80 per cent or more at existing refineries is seen as the key to profitability at these facilities. While exports of refined products are likely to increase year-on-year in 2015, there are limits to how much Chinese refiners can profitably export to Asia, particularly with Middle Eastern refinery capacity rising in the first half of 2015.²⁵ Thus, Chinese refiners will have to reconcile their need for improved refinery profits with the weakness of the export market, by limiting the growth in throughputs.

Figure 3: Chinese refinery capacity additions and delays for 2015, thousand b/d

Refinery	Operator	Existing Capacity	Added Capacity	Startup	Notes
Jujiang	Sinopec	100	100	Q3 15	Delayed from 2014
Tahe	Sinopec	100	100	H2 15	Could slip into 2016
Cangzhou	Sinopec	100	30	Q1 16	Delayed from 2014
Zhenhai	Sinopec	460	300	Q1 16	Possible start in 2015
Huabei	PetroChina	100	100	H2 16	Delayed from 2015
Huizhou	CNOOC	240	200	Q4 16	Delayed from 2015

Source: Argus, Company reports, China Matters, Energy Aspects

In the longer term, refinery closures in China are likely to become a factor for the market as the government is anxious to improve air quality in urban centres. Refineries near major cities, including Shanghai, Beijing, Nanjing, and Dalian, have been targeted for relocation to coastal areas (away from residential districts), which may permit capacity rationalisation. Competitive pressures on teapot refineries should also accelerate closures, though the ability of unprofitable

www.bloomberg.com/news/2014-11-28/china-to-increase-fuel-tax-to-curb-pollution-carbon-emissions.html.

²⁵ Bassam Fattouh and Richard Mallinson, *Refining Dynamics in the GCC and Implications for Trade Flows*, Oxford Energy Comment (Oxford: OIES, December 2013).

Chinese industrial installations to remain at least nominally operational should not be underestimated.

Across 2014, China remained a net product importer, but only just, at 14 thousand b/d, a sharp decline year-on-year of 0.19 mb/d.²⁶ Even though Chinese refining capacity additions are a paltry 0.2 mb/d this year, and the broader policy remaining one of keeping runs in line with local demand and importing or exporting any modest deficit or surplus, China is expected to switch to a small net product exporter in 2015. However, as discussed above, demand is becoming more efficient and overall growth less oil intensive, so the new fundamental trend of slower growth that started in 2014 will persist in 2015, likely leading to a small surplus of products.

5. Appetite for crude – high for now, as SPR fill continues

However, despite a slowing in refining capacity additions and a deceleration in end product demand, China's crude demand leapt higher in 2014 and more could be in store for 2015. This relates to China's strategic petroleum reserve (SPR) build-outs, along with the surge in the build-out of commercial storage in line with the country's rising refining capacity. China plans to achieve 90 days of forward crude import cover, much like OECD nations, with the filling spanning three phases. When the SPR was designed in 2003, its total intake was set at 500 million barrels (mb) by 2020. Various reports have suggested that this goal was increased to 600 mb,²⁷ which would better correspond to China's import rates in 2014, but official statements on the SPR plans and progress remain few and far between.

The Chinese government has vowed greater transparency, and in November revealed that Phase 1 concluded in 2009, when 91 mb of the 103 mb capacity was filled (~90 per cent)²⁸, with tanks located in Zhoushan (32 per cent), Zhenhai (30 per cent), Huangdao (20 per cent), and Dalian (17.5 per cent). Phase 2 of China's SPR started in late 2013 and should, officially, total 168-210 mb, though over 250 mb of capacity has been built as Figure 4 shows. The end result could be even larger, as some of the Phase 3 units are brought forward to take advantage of the lower prices. Potentially 140 mb of Phase 2 SPR units (if they are completed by the end of 2015) will need to be filled this year, while the Shanshan, Huangdao (19 mb of SPR and 11 mb of commercial inventories), and potentially even Tianjin Phase 1, all of which started filling in 2014, will see some filling continue in early 2015—taking 2015's total SPR fill close to 150 mb.

Meanwhile, planned commercial storage is even higher between 2010 and 2015, at almost 190 mb, and anecdotal reports suggest about 50 per cent has been filled (80 mb could be filled this year), although there is no reason to believe all of the commercial units will be brought online on time and filled. Overall, Sinopec has planned about 216 mb and PetroChina around 118 mb of commercial inventory fills, and low prices could incentivize the companies to speed up some of the stockpiling –storage unit availability permitting.

²⁶ Energy Aspects, China Oil Data – December 2014, 23 January 2015

²⁷ Reuters (2014), 'China ramps up crude buying, reserves purchases far ahead of schedule', 26 November.

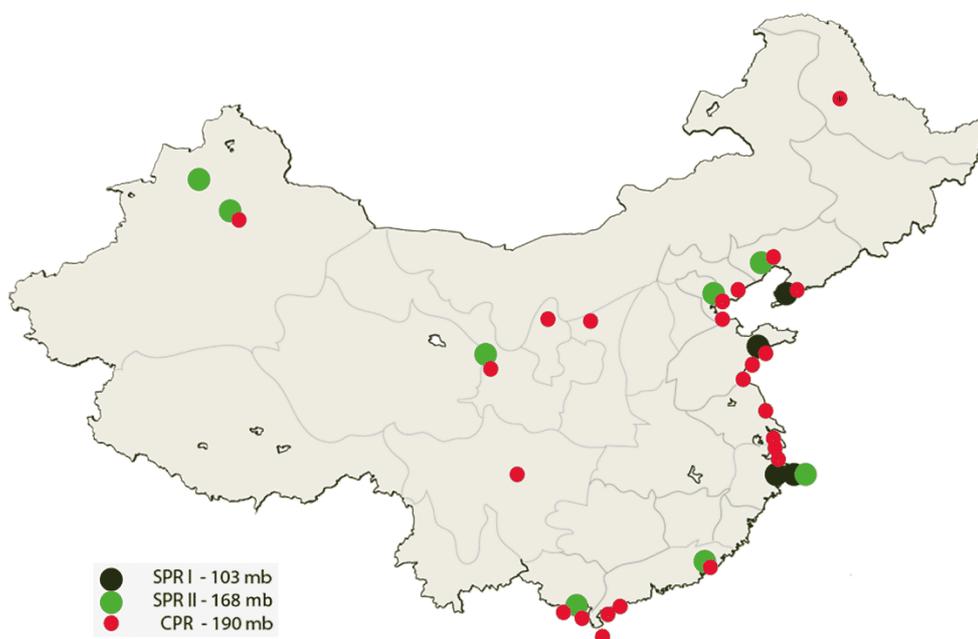
²⁸ Reuters (2014), 'China makes first announcement on strategic oil reserves', 20 November.

Figure 4: Chinese SPR sites, 2010-2015, mb

District	Province	Builder	Size	As of 2011/12	As of today	
				Completion date	Phase	Completion date
Dushanzi	Xinjiang	CNPC	19	2011 Jul-Sep	Phase II	2011 Jul-Sep
Lanzhou	Gansu	CNPC	19	2011 Nov-Dec	Phase II	2011 Nov
Tianjin	Phase 1	Sinopec	20	2014 H1	Phase II	2014 H1
Zhoushan	Zhejiang	Sinopec	19	<i>Not provided</i>	Phase II	2014 H1
Jnzhou	Liaoning	CNPC	19	<i>2011-2012</i>	Phase II	2014 H1
Shanshan	Xinjiang	CNPC	39	<i>Not provided</i>	Phase II	2014
Huangdao	Shangdong	Sinopec	30	2012-2013	Phase II	2014 H2
Tianjin	Phase 2	Sinopec	20	2015 H1	Phase III	2015 H1
Caofeidian	Hebei	Sinopec	38	<i>Not provided</i>	Phase III	2020
Huizhou	Guangdong	CNOOC	31	2012-2013	Phase II	<i>2015?</i>
Jntan	Jangsu	CNPC	16	<i>Not provided</i>	Phase II	<i>2015?</i>
Yangpu	Hainan	Sinopec	31	<i>Not provided</i>	Phase III	<i>2015?</i>
Zhanjiang	Guangdong	Sinopec	44	2012-2013	Phase II	<i>2015?</i>

Source: Company reports, China Matters, Energy Aspects

Figure 5: Chinese SPR and commercial inventory sites



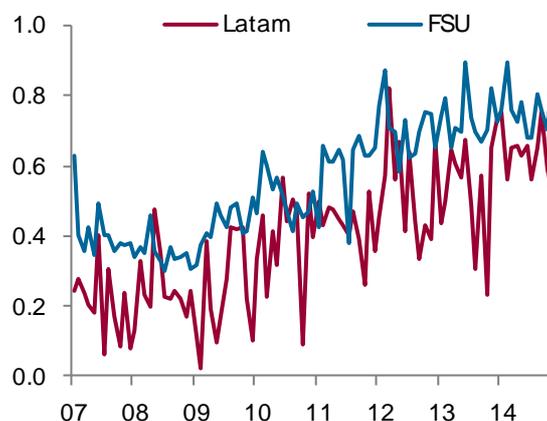
Source: Company reports

The fact China's crude appetite remains unsated is not news, but what has been interesting is the change in the sources of crude imports. Led by China, Asian consumers are now spoilt for choice, with greater volumes from Latin America, Former Soviet Union (FSU), and West Africa (WAF) all competing with traditional suppliers from the Middle East. Loans-for-oil deals provided

by Chinese banks have also generated a shift in the country's import sources. Traditionally, China relied on the Middle East and Africa for most of its crude imports (mainly light sweet), given geographical proximity (Middle East) and investments (Africa). China's refining capacity has also been historically configured to deal with Chinese crudes, which are predominantly sweet. CNPC/PetroChina's refineries tend to tilt more heavily toward sweet crudes because of their reliance on the Daqing and Liaohe grades in the north, while Sinopec's capacity is increasingly geared toward handling sour crude. Yet over the past decade, Sinopec and PetroChina have been expanding their capacity and upgrading it to process a wider variety of crudes, in line with the government's supply diversification strategy. Moreover, much of the country's production growth will come from offshore fields in Bohai Bay and from Xinjiang province, which yield heavier grades. Chinese refineries are now able to meet surging local demand without buying light sweet crude imports from WAF, as their refinery upgrades have made them more selective crude buyers.

Medium sour crude imports from Latin America have become extremely popular (see Figures 6 and 7). In September 2014 for instance, imports from Latin America to China rose to 0.76 mb/d, the second-highest level ever, supported by increasing purchases from Colombia. PetroChina's Liaohe refinery processed Colombian crude for the first time on record, supporting the rise. The attractive pricing offered by Latin American producers, as they try to gain a foothold in China (and Asia broadly), is also supporting higher imports. Ecuador and Brazil are an additional factor behind the growing flow of Latin American grades to China. Even though Venezuela owes China around 0.35 mb/d of crude for loans undertaken, exports to China have been falling since June. The decline is underpinned by huge problems currently affecting Venezuelan production and China easing some of the terms for Venezuela on its \$50 billion oil-for-loan deals—which means Venezuelan exports to China may stay low in 2015 (China is supposed to receive 0.23 mb/d from Venezuela as a repayment).

Figure 6: Crude imports from LatAm and FSU, mb/d



Source: China Customs

Russia and Kazakhstan, which have also signed loans-for-oil deals with China, could also see their exports to China increase over the coming five to 10 years. Kazakh exports to China could increase by 0.1 mb/d, or even more if output from Kashagan exceeds expectations. Russian exports to China are set to increase as Moscow turns to Beijing following the deepening Western sanctions regime. In November 2014, CNPC and Rosneft signed a number of deals, which will provide China with more Russian crude exports and, significantly, a stake in Vankorneft, Rosneft's upstream unit, which is currently developing the Vankor field, the largest project in East Siberia. Additional oil imports from Russia could now reach up to 0.8 mb/d by 2018 (up from more than 0.6 mb/d). This will also help cap seaborne imports from the Middle East, an increasingly important goal in light of Beijing's concerns with Washington's attempts to contain China's rise.

Access to the Russian upstream is significant for China as CNPC is buying into a highly lucrative field and participating in the entire oil supply chain, from the upstream, through the pipeline to the refining. As a result, CNPC and Rosneft also announced they will pursue a feasibility study for the Tianjin JV refinery, aiming to make the final investment decision in 2016 (ahead from 2017 as initially planned) and launch it in 2019 (one year ahead of schedule).

Figure 7: Chinese crude imports by country, thousand b/d

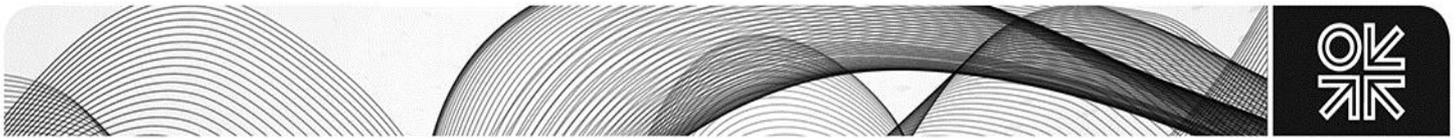
	2007	2008	2009	2010	2011	2012	2013	2014
Saudi Arabia	528	727	841	895	1,008	1,078	1,081	989
Angola	501	598	645	790	625	803	802	806
Russia	291	233	307	306	371	487	490	644
Iraq	28	37	144	225	276	314	472	573
Iran	412	426	464	428	557	440	430	546
Other	1,454	1,556	1,659	2,156	2,228	2,300	2,383	2,534
OPEC	1,817	2,255	2,618	3,029	3,165	3,578	3,617	3,717
non-OPEC	1,398	1,323	1,443	1,750	1,900	1,844	2,041	2,376
North America	9	2	9	23	46	36	30	18
South America	206	254	238	393	430	533	534	635
Africa	1,003	1,068	1,224	1,404	1,201	1,284	1,285	1,342
Asia-Pacific	119	112	201	179	179	160	132	125
FSU	412	349	432	510	598	704	734	765
Middle East	1,459	1,792	1,955	2,261	2,608	2,700	2,939	3,178
Europe	6	--	3	7	3	5	4	30
Total	3,215	3,578	4,061	4,800	5,065	5,422	5,658	6,092

Source: China Customs

6. Conclusion

Over the past year, the volatility in Chinese economic data, as well as oil demand and import figures, has generated significant uncertainty surrounding China's future trajectory. But the structural reality is that China's oil demand growth is slowing. Not only is the country's economic growth moderating from its former double-digit rates, but its energy consumption patterns are becoming increasingly efficient. It is this disparity between old habits and new realities that could once again weigh on prices as the slowdown in China's oil demand hits home.

The structural shift in the Chinese economy heralds not only slower oil demand growth, but also a shift in the dynamics of product demand. Within China's product demand barrel, diesel has been the star product, closely correlated as it is to heavy industry and coal transport. But this is changing as industries that boomed throughout the 2000s, such as construction, coal, ship-building, steel, and cement, started feeling the crunch of tighter credit adversely affecting diesel demand growth. Looking ahead, this trend will consolidate. For oil demand growth, especially for diesel consumption, the most significant policy changes will be the government's efforts to cool the housing market, reforms in the power transmission and distribution system, as well as



Beijing's efforts to curb coal consumption. If the economic slowdown and its impact on the property sector wasn't enough, the death knell for diesel demand growth will come from two distinct trends in China's coal market: first, demand for coal from industry and power generation has plateaued; and second, there is reduced need to transport coal by freight. In contrast, gasoline demand is thriving on transport demand. However, even for gasoline, the demand growth is likely to slow down, as the Chinese government introduces a series of policies aimed at curbing demand for oil and tackling environmental degradation. These have included promoting electric vehicles, natural gas vehicles, and mandating increased fuel economy in conventional vehicles.

Still, China's appetite for crude continues to grow due to Beijing's SPR build-out, along with the surge in commercial storage in line with the country's rising refining capacity. However, once the SPRs are finished, crude imports are expected to plateau, even if 2015's growth remains strong due to stockpiling. Crude imports have seen a change in source, with China now receiving greater volumes from Latin America and the FSU, as greater appetite for heavier crude emerges from upgraded refining capacity.

These changes in demand patterns are having big impact on the structure of the domestic refining industry. Even with closures and slower pace of Chinese refinery capacity expansion, this will not change the trajectory of Asian markets: Chinese exports will continue to pressure spot markets even if Chinese refiners are not seeking to dramatically increase exports.

These structural transformations in the Chinese energy scene make it necessary for market analysts to adjust to new ways of thinking and update their expectations. After all, it is not only China but the rest of the world that needs to adapt to a 'new normal' in the pace of economic growth and how this is shaping China's energy markets.