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Oil Prices

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Abstract

The single most important driver of shifting dynamics in world oil markets is China. It alone will continue to account for most of the world demand growth throughout this decade and probably the next. In September 2013, China's net oil imports are projected to exceed those of the United States on a monthly basis and by 2014 on an annual basis, making it the largest importer of oil in the world. In order to satisfy its thirst for oil, China has aggressively used its financial reserves to offer billions in development credit, underwritten with oil, especially in Africa, Latin America, and even Russia. From energy security point of view, one of the biggest threats to maintaining a stable oil price in the long run will be satisfying growth in Chinese demand. That is what is putting pressure on prices. An optimistic oil price could range from \$100 to \$130 a barrel. However, this paper will argue that in a supply-constrained world and with OPEC's spare capacity continuing to shrink, oil is unlikely to spend much time hovering around that price range. It will suggest that prices will continue to spike over the next five years occasionally reaching \$200/barrel in order to keep oil demand in check. The paper will also argue that the global economy can at most sustain oil prices that represent just about 6% of GDP translating into \$137 a barrel of Brent crude by 2015, \$156 by 2020, and \$241 by 2035. It will conclude that China's steep-rising oil demand, its search for new sources of oil and also its acquiring of oil assets around the world will ultimately give it the final say on the oil price globally.

Key Words: China, price, growth, energy security, superpower.

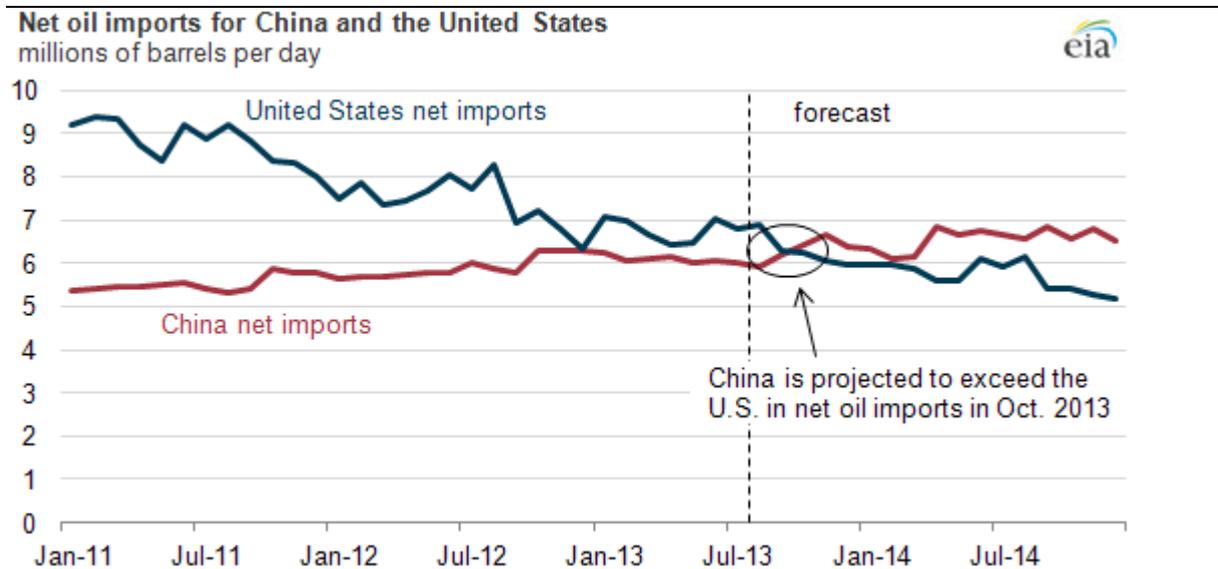
Introduction

China is the new factor in global politics and economics. The much-heralded advent of China as the other superpower is now a reality. On issue after issue, China has become the second most important country on the planet. Since 2007 China has been contributing more to global growth than the United States, the first time another country had done so since the 1930s. It has also become the world's largest consumer, eclipsing the United States in food, primary energy and industrial commodities.

China is also the United States biggest external creditor.¹ The United States could not be running an annual current-account deficit estimated at \$1 bn a year without consistent selling pressure on the dollar if Chinese purchases of US Treasury bills and bonds were not so high. Moreover, China is now the world's second largest user and importer of oil after the United States. However, by October 2013, China's net oil imports are projected to exceed those of the United States on a monthly basis and by 2014 on an annual basis, making China the largest importer of oil in the world

according to the US Energy Information Administration's (EIA) August 2013 Short-term Energy outlook (see Figure 1).

Figure 1
Net Oil Imports for China & the United States
(mbd)



Source: Courtesy of EIA Short-term Outlook, August 2013.

China's economy stood at \$8.5 trillion in 2012 in market exchange rates. **2** It is the second largest economy in the world after the United States'. However, based on a purchasing power parity (PPP) used by the World Bank and the International Monetary Fund (IMF) as a measuring stick, China's GDP is \$12.41 trillion. China's GDP is expected to overtake the United States' on PPP basis by 2015 and by 2020 using market exchange rates. China's real GDP is projected to increase by 5.7% annually between 2011 and 2035. **3**

However, China's robust economic growth and its status as an economic superpower would falter without oil. China's global oil strategy is, therefore, geared towards ensuring that this never happens.

The global oil market is at a crossroads. Current global trends in oil supply and demand are patently unsustainable environmentally, economically and socially. It is no exaggeration to claim that the future of global economic growth and, indeed, the future of human prosperity depend on how successfully we handle the two central challenges facing us today: oil supply security and the pace at which we develop alternatives to oil.

Oil is the world's most viable source of energy and will remain so probably throughout the twenty-first century even under the most optimistic assumptions about the pace of development and deployment of alternative technology. The surge in oil prices in recent years culminating in the price spike of 2008 coupled with much greater price volatility, have highlighted just how sensitive prices are to market imbalances. They have also alerted people to the ultimately finite nature of oil

resources. In fact, the immediate risk to supply is not one of a lack of global resources, but rather a lack of investment where it is needed.

Cumulative investment of more than \$13 trillion is needed between now and 2030 in oil exploration and expansion of production capacity worldwide. **4** The projected increase in global oil production hinges on adequate and timely investment. Some 64 million barrels a day (mbd) of additional capacity – the equivalent of almost seven times the current Saudi oil production – needs to be brought on stream between now and 2030. This figure makes allowance for the annual oil production depletion.

Concern about the depletion of conventional global oil reserves seems to have intensified for several reasons, including technological improvements in geological data gathering and analysis, the increasingly sparse reserves discovered by new drilling, question marks over the real size of global proven reserves and concerns that much of the world's conventional oil especially in the Middle East, is coming from old and over-exploited mega-fields that are becoming less productive. There is no risk that we are running out of oil but chances of being able to match the projected growth in demand over the medium term with a rise in production is being seriously questioned.

On the supply side, conventional oil supplies are depleting as evidenced by a major drive into the exploitation of high-cost deepwater oil reserves and unconventional oil resources such as shale/tight oil and Canada's oil sands. So what are the potential solutions? Managing both oil supply and demand is not a short-term game. However, the key buyer, China, with the greatest demand growth and the biggest user, the United States, seem to have been reading from different scripts.

China is taking the long-term view, making massive investments in both conventional and renewable energy to meet its burgeoning demand while at the same time aiming to improve energy efficiency. It has to with a GDP growth of 8% in 2012. China reported 18 million light vehicle sales in 2010 versus 13.6 million in 2009 (compared with 12.6 million in the US in 2010). Accordingly, Chinese oil demand grew at 10.5 percent in 2010, one third of total global oil demand growth. **5**

In the future, China will have to outbid the rest of the world for oil supplies, forcing up oil prices as a result. This will impact on the US economy in particular, weakening the dollar further and causing oil prices to rise – a vicious circle that sets the scenario for a perfect oil-fired economic storm.

In the US, the greatest influencing factor on political decision-making seems to be the political impact of the price of gasoline. The US suffers from chronic energy obesity – it needs to use less oil and produce more. Eventually, in order to significantly reduce demand, the US will have to bite the bullet and start a Long-term process of raising its gasoline prices closer to European levels – which for the present, is a politically unacceptable prospect.

So we remain in the horns of a dilemma. The global economy needs a price of oil of less than \$100/barrel. However, it seems that the only way we can restrain demand is by prices far greater than \$100/barrel and the present disarray in OPEC suggests that will be the case.

China's steep-rising oil demand, its search for new sources of oil and also its acquiring of oil assets around the world will ultimately give it the final say on the oil price globally.

The pressure on the oil price will continue unabated in coming years because of the growing global demand for oil and the dwindling global proven oil reserves. Although a steeply-rising oil price will restrain demand for a short time, the price will resume its surge in the absence of new supplies. The global economy will still need oil to function normally no matter what the oil price is, albeit at a reduced economic growth rate.

China's Oil Fundamentals

The single most important driver of shifting dynamics in world oil markets is China. It has a voracious energy appetite, still smaller than America's, but growing so fast that it alone will continue to account for most of the world demand growth throughout this decade and probably the next. At the same time, for several years it has been directly and indirectly responsible for driving global production gains.

China's spectacular economic growth has significantly altered its position in the global oil market. In 2012, China accounted for more than 11% of global oil consumption compared to 5% in 1996, whilst its share of global production only amounted to 4.8%. **6**

China's domestic consumption has risen by more than 10% between 2010 and 2012 while its production has risen by under 2% during the same period (see Table 1).

Table 1
China's Crude Oil Production, Consumption & Imports
(mbd)

	2010	2011	2012	2013	2015	2020	2025	2030	2035
Production	4.08	4.07	4.16	4.24	4.30	4.40	4.40	4.50	5.00
Demand	9.27	9.75	10.22	10.20	11.10	13.60	15.00	16.40	17.60
Net Imports	5.19	5.68	6.06	5.96	6.80	9.20	10.60	11.90	12.60
Imports as % of demand	56	58	59	58	61	68	71	73	72

Sources: BP Statistical Review of World Energy, June 2013 / OPEC World Oil Output 2012 / OPEC Annual Statistical Bulletin 2012 / Wood Mackenzi Forecasts as reported by the Financial Times on 21 August, 2013.

Since it became a net oil importer in 1993, China has greatly increased its oil imports from 20,000 barrels of oil a day (b/d) then to 6.06 mbd in 2012 accounting for 59% of consumption and this is projected to rise to 68% by 2020 and 73% by 2030. This rise in consumption and in oil imports is the result of several factors, including rapid GDP growth of about 9%-10% a year over the past two decades, urbanization, improving standard of living and a sharp increase in the number of vehicles on the country's

roads projected to rise from 60 million in 2010 to 130 million in 2020. **7** Another factor is the building of strategic petroleum reserves (SPR) with the intention of stockpiling 50 days' imports or 500 million barrels (mb) by 2015 and 90 days' imports or 1017 mb by 2020. **8**

In 2000, China consumed less than half as much primary energy as the United States. But by 2010, it surpassed America as the biggest consumer. **9** And by 2020, China's demand will increase another 50% while that of the United States and Europe will remain mostly flat.

In terms of oil, China consumed more than a third of the world's total production additions over the past three decades. Its demand will increase around 43% more, or 3.85 mbd, between 2011 and 2020 to nearly 13.60 mbd. **10**

Oil imports already account for 59% of total demand and Chinese production is projected to remain flat at around 4.0-4.5 mbd between now and 2030. By 2020 more than 68% of its oil demand will have to be imported rising to a projected 72% by 2035. And unlike the United States, the Chinese import portfolio is well diversified. Its top suppliers are Saudi Arabia and Angola, each with around equal shares that, combined, still supply only a third of total exports. After that came Iran, Iraq and dozens of smaller suppliers, many in Africa and increasingly in Latin America, but China is not heavily exposed like the United States, which imports 70% of its oil from the same five countries.

Wood Mackenzie, the energy consultancy, has said that China is on track to spend \$500 bn a year on crude oil imports by 2020 thus exceeding the peak in US oil import bill of \$335 bn. Analysts at the Edinburgh-based consultancy, one of the most respected analysts of the oil market, said Chinese net oil imports would rise to 9.2 mbd by 2020. **11** That is significantly higher than the 8 mbd of net imports forecast by the International Energy Agency (IEA) in its world energy outlook late last year, or by the EIA in its annual energy outlook in April this year. Though Wood Mackenzie factors in fuel efficiency measures, it expects the number of cars in China to grow so much that it will overwhelm efficiency measures.

Surging Chinese demand for raw materials has been the engine driving commodity markets including oil, in recent years, as the country's economy has regularly grown at more than 10% a year.

Wood Mackenzie expects the Chinese economy to grow by almost 8% a year in the decade to 2020, compared with the IEA's scenario of 7% growth.

Chinese oil demand is expected to continue growing smoothly, even as the economy transitions from a manufacturing to a more consumer-oriented economy.

The Oil Price

Again, to put these numbers into context, China needs to work very hard to secure enough oil to fuel its economy. Most global demand growth will be Chinese, and as such, it will drive global prices. And in the process China will continue securing

supplies through oil-for-cash development projects and investments, a model it has successfully implemented for decades.

As much as China has driven demand, it has also stimulated huge investments in production throughout the world directly or indirectly. Even when its companies are not involved, China's demand will continue driving investments throughout the decade and beyond.

From energy security point of view, one of the biggest threats to maintaining a stable oil price in the long run will be satisfying growth in Chinese demand. That is what is putting pressure on prices. It is helpful to the extent that Chinese companies are investing in additional production capacity. On balance, it is zero-sum if they compete but still bring oil to the market place. And you have a net positive in oil flow if China invests in developing deposits that, for reasons of profit or politics, are not attractive to international investors. **12**

Energy security, especially for the United States, has become more a question of price, a trend that will deepen throughout this decade. There is a broad consensus that economic growth is directly related to oil prices. Indeed, inflation tracks oil prices. And economic growth is inversely proportional to inflation, broadly speaking. That is the higher oil prices are, the less money available to spend on everything else, which means the economy slows.

Every \$10 increase in the price of oil reduces US GDP by 0.2%, according to a report published by the Congressional Research Service in April 2011, entitled "US Oil Imports: Context & Considerations". **13**

Record high oil prices in the past few years and renewed bullish trends in 2012, remind us that energy security is no longer so much about oil embargoes or the ability to find resources. It is about prices.

How long can the US economy sustain \$150 a barrel, or \$200 a barrel, when half of the country's oil supply is bought overseas? And how many leaders are willing to accept the political cost of rising oil prices? For every \$10 increase in the price of a barrel of oil, Americans spend \$30 bn more, according to IHS, the global energy consultancy. **14**

The global economy can at most sustain oil prices that represent just about 6% of GDP translating into \$130 a barrel of Brent crude in 2012, \$137 by 2015, \$156 by 2020 and \$241 by 2035 (see Table 2).

The global economy thus depends heavily on keeping oil as cheap as possible and since demand is harder to tackle, supply is the only real way to influence prices.

Imagine if there was a disruption to Iranian oil exports? Or instability in Saudi Arabia? The current spare capacity would send prices through the roof and the world into chaos. Any long-term disruption would be impossible to meet. The Libyan war put OPEC to the test and it failed.

Table 2
The Link between Global GDP, Oil Demand & Maximum Sustainable Oil Prices

	2012	2015	2020	2025	2035
Global GDP (US \$ trillion)	71.83	77.20	92.44	110.70	158.74
Maximum 6% of GDP on oil expenditure	4.28	4.60	5.51	6.60	9.46
Global Oil Demand (mbd)	89.77	91.80	96.90	100.90	107.39
Sustainable oil price (US\$)	130	137	156	179	241

Sources: IMF World Economic Database 2012 / OPEC: World Oil Outlook 2012 / IEA, World Energy Outlook 2012 / BP Statistical Review of World Energy, June 2013 / EIA, Energy Outlook 2012 / Author's projections.

*Author's estimates of GDP growth during 2012-2035 based on an annual rate of 2.5%.

Looking into the future, global demand will outstrip supply during most of this decade (see Table 3). In the latest IEA medium term forecast to 2016, geopolitics and increasing demand couple to reduce spare capacity. Prices will be between \$15 and \$20 per barrel higher through 2016. **15**

Table 3
World Oil Demand & Supply, 2012-2035 (mbd)

	2012	2014	2015	2016	2020	2025	2030	2035
World Oil Demand	88.77	90.70	91.80	92.90	96.90	100.90	104.20	107.39
World Oil Supply	84.40	84.63	85.37	85.17	87.91	89.62	90.05	90.06
Non-OPEC	46.60	47.70	49.90	49.90	48.68	48.92	49.16	49.31
OPEC	36.80	35.80	36.20	36.00	37.23	37.70	37.89	38.00
US Shale oil	1.00	1.13	1.27	1.27	2.00	3.00	3.00	2.75
Demand / Supply Deficit *	- 4.37	- 6.07	- 6.43	- 7.73	- 8.99	-11.28	-14.15	-17.33

Source: OPEC: World Oil Outlook 2012 / IEA, World Energy Outlook 2012 / BP Statistical Review of World Energy, June 2013 / EIA, Energy Outlook 2012 / Author's projections.

*The demand/supply deficit is accounted for by stock changes, consumption of non-petroleum additives and substitute fuels. Otherwise it will be reflected in higher oil prices.

A good barometer to follow though is the world's spare capacity. While non-OPEC producers are currently producing at full capacity, OPEC's spare capacity (world's

capacity) continued to shrink as a result of steeply-rising domestic consumption particularly in the Arab Gulf countries and slow additions to capacity. In 2012 it stood at 1.00 mbd. However, this spare capacity could disappear altogether by 2015 if no measures are taken to add to it or to reduce domestic consumption (see Table 4).

Table 4
OPEC's Spare Production Capacity (2009-2015)
(mbd)

	2009	2010	2011	2012	2015
Spare capacity	1.62	1.19	1.19	1.00	-

Sources: Petroleum Review, (various issues 2006-2010) / OPEC / US Joint Operating Environment (JOE)–2010).

The Saudi case illustrates growing concern among oil-consuming nations like the United States, China and Japan. Saudi Arabia is not planning significant production capacity increases through 2016 after having completed hefty investments in 2010. That uncertainty alone is huge. Saudi domestic oil demand is also rising faster than expected, partially due to subsidies, but increasingly because of lack of alternatives to generate electricity. **16** That is, Saudi Arabia for political and economic reasons will seek to maintain its spare capacity, but it will do so to manage prices to its benefit.

The Bank of America-Merrill Lynch Midterm oil forecast published in February 2012, estimated that OPEC production is now declining at an average rate of 4.5% per year, compared to 3.9% a year ago, and 3.3% the year prior. Overall, it estimated also that global oil production is declining at an average annual rate of 4.3%, compared to 4.2% in 2011. **17**

Global spare capacity this decade will thus remain strained even while the oil industry runs at full steam. Even with huge additions in the Middle East, Canada and Brazil, it will remain tight. The fact that most of the global output growth for the remainder of the decade is expected to come from Canadian oil sands, Brazilian and Angolan deepwater offshore, American shale/tight oil, and Venezuelan heavy oil, all of which are unconventional or cost significantly more to produce, augur a more bullish future for oil prices.

The optimistic price range, one that doesn't take politics into account, will hover between \$100 and \$130 a barrel. Rising budgetary needs in OPEC countries, as well as higher production costs in non-OPEC countries, mostly for unconventional oil, have set an \$80 floor on oil prices in the short term, according to the Bank of America-Merrill Lynch midterm oil forecast.

In a supply-constrained world, however, oil is unlikely to spend much time hovering around its price floor. This suggests that prices will continue to spike over the next five years occasionally reaching \$200/barrel in order to keep oil demand in check.

Furthermore, as the Libyan war has exposed, the world is no longer sufficiently supplied to sustain future supply disruptions like war, nor will it be for the remainder of the decade. The unprecedented release of oil supplies from the developed nations' emergency reserves in 2011, led by the United States as the Libyan war raged, highlights just how sensitive oil markets are and how concerned governments remain. The fact that the United States and its allies are considering once again turning to emergency reserves as tensions rise with Iran and over the civil war in Syria, illustrates the limited options available to Western governments at this juncture.

Both China and the United States need to pursue a similar energy security strategy. The two face this decade under different circumstances. The United States owes nearly \$15 trillion, nearly 100% of its GDP. In contrast, China's public debt was less than 20% of its GDP in 2010 and it has \$3 trillion in foreign reserves, a world record that swells every year. The United States has had a trade deficit for decades while China has annual trade surpluses. America's economy will struggle to grow and China will continue expanding rapidly. The American public deficit is increasing, while the Chinese one is decreasing. **18**

This is not to say China and the United States will literally fight for oil any time soon. There will be no need to. But China should still plan for increased competition. With decades of advantage, American requirements to improve energy security are smaller than those of China, but then again China is in a better position to advance its interests this decade than the United State.

China's Oil Diversification Policy

China's diversification strategy is to limit its oil dependence on the Middle East, and it has aggressively used its financial reserves to offer billions in development credit, underwritten with oil, especially in Africa, Latin America, and even Russia. Suffice to say that Chinese oil demand is already a challenge to US energy security, not in terms of securing volumes, but in terms of prices.

China needs to secure more oil – and most other commodities – than any country in the world to maintain its growing economy. Its efforts over the last three decades stretch to Asia, on to Africa and the Middle East, and eventually to America.

For decades the doctrine of peaceful rise has meant that China has tried to secure energy and raw materials without confronting the United States and the West. China's long-standing willingness to deal with states that the West regards pariahs is in part a practical and ideological refusal to make judgements about other countries' domestic policy. It is also in part a recognition that dealing with countries like Sudan, Iran or Uzbekistan allows China to avoid direct confrontation with Western interests. However, the larger China has become, the sheer scale of its energy needs has forced it more and more to intrude into areas that the United States regards as its own sphere of influence.

Examples abound. Consider China's courtship of Canada. In April 2005 Petro-Canada and Enbridge signed a memorandum of understanding to build a \$2-billion 'gateway' pipeline to move oil from Alberta to the Pacific Coast. Petro-China is to get

200,000 b/d through this pipeline. Moreover, the Chinese oil company, Sinopec, has acquired a 40% stake in Synenco Energy's \$4.5 bn Northern Lights Oil Sands project with projected output of 100,000 b/d, while CNOOC has acquired 16.9% stake in MEG Energy Corporation, which operates the Christina Lake project, near McMurray. **19**

In Latin America, China secured long-term commodity supply deals while slowly taking up positions in production of everything from copper and coal, to oil. Around 90% of China's \$45 bn invested so far in Latin America, with billions more already agreed, has gone to the commodities sector, mainly oil. Beijing offered cash-for-oil swaps in Venezuela, Brazil, Ecuador and several more countries. Billions of loans were signed, underwritten with long-term oil supplies. Brazil and Venezuela alone received \$40 bn combined. The money was critical and did not affect debt levels as oil was the exchange currency. **20**

China's presence in Latin America has aroused great concern and anxiety. In fact, China's interest in Latin America is not to challenge the US dominance in the region, its "back-yard", but to promote cooperation with the continent in the economic sphere. Naturally, as a region with large market and an abundance of resources, Latin America is highly complementary economically with China.

Business ties with Venezuela are heavily weighed on by cash diplomacy, but most of China's inroads in the continent are through corporate, market-based channels. However, the most significant deals have been in Brazil. Early in 2011, Sinopec bought a 40% stake in the integrated Brazilian operations of Repsol, the Spanish oil major. Repsol has top of the line expertise and assets throughout the continent, from Alaska to Argentina, operating for over two decades in the region, and Sinopec is flush with money. Months later, Sinopec also bought a 30% stake in the Brazilian unit of Portuguese oil company Galp. China's Sinochem agreed to buy a 40% stake in a Brazilian offshore oil field operated by StatoilHydro. China has become Brazil's largest export destination, primarily importing raw commodities – crude oil, iron ore and soybeans. Brazil's exports to China in the first seven months in 2011 totalled \$24.4 bn, a 46% rise over 2010. **21**

To sustain its spectacular economic growth, China is racing to secure Middle East deals, putting it on a possible collision course with US interests in the world's most volatile region. China is now the biggest importer of Saudi oil, the second-biggest of Iranian oil, and the largest player in the Iraqi oil game. China's national oil company, CNPC, shares equally with BP the contract to develop Iraq's biggest oilfield, the 'Rumaila' in the south with estimated proven reserves of 17.8 bb. This is the biggest contract signed by the Iraqi government so far. **22** China is putting a lot of money on the bet that having ownership of oilfields is a better guarantee of supply than buying oil on the open market. **23**

Chinese activity in Africa is increasing at an exponential rate. According to the China-Africa Business Council, China is now Africa's third most important trading partner behind the United States and France. In 1999 the value of China's trade with Africa was \$2 bn; by 2005 this has grown to \$39.7 bn. A senior economist at the Chinese Ministry of Commerce predicts that trade volume between China and Africa could top the \$100 bn mark by the end of the decade. **24**

Driven by a desire to obtain sources of energy and raw materials for China's continuing economic growth and open up new export markets, Chinese expansion into Africa is attracting more and more attention from policy-makers in the West. Of particular interest to the West is China's growing expansion into Africa's oil markets. It should be pointed out that although oil is a major and obvious source of Chinese interest in Africa, it is far from being the only one. China is actively seeking resources of every kind: copper, bauxite, uranium, aluminium, iron ore and manganese, among others, are being sought acquisitively by Beijing. **25**

Any analysis of China's oil diplomacy in Africa needs to be balanced and avoid the hyperbole that has characterized some accounts. In the short term, China's trade with and investment in Africa are of assistance to the development of the continent, if for no other reason than that little investment is forthcoming from other sources. China's investment in Africa's crumbling infrastructure is needed and is welcomed by most. Partly as a result of China's interest in Africa – particularly in African oil – the continent's annual growth rate has increased to 4.5% per annum.

In Kazakhstan, China is looking to secure more Kazakh oil supplies following its acquisition of PetroKazakhstan and the commissioning of its first oil import pipeline a few years ago. On 30 April 2006, a new era between China and Kazakhstan began when Kazakh oil reached and crossed the border with China in the latter's first import pipeline (nicknamed the 'new silk road'), which runs 600 miles from Atasu, in central Kazakhstan and on to Xinjiang province in China. **26**

Beijing has also been encouraging its state-controlled oil companies to secure exploration and supply agreements with states that produce oil, gas and other resources.

The Real Oil Game Changers: Iraq & Venezuela

Iraq and Venezuela could emerge as the real oil game changers in the coming three decades of the 21st century. They both have the reserves and the potential to add more than 10 mbd, or 12%, to global oil supplies by 2020. However, realizing this potential will depend on investments, geopolitics and stability.

Iraq's Oil Potential

With tremendous crude oil reserves estimated at more than 385 billion barrels (bb) between proven, probable and recoverable, lowest production costs in the world and the biggest potential for capacity expansion of anywhere else, Iraq may be destined to dominate the world oil market in the coming three decades of the 21st century but only if geopolitics and infrastructure permit. **27** However, the development of this colossal oil wealth will require both substantial foreign investment and technical assistance and also political stability.

Of more than eighty oilfields discovered in the country, only about twenty-one have been partially developed. Given this state of underdevelopment, it is realistic to assume that Iraq has far larger oil reserves than documented so far, probably about 200 bb more. These numbers make Iraq the fulcrum of any future equilibrium in the global oil market. **28**

In 2009, the Iraqi government awarded the re-development contracts of 11 of the country's super-giant oilfields to several international oil companies. **29** The re-development contracts awarded so far target a total production of more than 11.6 mbd, an increase of about 9.60 mbd over the current level of considered fields (see Table 5) This does not encompass the whole of Iraqi oilfields.

Table 5
Peak Planned Production of Already Awarded Iraqi Oil
Contracts (Excluding the Kurdish Region)

Fields	Foreign Companies (Share)	Current Production (mbd)	Production Targets (mbd)
Rumaila	BP / CNPC	1.10	2.85
West Qurna 1	Exxon/Shell	0.27	2.35
Zubair	Eni / Occidental / Kogas	0.20	1.20
Missan*	CNOOC / TPAO	0.10	0.45
Majnoon	Shell / Petronas	0.05	1.80
West Qurna 2	Lukoil / Statoil	0.12	1.80
Halfaya	CNPC / Petronas / Total	0.07	0.54
Gharaf	Petronas / Japex	0.03	0.23
Badra	Gazprom / Petronas / Kogas TPAO	0.02	0.17
Qaiyarah	Sonangol	0.02	0.12
Najmah	Sonangol	0.02	0.11
Total Production*		2.00	11.62

Source: Oil: The Next Revolution, published by Belfer Centre for Science & Technology, Harvard Kennedy School, June 2012, p.24.

*Excludes the Kurdish region.

If the re-development plans proceed as planned, Iraq's oil production could rise from 3.12 mbd in 2012 to a projected 12.72 mbd by 2020 (see Table 6). Iraq could thus emerge as the largest crude oil producer and also the largest export in the world.

The Kurdish region could produce up to 1 mbd of oil by 2020, or 825,000 b/d more liquids than in 2011. Yet, like the rest of Iraq, it is constrained by the lack of infrastructure and export capacity. Moreover, without some kind of agreement with the central Iraqi government, many international oil companies have always been cautious about making major investments in the region. All this could technically cut 500,000 b/d from the overall Kurdish production capacity by 2020 from the projected 825,000 b/d to 325,000 b/d by then.

Table 6
Iraq's Current & Projected Oil Production, Consumption &
Exports, 2010-2020

(mbd)

	2010	2011	2012	2013	2020
Production	2.49	2.92	3.12	3.28	12.72
Consumption	0.60	0.75	0.79	0.83	1.17
Exports	1.89	2.17	2.33	2.45	11.55

Sources: OPEC Annual Statistical Bulletin 2012 / BP Statistical Review of World Energy, June 2013 / Author's estimates.

In total, Iraq could enjoy additional unrestricted new production of 10.43 mbd by 2020 (9.6 mbd from Iraq and 825,000 b/d from the Kurdish region), or 5.13 mbd recognizing the risks.

Still, Iraq's enormous potential for oil is threatened by several problems that could significantly reduce its future supply.

Iraq's oil industry has been devastated by three wars between 1979 and 2003 and now requires billions of dollars of investment for rehabilitation. Of particular need is the upgrading of its infrastructure and the expansion of pipelines and oil-export terminals on the Gulf and also establishing political stability in the country.

The only available oil-export pipeline is the Iraqi-Turkish Pipeline (ITP) from Kirkuk to Ceyhan on the Turkish Mediterranean coast with capacity of 1.6 mbd but its current throughput is 400,000 b/d. However, the ITP passes through Iraqi Kurdistan and could thus be vulnerable to sabotage and attacks by Kurdish insurgents unless some form of a political settlement is reached between the central government in Baghdad and the Kurdish regional government (KRG).

Iraq's actual export capacity through the ITP and terminals on the Gulf is currently estimated at 3.8 mbd (see Table 7).

Table 7
Iraq's Current Pipeline & Gulf Terminal Oil-Export Capacity

Route	Capacity (mbd)
Iraqi-Turkish Pipeline (ITP) (Kirkuk-Ceyhan)	1.60*
Gulf terminals of: Mina Al-Bakr, Fao, Khor Al Amaya & Umm Qasr	3.40
Total Capacity	5.00

Sources: Oil: The Next Revolution, published by Belfer Centre for Science & Technology, Harvard Kennedy School, June 2012 / EIA.

*Current throughput is only 400,000 b/d.

Furthermore, for years under the most intrusive UN sanctions, Iraq was not able to use the latest modern technologies for exploration and production such as deep-drilling, horizontal drilling, enhanced oil recovery and correct re-injection of water and natural gas. That is why the Iraqi government has awarded the re-development

contracts to international oil companies so as to get access to investments and latest technologies.

Why Iraq Such a Prize?

Other than the huge reserves, Iraq is the only country in the world potentially capable of flooding the oil market with cheap oil on the scale of Saudi Arabia and Russia. Not only does it have the potential to become the world's largest producer, but no other producer could do it so cheaply. That is because, for geological reasons, Iraq boasts the world's most prolific wells.

Before Iraq's oilfields were devastated by three wars between 1979 and 2003, its wells produced an average of 13,700 b/d each. By contrast, Saudi wells averaged 10,200 b/d each. US wells, which are gradually drying up, averaged 17 b/d each. It would take more than 800 US wells to pump as much oil as a typical Iraqi well. The average cost of bringing a barrel of oil out of the ground in the US is about \$10. In Saudi Arabia, it is about \$3 and in Iraq less than \$1. **30**

Venezuela

The only region that could significantly increase oil output on top of market expectations is Latin America, which has the world's second biggest oil reserves. And within that, Venezuela is the only game changer. Venezuela's 297 bb of oil are already the biggest reserves, and still growing. **31**

If Venezuela gets the investments and expertise necessary to tap into its huge reserves, Venezuelan oil production could rise from 2.73 mbd in 2012 to 4.73 mbd by 2020. However, few believe Venezuela could attract the investments needed without some rapprochement with the United States.

Venezuela could add at least 2 mbd to global oil supplies by 2020 rising to more than 4 mbd by 2030 (see Table 7).

Table 7
Venezuela's Current & Projected Oil Production
Consumption & Exports (2010 – 2030)
(mbd)

	2010	2011	2012	2015	2020	2030
Production	2.85	2.88	2.73	3.00	4.73	5.00
Consumption	0.68	0.74	0.78	0.80	0.84	0.93
Exports	2.17	2.14	1.95	2.20	3.89	4.07

Sources: BP Statistical Review of World Energy, June 2013 / OPEC Annual Statistical Bulletin 2012 / Platts, www.platts.com / EIA Estimates / Author's Projections.

Looking forward, Venezuela has agreements in place to add nearly 2.4 mbd more of extra heavy crude from the Orinoco Belt this decade, which would translate to around 1.9 mbd of upgraded crude.

A great deal depends on Chinese companies, which have committed some \$40 bn this decade to developing Venezuela's oil bounty through four different projects that involve oil production of about 800,000 b/d, and the construction of a refinery geared for Venezuela's heavy oil with a capacity of 200,000 b/d. **32**

Venezuela could ultimately enhance US energy security. This would take a lot of investment and a lot of recovery, but the reserves are certainly there.

Conclusions

The single most important driver of shifting dynamics in world oil markets is China. It alone will continue to account for most of the world demand growth throughout this decade and probably the next. At the same time, for several years it has been directly and indirectly responsible for driving global production gains.

By October 2013, China's net oil imports are projected to exceed those of the United States on a monthly basis and by 2014 on an annual basis, making it the largest importer of oil in the world.

Suffice to say that Chinese oil demand is already a challenge to US energy security, not in terms of securing volumes, but in terms of prices, a trend that will deepen throughout this decade.

From energy security point of view, one of the biggest threats to maintaining a stable oil price in the long run will be satisfying growth in Chinese demand. That is what is putting pressure on prices.

The optimistic price range, one that doesn't take politics into account, will hover between \$100 and \$130 a barrel. However, in a supply-constrained world and with OPEC's spare capacity continuing to shrink, oil is unlikely to spend much time hovering around that price range. Instead, prices will continue to spike over the next five years occasionally reaching \$200/barrel.

The global economy can at most sustain oil prices that represent just about 6% of GDP translating into \$137 a barrel of Brent crude by 2015, \$156 by 2020, and \$241 by 2035.

China's steep-rising oil demand, its search for new sources of oil and its acquiring of oil assets around the world will ultimately give it the final say on the oil price globally.

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Footnotes

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