

EXPLORING THE UNCERTAIN
WORLD OF ENERGY: 2000-2020

AGE OF PARADOX



CIEP

CLINGENDAEL INTERNATIONAL ENERGY PROGRAMME

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TITLE

Age of Paradox

SUBTITLE

Exploring the uncertain world of energy 2000-2020

AUTHOR

Clingendael International Energy Programme

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DESIGN

Studio Maartje de Sonnaville

PRINTED BY

De Swart

PHOTOGRAPHS

Jaap Oldenkamp Vormgeving in Fotografie

The photographs show how The Netherlands is part of the international energy landscape in a very Dutch way.

ENGLISH EDITING

Deborah Sherwood

PUBLISHED BY

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AGE OF PARADOX**EXPLORING THE UNCERTAIN
WORLD OF ENERGY: 2000-2020**

‘All is not what it seems...’

SOURCE: COFFEE CUP, INTERNATIONAL SPY MUSEUM WASHINGTON D.C



CLINGENDAEL INTERNATIONAL ENERGY PROGRAMME

CIEP is affiliated to the Netherlands Institute of International Relations 'Clingendael'. CIEP acts as an independent forum for governments, non-governmental organisations, the private sector, media, politicians and all others interested in changes and developments in the energy sector.

CIEP organises lectures, seminars, conferences and roundtable discussions. In addition, CIEP members of staff lecture in a variety of courses and training programmes. CIEP's research, training and activities focus on three themes: regulation of energy markets (oil, gas, electricity) in the European Union; the international economic and geopolitical aspects of oil and gas markets, particularly with respect to the European Union security of supply; energy and sustainable development.

CIEP is endorsed by the Dutch Ministry of Economic Affairs, Agriculture and Innovation, the Dutch Ministry of Foreign Affairs, the Dutch Ministry of Infrastructure and the Environment, BP, Delta, Electrabel GDF-Suez, Eneco, Energie Beheer Nederland, Essent, Esso Nederland, GasTerra, Gasunie, ING, NAM, NUON, TenneT, Oranje-Nassau Groep, Port of Rotterdam, RWE, Shell Nederland, Total E&P Nederland, Vopak Oil Europe Middle East and Wintershall.

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AGE OF PARADOX

EXPLORING THE UNCERTAIN WORLD OF ENERGY: 2000-2020

PREFACE

For the past ten years, Clingendael International Energy Programme (CIEP) has been analysing and debating ongoing developments in the energy world. A solid understanding of energy markets, their main players and the impact of government policies is crucial in these debates. The development of European gas and electricity markets in particular, including the impacts of regulation and climate change policies on such markets, has been one of the core themes on the research agenda. Although the inroads made by renewables on traditional energy markets over the past ten years is often deemed too modest, they have nonetheless radically changed the context of EU energy policy-making. In ten years' time, the yardstick against which new energy investments are measured has changed significantly. With the energy ship slowly changing course, the energy trilemma of security of supply, reasonable prices and the environment, is posing new questions, some of which will still go unanswered. Although countries' energy mixes were slowly converging in the past decades, we now observe more diverging developments, at least among the OECD countries, depending on their resource base, financial strength and strategic preferences. Energy globalisation remains an incomplete puzzle.

In an attempt to stay ahead of the curve in the energy and climate developments, CIEP began to develop possible future storylines of energy. Through the years, these storylines have helped to develop antennae for markets and policies beyond the day-to-day or even year-to-year developments. Moreover, they have helped us to learn to think about views and interests from various capitals around the world. The energy strategy game board certainly looks different from various vantage points; what's more, over the past decade we have witnessed the emergence of new powerful players. In the ten years of CIEP existence, the energy game has changed almost beyond recognition in terms of players, fuels, trade and prices, all of which is linked in some way or other.

In this work, CIEP traditions in the geopolitics of energy is a leading theme as we explore the implications of the changes of the past ten years on energy strategies towards the end

of the current decade. Some of the narratives present an uneasy future and strategic dilemma's which will not be easily solved. The comforting part is that storylines tend to be simply that: they serve as mirrors of what might come *if* power is not balanced, *if* players do not adapt strategies, *if* economies fail to adjust or *if* technologies do not create new ventures. We have taken the CIEP studies and debates of the past ten years as a point of departure and run with them into the future. In ten years' time we hope to be proven completely wrong.

Coby van der Linde



SECTION ONE

AGE OF PARADOX

EXPLORING THE UNCERTAIN
WORLD OF ENERGY: 2000-2020

Ten years ago, the world's energy politics and markets had a very different look than they do today. The 'American age' was in full swing, with most analysts expecting this to remain the overwhelming narrative of our times. That was certainly the working assumption on 1st September 2001, when the Clingendael International Energy Programme was born. On 11 September 2001, Al Qaeda attacked the US. That incident reshaped America's view of the world and it was clear from then on energy was inexorably going to be a large part of the geopolitical debate. CIEP wasn't just in business, it had no time to waste in starting to fill some of the gaps between the market and geopolitics, as well as how to approach rises in CO₂ that are an inevitable consequence of a global hydrocarbon economy. Less than three months later, the failure of Enron sharpened the energy debate even further.

Wind the clock forward to 2011 and things have not just become fantastically more complex from a geo-economic, geopolitical and energy perspective, but also far more uncertain. Wars have come (and not quite gone) in South Asia and the Middle East. Financial crises have hit, and economic downturn has firmly set in amid disastrous OECD balance sheets. Conversely, key emerging markets have appeared, so much so that a 'Chinese century' looms just as certain as the 'American age' did a decade ago. Such shifts ushered in a newly formed G20 to surpass a moribund G8 at the apex of global economic governance, but the new body remains remarkably long on political declarations and horribly short on effective domestic economic actions. Default is still *the* word on the lips of investors across Europe and a recently downgraded US, just as everyone is asking where the frontier markets of tomorrow will be – and indeed, what kind of global energy governance system will be needed to drive the unprecedented demand growth.

Mapping how we arrived at the current 2011 geopolitical, geo-economic and energy problem will be a core purpose of this book, as will highlighting some of the key contributions CIEP has made to the energy debate over the past decade. Sketching the contours of the coming years will be no less important – even though these can only provide best guess

scenarios rather than categorical answers. The oil demand shock in 2007/2008, the European gas crises of 2008/2009, US shale gas revolutions in 2008/2009, the Macondo oil spill of 2010 and the Fukushima nuclear disaster in 2011 all show that developments are by no means linear. Any trends that can be pulled out of the policy mix are subject to considerable wax and wane. The same interconnected point applies to price and technology, both areas will remain inherently uncertain. The cornerstones of CIEP output should at least help to provide some useful directions for those charting the energy world, under three key policy research areas:

- Understanding how oil, gas and power markets have played out in Europe and beyond has been a core CIEP focus, as have international geo-economic and geopolitical implications that both feed into (and flow from) such developments.
- Security of supply is no longer the preserve of European markets amid dwindling indigenous supplies, but directly relates to the key growth markets of tomorrow – namely China and India.
- Sustainable development & clean growth might not be at the forefront on the energy debate right now (at least on a global basis) but it's clear that decarbonising economic growth is a challenge that's only going to become a stronger 'externality' for all energy producers and consumers to think about in future.

This book highlights some of the key geo-economic, geopolitical and energy developments seen over the past decade, examining how CIEP has responded to, and on occasion led the debate on energy. Based on these insights, we derive some trends that sketch out the geopolitics of energy developments for the remainder of this decade. We gladly refer you to our website, www.clingendael.nl/ciep/ publications, to find the publications on which this book is largely based. This narrative is however far from complete, but is merely a lens to focus on certain strategic aspects of world energy relations as one of the realities. There are many more.



The world will go through a period of profound change over the next decade as geo-economic, geopolitical and energy pressures converge to reshape the international order.

The bottom line here is our expectation that the world will go through a period of profound change over the next decade as geo-economic, geopolitical and energy pressures converge to reshape the international order.

far cry from early 2001 when CIEP was still an idea being hatched in a Clingendael back office – not the fully-fledged international programme it is today.

The narrative first takes us to developments in the international oil markets, where China's rise makes itself felt most, and then to the international gas markets, where large changes in the demand and supply outlook are impacting international markets and relations among countries. In the past, understanding the political and economic mechanics of the international oil market was enough to understand the main drivers of international energy relations. The increasing share of natural gas in the energy mix, and the policy drive for renewables, makes the interplay between traditional and new fuels increasingly complex. Yet, in the current decade, oil and natural gas remain at centre stage, with other options potentially playing a more prominent role in later years. The velocity and intensity with which these new options can play out will certainly influence energy policy debates in the coming years, but will have little impact on the real numbers. In the short term, the gap between energy policy direction and numbers can thus lead to considerable smoke and mirrors on future demand and supply.

Energy market volatility will be high and market 'certainty' remarkably low. Security of supply will be the main policy focus, with price being part of the mix. Reducing emissions will remain a lesser priority, at least on a global basis. Serious political and economic reform will remain as necessary as it is difficult on the supply side of the equation, particularly as it must take place in the midst of an external power vacuum where US power ebbs, and Chinese oil 'flows', albeit without overarching security guarantees in place.

The book duly starts by sketching the world as we see it today, and how we think it will look in future, before dusting off our previous work to see how we got here in the first place. The lessons we've learnt (and will continue to learn) inform our overall suppositions as to what the energy world of 2020 might look like. It's certainly all a



SECTION TWO

PARADOX OF SCARCITY

We are currently in the midst of profound supply and demand side uncertainty – both on geological and geopolitical grounds. No one doubts that the energy pendulum is shifting East, but the key questions are how fast and under what geopolitical, geo-economical and market conditions. It might well be that Western security constructs need to fall apart over the next decade before new institutions can be forged into an Eastern fashion to rebalance geo-economic power with geopolitical responsibility.

The political hubris is presuming that these shifts aren't already underway – concerted political engagement will be needed all round in the next ten years if credible producer-producer, consumer-consumer and producer-consumer relations are to be struck. Get that right, and the Paradox of Scarcity we are in today could prove to have a shiny silver lining. If not, then the future looks very dark and sooty indeed.

REGIONAL DEBATES: GLOBAL GAPS

Amid current confusion, one clear fact that leaps out is that no one has managed to grasp the emissions nettle yet. Not even close. If anything, preoccupation with security of supply and price are taking centre stage for OECD and non-OECD economies alike. Price peaks of \$147/b in 2008 followed by lows of \$33/b six months later go a long way to explain this. As do elevated benchmark prices of over \$125/b in mid-2011 – on the back of seismic political turmoil in the Middle East shaking the fungible ground upon which global oil supplies supposedly sat. OPEC appears increasingly fractured between price hawks and price moderates over volume and price, while consumer countries remain far from cohesive. Crafting coherent energy policy in the midst of this is not the for faint hearted, and by no means easy, particularly when the core question of what is it you actually want to achieve has not been answered. The fact that coal has been coined the ‘fuel of the future’ in Asia provides a telling answer as to how disparate the global debate *really* is. There is no ‘one debate’ and there is no single answer beyond the very basic interest of everyone keeping the lights on and the goods moving.

Europe has got the emissions ball rolling but may run into difficulty to match political rhetoric with market support to meet its own prescribed targets to decarbonise the European economy. Switching from coal to seemingly abundant gas is the cheaper and easier fix. Asia is transfixed with security of supply and (to a lesser extent) price, which has seen a shift back towards equity hydrocarbons rather than market liquidity. The US still lacks any kind of cohesive energy policy, beyond fuelling national instincts towards energy independence, which hits on a broader, and some might say systemic point: energy is still fundamentally a national pastime. That still applies to the US where political risk is dished out according to the national flags companies carry. It still applies to Europe, where national champions often stand tall above national energy policies often dictated on a bilateral or sub-regional basis. If we go further upstream to producer countries, National Oil Company’s maintain a tight grip over ownership *and* access of reserves. It’s only Asian NOCs that seems capable of bucking the general trend, making

major international investments through a judicious blend of political design and ‘commercial practice’. In 2010/11 Asian NOCs finally tipped the balance by outspending international counterparts on upstream acquisition.

Few doubt that the world’s focus is shifting to the East, but the key questions are how fast and under what geopolitical, geo-economical and market conditions that will be. Although answers can never be definitive, the broad contours of how global energy provision will be arranged are starting to emerge. In terms of electricity generation, ‘indigenous’ coal will remain the bedrock of economic growth in emerging markets, albeit with ‘international’ gas creeping into the mix. European and US markets will increasingly shift towards gas to replace coal, with renewables and nuclear remaining more marginal players. That may sound like pretty innocuous stuff to some, but amid this differentiation sits a crucial ‘gold standard’: oil will continue to monopolise transportation of goods, material and people worldwide, with the clear upshot that everybody will want to keep getting their hands on the black stuff. Yes, CIEP agrees that fungibility might increase in terms of fuel switching (with considerable implications for storability), but the overall perpetuation of a global hydrocarbon economy will have a sharp resonance for geopolitical configurations. No clear approach exists to upstream acquisitions between East and West. Nobody is even willing to pretend that a credible price band *could or should* be set beyond prospective Saudi supply and Chinese growing demand.

If anything, we are in the midst of profound demand side uncertainty as to who will undergird global supplies, while supply side political and capacity constraints are quickly adding to the squeeze. The prospects for cooperation in what amounts to a quagmire of producer vs. consumer, producer vs. producer and consumer vs. consumer competition are thus inherently limited at least not without concerted political effort all round.

DEMAND SIDE CRACKS

On one level, the energy ground is shifting, and in a very literal sense. Amid promising domestic energy developments (and insurmountable fiscal challenges), it’s highly unlikely that



Europe's geopolitical energy significance will increasingly derive from how other global players view it as a strategic asset to have on-board, rather than how Europe shapes the world.

America will continue to underwrite global energy provision as it did in the post-war era. Domestic shale, Canadian tar, and oil from Latin America and the outer continental shelf will be the preferred core US options with some limited West African oil supply put into the mix across the Atlantic. 'Geopolitical dredging' will not be required for such supplies, in MENA, Central Asian, Eurasian or African markets.

That might appear to be good news for America, but it's certainly bad for Europe. With trans-Atlantic military power ebbing US recoil will clearly affect European supplies in terms of structural dependence on Russia oil and gas as its default supply option. Assuming Europe continues its (dis)orderly management of relative decline, Brussels will fail to open up new MENA or Central Asian reserves precisely because its security sealant is too leaky for upstream players to take politically seriously, while shale gas is likely to remain a marginal player for selective CEE markets predicated on geostrategic grounds. If anything, Europe's geopolitical energy significance will increasingly derive from how other global players view it as a strategic asset to have on-board, rather than how Europe shapes the world.

On that note, China will be far more active and assertive in diversifying its supply mix as the main market mover in oil and gas. The Middle Kingdom (as the country's name is literally translated) will have no choice but to source increasingly large amounts of oil from the Gulf, and to a lesser extent Central Asia and Africa, while gas will be sourced predominantly from Russia, Qatar, Australasia and Central Asia. Domestic supply will increase (both for oil and gas) but China's import dependency will far surpass even the most far reaching of efforts to boost internal output. Having shifted to being a net importer of oil since 1993 Chinese consumption will continue to sharply increase over the coming years and what's more, it has no option but to 'go global' to fill looming resource gaps. Given this new epicentre of burgeoning demand, major questions inevitably arise as to whether 'arbitrage' – both economic and political – will fall on the demand side of Beijing, Delhi, Brussels and Washington or sit on the supply side of hydrocarbon capitals in the Middle East, Africa, Central Asia, Latin America and Russia.

Whichever way the arbitrage debate plays out, China (and indeed the world) can't get away from a geopolitical crux on whether Beijing is willing to risk sourcing external supplies in the midst of geopolitical vacuums in the Middle East and Central Asia, or whether it will step into the breach and supplant the US as the primary geopolitical actor across producer states. The chances are that China will need to match hydrocarbon demand with geopolitical supply if things are to be kept on an even keel. All while giving India a sufficient stake in the game to ensure to Asian demand is met across the 'Chindian' board rather than on a selective basis.

In turn, India will have little choice but to cede considerable geostrategic ground in the Indian Ocean and South Asia to be able to free ride on the back of Chinese energy interests, just as much as Europe has taken a free ride at US expense over the past years if such arrangements are to work out. It might well be that Western security constructs need to 'fall apart' over the next decade before new institutions can be forged into an 'Eastern fashion' to rebalance geo-economic power with geopolitical responsibility. How messy and disorderly this process proves to be remains uncertain – as does the interaction between geo-economics, geopolitics and energy along the way.

GEO-ECONOMIC QUICKSAND

But timing is crucial here. China's decision as and when to take up American military slack will depend on broader geopolitical and geo-economic relations with the US (in what some have coined the G2). Given that China basically underpins US debt and therefore US defence expenditure, the assumption that creditor-debtor relations won't come without a political catch for Washington is naïve. As Secretary of State Clinton has already asked, 'how do you talk tough to your bank manager' – it's an interesting question to ask on Taiwan, Iran, Japanese maritime interests or the Korean peninsula, but it misses the bigger point. The greatest geopolitical concern for Washington is not if China starts playing politics with the assets they already have, but if they start working on an economic plan B to avoid US dependency full stop.

China has better games to play, not only with the BRIC economies but with emerging markets across the board.

Obviously China is still dependent on exports to the US for the time being; it also has no truly comprehensive outlet for non-dollar securities to provide credible alternatives to US markets. Despite US debt ceiling debacles, China isn't *really* looking to pitch the Red Back as any kind of reserve currency any time soon beyond ad hoc currency swap agreements. The renmibi is not convertible and capital controls are almost certain to stay in place for now. And yes, China clearly doesn't want to prompt a fire sale on US denominated bonds given it holds over \$1.1tr of them. But the idea that China will not gradually diversify away from the US dollar or reduce exposure to Western demand in light of the financial crisis is about as naive as thinking that property prices would only ever rise. Rebalancing will assuredly come one day, but it might not be in the form the US likes.

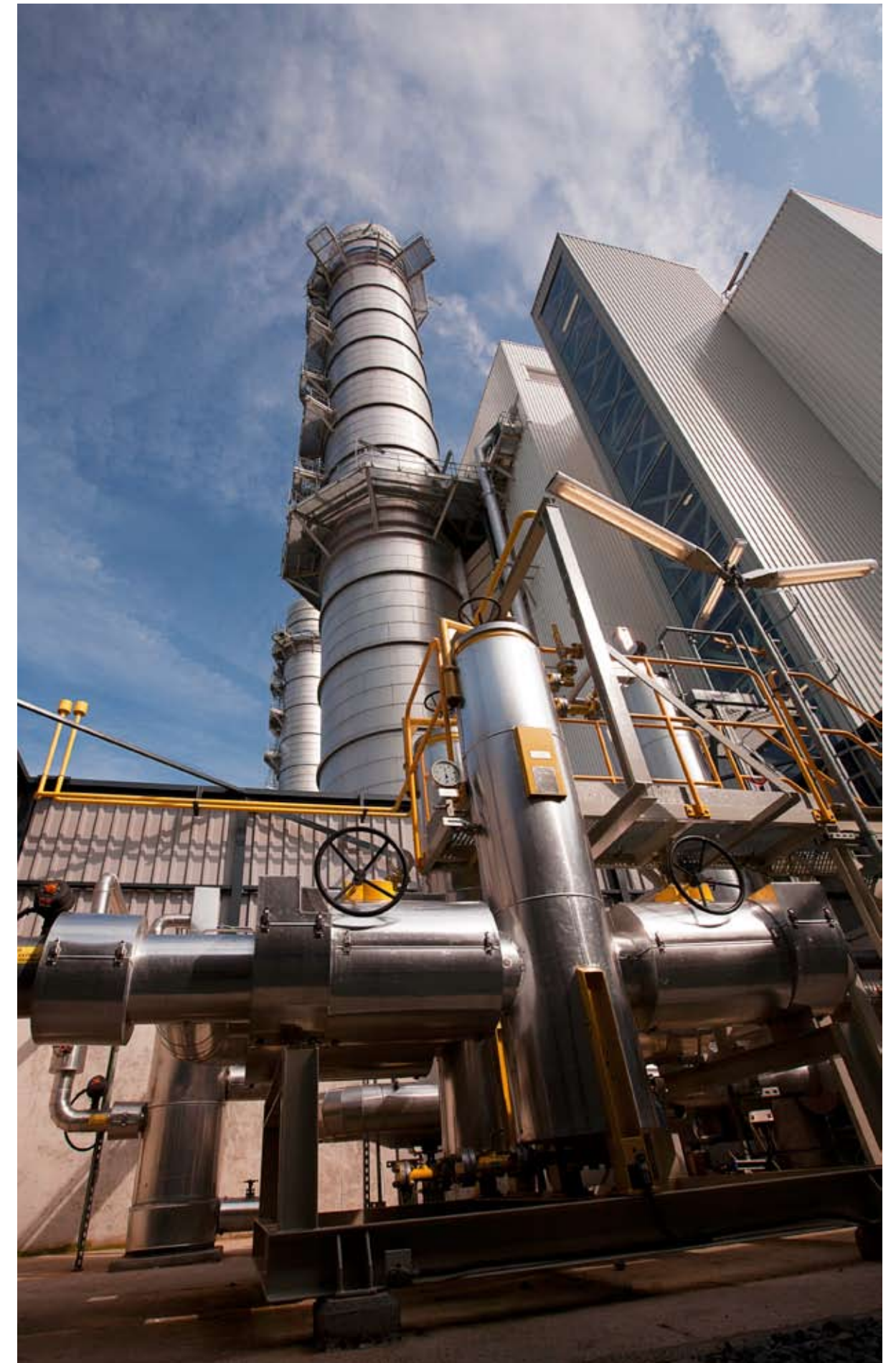
The train has arguably already left the station; stoking domestic and regional demand are two key tracks in China's diversification approach. For all the Keynesian headlines in the West, it was China that launched a massive stimulus that amounted to more than 8% of GDP alongside US\$1.5tr of state enforced lending to the private sector. The Chinese economy not only grew by 10% in 2010, it surpassed Japan to become the second largest economy in the world. Even if China gradually adopts a more sustainable path to cool its growth (inflationary pressures are obviously growing and a certain degree of institutional weakness may require intervention), this isn't some kind of short term tactical from Beijing, but rather a fundamental reorientation of China's global economic position. It wants to use its financial clout to stimulate a new wave of self-reinforcing growth with other emerging markets – not just keep propping up the export channels of old.

Consider the numbers. In the decade that finished to 2010, the BRIC economies (and predominantly China) added around \$8,000bn to global GDP. The BRICs are now forecast to add \$12,000bn more over the coming decade, twice the US and Eurozone combined (FT 10 August 2011). The Chinese Development Bank and China Export-Import Bank issued loans in excess of \$110bn to developing countries over the past two years – a larger sum than the key lending

arms of the World Bank. China became Brazil's largest single trade partner and investor in 2010, and saw export trade increase by a staggering 73%. Exports were also sharply up to India (38%) and Russia (69%), which buffeted an overall export increase of 30%. 'Cementing the BRICs' you might say, given China's clearly dominant economic position over the BRIC bloc, but Beijing also replaced the US as the key trade partners of Japan, Malaysia, Singapore, Hong Kong, Australia, the Philippines, South Korea, Saudi Arabia and Indonesia. Once this is understood it becomes clear as to why the Chinese take up of Eurozone debt has been so tepid and why the dollar is on shaky ground. China has better games to play, not only with the BRIC economies but with emerging markets across the board; And nowhere more so than in commodities, which constitutes the third and most important rail to China's geo-economic track.

CHINA'S COMMODITY ROCKS (IN HARD PLACES)

Commodities aren't just about meeting demand for China but constitute a massive hedge against the dollar (deals are invariably structured in dollar-denominated assets directly filtered from foreign exchange reserves) and loans are also linked to prevailing commodity prices. Given that Asian demand dictates fundamentals on the trading floors of New York and London these days, China is basically placing a bet on its own economic performance rather than the US. It also explains why close Chinese relations with resource rich states are the biggest geopolitical driver of global affairs today. 'Economic policy is energy policy is foreign policy'. Security of supply, diversity of supply and reducing price risk exposure are the key ingredients involved. And it's a recipe that China can ill afford to get wrong. Chinese oil import dependency will rise beyond 80% over the next twenty years or so with around 40% of global demand growth coming from China alone. It already became the world's largest consumer of energy ahead of the US in 2010, an event that – according to some – should have been twenty years further down the track. This has inevitably facilitated far stronger Chinese links to Central Asia, Russia, Africa, Latin America and the Middle East. Such linkages will continue to recalibrate global affairs writ





Linkages will continue to recalibrate global affairs *writ large* on the simple reasoning that producer supply will inexorably lean towards Asian demand.

large on the simple reasoning that producer supply will inexorably lean towards Asian demand.

If anything, China has cannily used the economic downturn as the perfect storm to make strategic resource investments when few else could. 'Loans for oil' agreements were an easy sell for those deemed to be on the critical list of resource (mis)management. Venezuela was falling over itself to sign a \$20bn credit line in exchange for up to 200,000b/d for Sinopec and CNPC; Colombia looks similarly keen to provide an \$8bn transportation outlet to China to help circumvent the Panama Canal for Venezuelan supplies. Russia wasn't much different, striking a \$25bn oil export-backed loan agreement for Rosneft to supply China with up to 300,000b/d over the next twenty years. China nipped Central Asian supply in the bud, sourcing oil from Kazakhstan and gas from Turkmenistan and indeed, Uzbekistan. Southeast Asian and Australasian supply is increasingly dominated by Chinese demand, alongside a swathe of African states joining the ranks of Chinese natural resource interests. China has galvanized relations with West African producers, most notably Angola, but with Nigeria, Guinea and Ghana firmly on the roster, mirroring developments in Central and East Africa. North Africa is also a going concern.

The list could easily go on; China has actually made over 200 resource investments in over 50 countries. But it's not just in 'frontier' markets where China has been investing. Brazil secured a \$10bn loan to help finance its \$174bn five-year strategic energy plan, quickly followed by investments in Argentina, while Canada has opened up tar sand prospects for overseas investment. This matters economically – 5.7% growth in Latin America, 4.7% in sub-Saharan Africa and 9.3% in East Asia & the Pacific would all be unthinkable without Chinese demand – but it also has a political edge: resource rich states are increasingly empowered to play off competing Western and Eastern commercial interests. This can be seen in Central Asia where Russian, European, US and Asian suitors all want to be sat at the table, in Africa where resource rents invariably go to the highest, or indeed sometimes most corrupt bidders. In Latin America, there is now an increasingly fine line between those playing the

market and those draining the state, while Russia clearly wants to push its economic and political ends by energy means. It's China that has changed the game, and China that has stolen tentative US and European ground.

This certainly applies to the Middle East where China has made its resource presence firmly felt. Marginal producers are exactly that for China now: marginal. Risk, or rather tolerance of risk, plays a major part when going for juicy finds. Beijing is well aware that some of their more exotic commodity bets might not pay off, but it's no surprise that China has been leading the charge back to Iraq to make sure they can capitalize on new prospects. Baghdad sits on some of the largest reserves in the world; getting your foot in a US opened door is a smart long-term move. Likewise, China has major energy links with Saudi Arabia, Kuwait, UAE, Qatar, Yemen and Oman to ensure that supplies flow eastward. More controversially, Beijing sees Iran as a major supply option. It has twenty five year LNG supply contracts in place with Tehran and has taken a majority stake developing the Yadavaran oil field to ship 300,000b/d to the mainland over the next thirty years. North Pars Gas and North Azadegan are more recent additions to China's Persian collection.

On their own, such deals sound a little dry, but they couldn't have any sharper political resonance if you tried. It's highly unlikely that China will do much heavy lifting on international sanctions against the Iranian nuclear programme unless its most important regional energy supplier, Saudi Arabia, decides to call time on Tehran's nuclear ambitions and put pressure on Beijing to comply accordingly. China knows that the 1mb/d it takes from Riyadh will be crucial to meeting long-term demand, and ultimately it's the one relationship it must make work in the Middle East. Arab oil supplies still trump Persian output. The US gets this to some degree, and this explains why the White House has been happy to let China source more and more Saudi (and Iraqi) oil to pressure Tehran. From an energy perspective, this places the Saudi-Iranian power play at the heart of the US-China energy relationship in the Middle East. What's more the Saudi's know it – China's presence gives them considerable political leverage over Washington, Beijing and ultimately Tehran.

No security, no \$? It's certainly a question for the US to ponder.

More fundamentally, this raises our previous question of how long the US will continue to underwrite global oil supplies through its naval dominance – and indeed, how long China will keep paying the US to maintain such a presence. The Middle East sits at the heart of this debate, and although the exact date is impossible to predict, the point at which the US relinquishes this role, will basically signal the end of its superpower status. For the US, it hasn't been about controlling resources or consuming vast amounts of Middle Eastern oil for quite some time, but rather ensuring safe flows of hydrocarbons to global markets, whether in the East or West. Get that right and much else follows as the geo-economic and geopolitical lynchpin of the world – if that slips, you start to look like a distinctly 'ordinary power'. That's before we even consider the issue of where Gulf States decide to recycle their petrodollars in the future. No security, no \$? It's certainly a question for the US to ponder – not only in terms of treasuries, but what currency oil is priced in. Washington should therefore be remarkably careful as to how far and how quickly it plays its 'energy independence' hand. Energy independence might look an attractive option on Capitol Hill, but it will come with serious geopolitical downside risks that many in America aren't yet fully willing to contemplate – at least if initial sensitivities around waning US power in Asia-Pacific are much to go by. Losing the Gulf would still be a bitter pill for the US to swallow, and as yet, remains a space China is unable to fully cover, beyond some limited maritime insurance policies in place.

It's absolutely true that the energy world is not *just* going to be about China, far from it. But assuming the geo-economic tilt eastward is to happen sooner rather than later, geopolitical arrangements will also need to be put in place to manage the consequences in Washington, Beijing and Brussels. Coming to mutual understanding and mutual agreements as to who should be taking geopolitical responsibility for what (and how), will be crucial to keeping global energy supplies in order. China will be re-gearing to become a provider of geopolitical stability rather than a consummate consumer.

SUPPLY SIDE OIL SLICKS?

In mapping out some of the painful demand side geopolitical and geo-economic adjustments that we think will inexorably

unfold, it actually points us towards some ingrained supply side problems as well. On the face of it, producers should be sitting pretty. Petrodollars are back (to the tune of \$1,000bn in 2011 in Middle East producer coffers) and prices are high. But the snag, and it's a rather big one, is that Gulf monarchies and Arab Nationalist Republics have all been sitting on seemingly politically unsustainable ground, and doing so thanks to external Western security guarantees. That game is now rapidly coming to a close. Whether MENA states can find a way of muddling through remains to be seen, as does the form that any new external security guarantees will take.

Even if things dampen down and the barricades are dismantled, it's become increasingly apparent that wholesale political and structural economic reform will be needed if MENA states are to prevail. The fact the Arab Spring ignited when benchmark prices were at \$95/b has debunked the notion that 'when oil prices are high the rulers are safe'. Contagion took hold far faster than most analysts expected in 2011, and it could well do so again, particularly where political succession issues crop up in Bahrain, Kuwait, Qatar, UAE and most notably Saudi Arabia. The fact that Riyadh's stability can no longer fully be taken for granted should send chills down the spine of anyone engaged in the energy world. It's the only swing player left in town and will remain the power behind OPEC's throne for the foreseeable future. If anything, 'swing production' is heading in the wrong direction given that Libyan, Syrian, Egyptian, Iraqi, Yemeni and Bahraini supplies are all under intense political pressures to maintain consistent supplies. Heightened volatility will be the inevitable result when succession issues arise, above and beyond the political mark-ups afflicting oil today. Key producers in Central Asia share similarly unsure succession grounds.

The upshot is that holding onto power is by no means going to be cheap, and as far as price moderates are concerned, much depends on what your definition of 'moderate' actually is. Having been able to foot benchmark prices little more than \$20/b just a few years back, even the Saudi's need a purported \$88/b to balance the books given non-discretionary spending requirements associated with \$129bn of sweeteners offered



The real \$100 question is not one about price but making sure global oil supply can realistically reach 100 million barrels a day down the line.

to the Arab street. Kuwait, UAE and Qatar aren't that much different. There are no price moderates left in OPEC ranks, merely gradations of hawks – all of whom increasingly regard \$100/b as a crucial break even cost for oil.

This underpins why friction across producer states is so sharp and price expectations high. Venezuela, Iran and Algeria have clearly pitched their tents to maximise receipts and revenues as quickly as possible. It's also a pretty easy call for them to make given their supply is already maxed out, and incremental supply growth limited, despite Caracas and Tehran's burgeoning proven reserves. Gulf States talk a better game on price, but their flexibility to manage price and production has decreased. Russia has of course been happy to take a free ride at OPEC's divisions (and expense), but looks increasingly unlikely to maintain current levels of output without serious upstream restructuring and investment. As BP found out and others will come to learn, upstream risk remains substantial in Russia given that contracts are pegged to the political vagaries of the Kremlin. Those trying to get out of an IOC past into an NOC-IOC joint venture future will come across similar political minefields elsewhere.

The fact that the IEA decided to release stocks in June 2011, although controversial, underpinned the fact that producers had lost control of the market. Political risk has always had a firm 'price bite' when markets are tight, but the added twist this time was not so much about absolute volumes, but the fungibility of supply. The loss of Libyan sweet crudes clearly caught Europe on the hop; 1% global production losses from Tripoli translated into 30% Brent spikes. Shuffling the decks with West African supplies and heavy grades heading to China was the response. Although enhanced refinery capacity in the Middle East and Asia might help to attenuate such pressures in future, the Libyan crisis has underlined the fact that the oil market is not as fungible or elastic as we would like to think. It's actually remarkably fragile, both in terms of of qualities and price pressures where the political mark-ups – not only from the Arab Spring, but longer term frictions around Iranian nuclear ambitions, resource nationalism, and supply chain (in)securities. They will remain in play for the foreseeable future.

On that note, volatility is already the new norm. We've seen 250% price hikes from the lows of 2009, and future spikes are almost inevitable given political constraints and rising domestic demand across Latin America, Africa and MENA markets. Subsidies remain politically sacrosanct and price signals effectively non-existent in such markets. Export margins will narrow accordingly, which underpins that getting investment right and meeting supply will be the core challenge for the coming decade. The key question for OPEC is how this blend plays out. Oil over \$100/b is catching the headlines given the parlous state of OECD economies. A 71% increase in export earnings between 2009 and 2011 across producer states certainly suggests that the West has lost its ability to export recessions and speed up recoveries by depressing commodity prices (or deflating the dollar). Yet the real \$100 question is not one about price but making sure global oil supply can realistically reach 100 million barrels a day down the line. The 'incremental barrel' might be enough to get us close, but access to reserves remains globally limited, and political pressures are likely to translate into populist energy policies. National Oil Companies have long been used as cash cows for social spending and patronage networks, yet the pull on such purse strings have never been more acute than now. Upstream E&P investment will likely suffer as a result – a worrying development when we consider that the IEA thinks \$20bn a year will be needed in MENA states to boost supply and meet demand over the next twenty years. OPEC's 1,070bn proven reserves will not be of much economic use if they remain buried deep in the ground.

Non-OPEC 313bn barrels are not only a much smaller proven reserve pool to swim in, but remain subject to capricious political risk factors as well. BP is still smarting from Washington's Macondo lashings, while Brazil has made it clear that any new offshore production will be subject to tight political control. Canada remains sensitive to overseas investments on key resource assets while dwindling production in the North Sea is still subject to sporadic tax hikes. You'd think that with benchmark prices trading consistently over \$100/b that unconventional oil production would become a more credible play, not only in Canada, but

Severe price corrections remain entirely possible in the short to medium term.

further north in the Arctic. Yet politics remain opaque and market confidence of sustained high prices remarkably low. The fact that oil went from \$147/b to \$33/b should have told oil producers all they need to know about the perils of demand destruction. That's hardly an implausible prospect given the monetary and fiscal hallucinations upon which the global economy is currently (2011) built. If anything, we are facing exactly the same paradox today that we did in 2008 of booming commodity markets on the one hand with financial meltdown on the other – and not just banks this time, but sovereign balance sheets.

Severe price corrections therefore remain entirely possible in the short to medium term. If OECD demand remains sluggish (if not entering outright contraction) and emerging market (Asian) growth starts to derail, producers will have a serious problem. The lessons of 2008 were clearly not learnt. Producers have overextended their positions and left themselves exposed, at precisely the same time that political unrest has hit. How low benchmarks can go will depend on where Saudi supply and Chinese demand set the floor – either prospect is far from certain, at least not without Riyadh cutting deep into reserves and Beijing injecting fresh stimulus into its economy. The fact that producers have been struggling to hang on at \$125/b, let alone the prospect of \$50/b highlights the sheer volatility that lies ahead. Capacity margins will look huge and emissions will drop should another global contraction take hold, but in terms of 'the cycle' such volatility will hamper upstream investment in what is already a geopolitically constrained energy world. Whether the 'Chirabian' relationship of Saudi supply and Chinese demand will be enough to keep things intact remains to be seen: either way, it's increasingly clear that new arrangements, both on the supply and demand side will be needed in the years to come.

TWISTS AND TALES

The twist here is that if capacity constraints are growing from political instability across producer states then production musical chairs will start to rotate when the major producers of today eventually start to run dry. Initial signs of this are starting to filter through. Venezuelan reserves have more

than tripled to 296.5bn barrels, a boost of 40.4% having risen by at least 14% every year over the past five years. Higher levels of reserves are also to be found in Iraq and Iran. Tehran's reserves standing at a supposed 151bn barrels and Baghdad's at 143bn, which constitute 10.3% and 24.4% increases respectively on 2010 figures. That's all while Saudi proven reserves have flat lined at 264.5bn barrels. While it's possible that Saudi Arabia will revise its reserves upwards at some point in future, the Saudi crown will inevitably slip as the fundamental driver of OPEC output. That won't happen between now and 2020, but it's certainly something to think about in the longer term.

The supply side debate is particularly acute here because we have entered an unprecedented period of demand growth. Western markets may have maxed out on their hydrocarbon intake, but the markets of tomorrow in Asia, most notably India and China, assuredly haven't. Non-OECD players will account for over 90% of global growth and well over half of global energy consumption by 2020 across the energy board. Corresponding supply growth will have to come from within OPEC ranks if the global energy system is going to get even close to providing 100mb/d of supplies. This might not directly translate into pure oil demand, but even if competition from gas, biofuels and lithium gathers steam, oil will continue to play the key role. The short (and long) of it, is 'oil rules ok' as far as transportation of people and goods is concerned.

The fact that subsidies have remained stubbornly high and price signals remarkably weak in Asia, Latin America, MENA and African markets doesn't help to clip demand. Even where governments had been toying with price reform, this is hardly politically astute timing to take a price-reflective plunge. The upshot is that oil will continue to come with a major political premium attached, and most notably in non-OECD states. Whether Western players will be able to keep pace with change remains debatable, particularly for those unwilling to break with an IOC past towards a statist future. The mutual gains of 'access for technology' are plain to see, and some might even argue a structural necessity. Assuming low costs reserves will become increasingly tight, Canadian oil sands, Brazilian deepwater finds and



Global estimates pitch unconventional reserves currently at anything up to 920tcm or beyond, five times the size of conventional reserves.

Russian Arctic prospects are the most likely candidates to plug some of the gaps in future, but expect to see OPEC market concentration to become remarkably neat towards 2020. When new reserves come online in technologically challenging environments, this won't be a free lunch from a political risk perspective either. Biofuels will probably continue to see relatively high growth on the back of EU/US subsidies, but this will hardly be sufficient to shift the oil needle to any significant degree. Moreover, sovereign control isn't going to be the exception but a standardised production rule in the upstream world.

GAS GAMES: UNCERTAIN WINNERS

Despite oil's obvious woes, crude is far from passé. If anything it remains the Holy Grail for gas producers, all of whom are desperate to maintain the oil-indexed link for gas supply contracts. The reason is simple enough: oil remains far more expensive than wholesale gas prices traded on European and US markets – at least for now, given the difficult time gas producers have had over the past two years from weak fundamentals and new streams of supply growth. Although markets have tightened of late, the gas world remains in flux with no clear winners (and indeed no clear losers). How gas dynamics play out is therefore open to considerable interpretation and debate. The good news for consumers at least, is that the largest gas producers tend to sit on politically more stable ground than the giants of oil.

The 2008/2009 recession cut global gas demand by around 3% according to the IEA in 2009, with European demand sliding by 7%. Bad stuff, but nothing producers hadn't seen before. The real problem was that a swathe of new gas all came on stream at exactly the wrong time for producers – be it pipelines, LNG, or more critically, breakthroughs in 'unconventional gas' production. The likes of Qatar which invested heavily in LNG trains in the early 2000s had little clue that shale gas would be lurking quite so readily around the corner – clearly not, or producers would not have had another 80m/t of LNG ready to roll in 2010.

Global estimates pitch unconventional reserves currently at anything up to 920tcm or beyond, five times the size of

conventional reserves. The implications for the gas sector could thus be genuinely seismic in the true sense of the word. The US has been the main mover in this regard through its prolific shale gas output and is now the largest gas producer on earth surpassing Russia's 600bcm/y in 2009. This equates to a large percentage of US domestic gas needs, and what's more, this has been done at a highly competitive breakeven price of \$3-7 per MMBtu. 'Unconventional' has thus become distinctly conventional as far as the US is concerned, with the more significant impact being that producers elsewhere have lost what they saw as a 'banker' LNG market. Even if you managed to sell gas in the US right now, you almost certainly wouldn't like the price. Should Europe start to seriously develop its own unconventional supplies in Poland, Romania, Germany, Hungary and Austria over the next decade, it would be fair to say most Atlantic Basin bets are off.

But the impacts have also rebounded in the Pacific Basin. China and India were quick to latch on, playing prospective MENA, Russian, Central Asian and Australian supplies off against each other on volume and price. China has not only been able to draw on cheaper LNG than originally envisaged, it has been the main mover in securing Australian CBM supplies. If we add Turkmenistan and Burma into the Chinese pipeline mix, alongside large amounts of Qatari LNG, Beijing is well situated to leverage its buying position in the longer term. It has also earmarked 30bcm of gas to come from its own unconventional reserves. This clearly wasn't what Russia had in mind; it assumed it would be able to sell expensive Siberian supplies directly into Chinese markets, which in turn would be used as leverage over other Asia-Pacific consumers and more importantly, over its core European demand base.

STRONG HAND OR BUST FLUSH?

Consumers have therefore been dealt a strong geopolitical hand from these subterranean shifts. China realises that greater supply to Asian markets is a good thing, and not only to keep producers on their toes by tempering Beijing's 'blind chase' for natural resources. Europe can supposedly plump for more gas, less coal and limited renewables to reduce emissions. Things have progressed so far in the US that Congress is starting to entertain the notion of phasing

The unconventional genie is clearly out of the bottle (*and it can't be put back*), but consumers will have to rub very hard if they really want to fundamentally shift the ground upon which gas producers sit.

out coal in favour of gas; it would be less economically painful than building new nuclear capacity or ramping up renewables to reduce emissions. Some are even talking about the gasification of US transport to clip oil producer's wings. Conversely, Russia, Iran, Venezuela, and Algeria have major cause for political concern, as do Gulf States, which can only rely on lower production costs for so long to keep their heads above water. At the very least, producers will have to 'play nicer' with IOCs assuming that they now have access to swathes of shale gas reserves.

But before we let our imagination run too wild in this supposed world of 'oil on gas competition' between Saudi Arabia and Russia, it is important to remember that much of the analysis on unconventional gas is grounded in potential reserves, not actual output. We remain a long way from entering a new energy world order where producers simply do not matter and unconventional gas is a guaranteed bet. If anything, such grandiose visions point us towards the main catch here: the world is going to need gas, and lots of it. Europe needs it for environmental imperatives, Asia to drive growth (and in Japan, to fill gaps), the US to reduce its fixation about energy independence, and perhaps more importantly in MENA, West Africa and Latin America to meet domestic demand and support economic diversification. Consumers should thus seriously question the assumption that gas supplies for the international market will really be as plentiful in the long term as generally believed.

Shale gas uncertainties have already seen conventional upstream investment cut. Russia will hold back on making any major commitments until demand returns and prices firm, while Qatar has formally signalled that it will be holding fire on further prospects. Libyan production has gone badly offline, while Algeria is very nervous about squandering precious reserves in an uncertain market. Iran will continue to put its nuclear plans ahead of hydrocarbon development and Iraqi output remains stymied by political divisions. Previous LNG heavyweights such as Malaysia are not in a credible position to recapture lost ground either, while political risk remains considerable in Nigeria and indeed in other prospective West African players. Australia is facing a

domestic discussion on sustainability, which could take some steam out of recent expansion.

The unconventional genie is clearly out of the bottle (and it can't be put back), but consumers will have to rub very hard if they *really* want to fundamentally shift the ground upon which gas producers sit. If anything, things are already starting to slip. Pre-existing US fields are declining at alarming rates, while the Environmental Protection Agency is starting to raise ecological concerns over non-conventional production. The IOC's, which are rapidly getting involved in the shale game, are challenged to prove that this gas can be produced at cost and in compliance with the environmental standards, wiping away the more dingy environmental reputation of the path-breaking companies of the earlier shale gas days. These same concerns will be the main hurdle to unconventional production in Europe where tightly packed populations will be less than enthralled by the production processes currently associated with hydraulic cracking. Cost will also be an issue, particularly in markets where resources are located at greater depths such as Germany, Hungary, Austria and Ukraine, and will almost certainly be a key factor in Asian production. As the energy industry has noted, 'shale gas, is not shale gas, is not shale gas': the terrain, and therefore the costs, remain very patchy from a global perspective at this stage. Rising domestic demand across many of the world's largest gas producers should not be discounted either, particularly where subsidies remain strong, nor should increased lethargy from consumer states no longer willing to provide the political support needed to bring new production on stream. Asia is unlikely to buy into a laissez-faire approach, but Europe is the real problem now that the US has stopped pushing it to take energy security seriously. Politics not price is the fundamental stumbling block for Europe.

Yes, utilities have rightly grabbed their chance to drive down prices with the likes of EoN, Gdf-Suez and RWE all trying to turn the contractual tables on Gazprom towards greater spot market formulas. But at a governmental level, Europe seems determined on grabbing a gas defeat from the jaws of victory. 'Fracking failures, nuclear nonsense and euro headaches' are amongst the latest policy culprits.



Politicised pipelines work well for some, yet they come with political costs for others.

EUROPE: A JUDICIOUS FAILURE?

The French government wasted little to no time banning all shale gas development on French soil; hardly a smart move to keep producers on their toes. Meanwhile Germany has decided to phase out all its nuclear power by 2022 on the back of the Fukushima disaster. Generation gaps will more likely than not be filled with Russian gas. Couple this with Europe's foibles in MENA markets, the looming gas conflict in the East Mediterranean, and European credibility in its 'four corridors strategy designed to open up Central Asia, MENA, Scandinavian and Russia supplies, and things start looking considerably better for Gazprom's European supply outlook.

Structural dependence on Russian supplies is a fact of life for Europe. Much therefore depends on the management of this relationship and the ability to diversify gas flows and routes. Structural import dependency varies across EU markets, with obvious larger dependencies in the East. The philosophy behind gas market liberalisation was easier to understand in the relaxed market of the 1990s than in the tight market that followed. Russia, but also other producers are keen to make sure that genuinely competitive gas supplies meet resistance in an attempt to secure firmer prices for their gas and underpin new investments. Until 2008 companies from France, Germany and Italy were keen to secure long-term contracts with Russia, actively supported by their governments, which were interested in the security of supply they could provide. Indeed, political linkages with France, Germany and Italy continue to be important for Russia. The transit risk, connecting Russian supplies to the European market, increased with the political and economic instability of Belarus and Ukraine, which are perched between the two diverging models of gas market governance. Treaties, agreements and strategic relations between the various stakeholders have been unable to avoid any serious risk management without political tugging. Meanwhile, opening up new corridors without Russia has seen mixed results. NordStream is going ahead in the North as fast as Nabucco is dying in the South, with gas market liberalisation hardly doing sufficient work to plug the gaps in between. Politicised pipelines work well for some, yet they come with political costs for others, not least because Russia's strategy

remains as clear as it is rational: exert maximum economic and political leverage from its energy assets, and minimise competitive supplies to European markets to enhance rents, until a tipping point is reached.

Moscow could be tempted to use Nord Stream as leverage over former Soviet states, including Ukraine, to either exact higher gas prices or greater political influence. Russia will be banking on EU members to look after their own bilateral energy security interests rather than defending the interests of awkward post-Soviet states in times of crisis. This is exactly what happened in 2006 and 2009; it can happen again in countries where Russian cuts can be made without affecting broader European supplies. The upshot is that a key geopolitical artery linking Europe to post-Soviet space will have been by-passed, and severed largely at German connivance. This is a strategic reality which the EU, and more importantly individual Member States, must face up to. Yet the current pre-occupation across Western European states is not how to salvage Central and Eastern European countries from potential future Russian energy pressures, but how to secure downstream stakes in NordStream. France, the Netherlands, and the UK are all in the queue.

If anything, vertical integration from Gazprom's end of the pipeline looks increasingly likely with Germany considered the low-hanging fruit, and that's despite the tortuous passage of the EU Third Energy Package in 2009 to take the sting out of third party tails. Much of this is a function of policy still being dictated on national, rather than European basis. Nimbyism remains very high, and market assumptions remarkably naive that either shale or LNG will provide ample marginal supply to offset Russian supply dependency. This may be true in the Northwest European market, but diversity of supply is much more difficult to achieve in East Europe with Caspian supplies likely to be soaked up by Turkey, unless volumes can be increased substantially. The new external energy diplomacy competence of the EU Commission for the region is raising the geostrategic stakes. If shale doesn't come online in Europe, Brussels can only hope that developments in the US and Asia ensure that those on the buy side retain the upper gas hand. As it stands, European dependence on Russian gas

Like it or not, China and Europe are part of a trilateral energy relationship, with Russia playing the part of lynchpin.

could actually become so acute that it starts undermining China's hedging strategy across multiple producers. Beijing knows the mainstay of its Eurasian supplies will ultimately have to come from Russia; unless it can stop Europe going cap in hand to Moscow at the other end of the pipeline, it will not get Russian supplies on Chinese terms. If Russia manages to tighten its grip on Central Asia and starts playing off Eastern and Western markets, China's current hedging strategy might even collapse. Like it or not, China and Europe are part of a trilateral energy relationship, with Russia playing the part of lynchpin. Gdf-Suez certainly seems to understand this, given its recent €2.3bn partnership with China Investment Corporation.

But affording Russia some wiggle room is by no means all bad. It remains the giant of the gas world and will be for a long time to come. It's made clear that if Europe doesn't stick to oil indexed pricing it will turn to Asia, a threat which the likes of Qatar have already carried out in terms of LNG supplies. Assuming Asian demand remains on the up, the bulk of global gas supplies will actually be brought under long-term (oil-indexed) GPAs, not independent wholesale prices Europe and the US are so excited about today. Genuine spot prices may face an uphill struggle in the years to come, either on wholesale hubs or LNG cargoes.

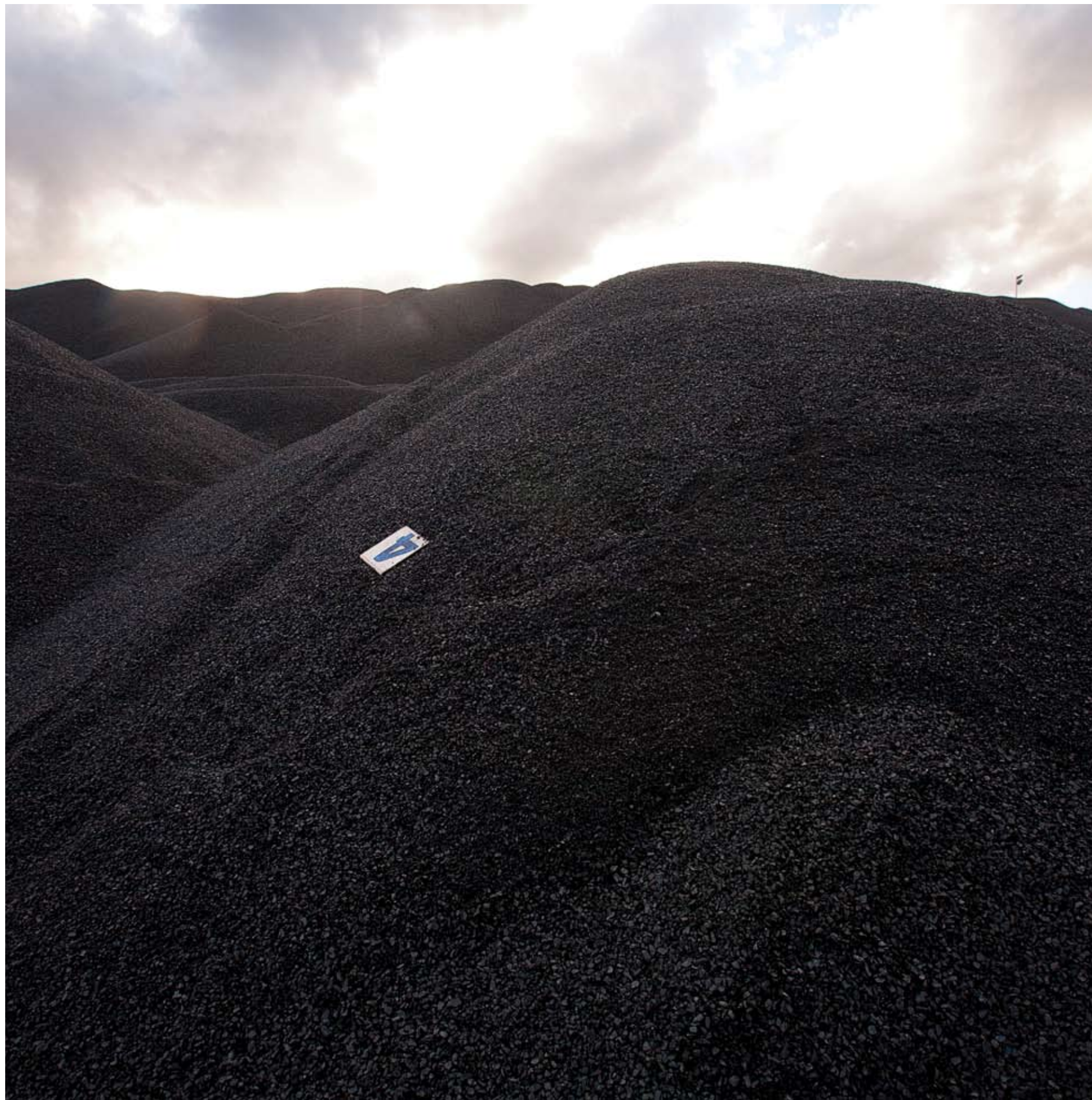
That will come as disappointing news for price-reflective purists, but keeping things on the 'oil straight and narrow' could have some upside. The obvious point is that spot prices can play out any which way – cheap today, horribly expensive tomorrow. But in the shorter term, squeezing gas producers too hard could have serious downside risks, not least because the logical (end) conclusion here tilts towards greater supply side collusion as independent gas benchmarks bed in. The gas cartel (GECF) debate has been exhausted, and CIEP doesn't believe this is a likely development between now and 2020, but ignoring supply side collusion full stop, could prove to be a costly mistake, just as it was to ignore the world's largest oil producers in the 1960s.

Algeria sounded the loudest alarm bells at the latest GECF gatherings; it wanted spot market cuts and greater

cartelisation on the agenda. Qatar and Russia may well have said 'no' – not least because they don't want to do the heavy lifting required to set a floor under spot gas prices – at least not yet. But assuming that producers do not care about spot prices per se, would be a mistake: yes, the spot market is still relatively small, and yes, prices have plummeted without producers going into a total spin, but it remains unclear how long producers are willing to take the hit, or indeed, what they would do if low spot prices were to pave the way towards further contract renegotiations on long-term supply contracts. This is where the bottom line really counts for Gazprom, and it explains why Moscow has been keen to stress that the oil index link should be maintained on its core pipelines *ad nauseam*.

The fact that Ukraine was unable to break this link by only getting discounts at the rate equal to the reduction in export duty for Russian gas over the past few years, and that Gazprom is willing to go to arbitration with other European utilities is telling. It strikes at the heart of Russian concerns that weak spot prices could create further arbitrage potential on long-term contracts. Algeria has exactly the same concerns over its new Medgaz pipeline feeding Southern Europe. Should consumers keep turning the screw on price, they stand a good chance of finding that at subsequent GECF meetings, it will not only be Algeria that calls for supply restraint on spot and traded markets in order to recalibrate the market back towards producer interests. When the going gets tough, the political rhetoric can be expected to get louder, and loudest of all from those in the weakest positions (notably Iran, Bolivia & Venezuela), while Russia and Qatar remain the states analysts should actually watch for in terms of credible action.

Concerns about obsolescing bargaining issues in pricing and long-term contracts are what make shale a precarious proposition for third country producers of course. If they were to materialise, the prospects for traditional producers would obviously be grim. Cartelisation – or indeed mere bilateral price collusion – would be a dead duck, but Europe is currently acting as though shale is inexorably going to deliver the goods as far as its supply side efforts are concerned. The



Taking a bet on unconventional gas is eminently wise in order to maximise optionality, but making it a one bet, less so.

blunt truth is that nobody really knows if unconventional gas is going to globally pan out – particularly if producers take assertive moves to flood ‘conventional markets’ along the way. Should things fizzle out, the default position is somewhat more certain: supply will be tighter and conventional demand high. Taking a bet on unconventional gas is eminently wise in order to maximise optionality, but making it a one bet, less so. Not unless consumers can live with the prospect of producers being back on top, and back pretty soon.

WE'RE ALL CONVENTIONAL NOW...

The good news is that the supply side for gas is looking relatively solid. The shale revolution has obviously offered IOCs another bite at the reserves cherry, underpinning the degree to which our definition of ‘Major Reserve Holders’ requires drastic revision given US production levels. Assuming the ‘revolution’ continues to gather pace in multiple jurisdictions, the question of whether we’ll be referring to ‘big oil’ or ‘big gas’ by 2020 remains a matter of considerable debate. According to some estimates, 175bn barrels of oil sands can be put to production at \$80/b, and a staggering two trillion barrels of shale could become commercially viable at \$100+/b.

The US will remain a key gas market in this respect, (although its global significance will derive from a lost Atlantic Basin market rather than from acting as an export giant), while Australia will continue to push CBM developments and could well surpass Qatar as the LNG heavyweight of the world. The Middle East will also see incremental LNG growth over the next decade (albeit with a surfeit of imported gas hitting Gulf markets), as will some of the larger African players. This should see LNG growth outstrip other forms of gas production. Smarter European states will use LNG to feed spot markets in Northwest Europe and as a potential Russian hedge in more geographically pressed areas, while unconventional developments will remain remarkably patchy on European turf. The logic is simple enough though: the closer you get to the Russian border, the more likely it is that shale will be made to work. China is no exception on the Yellow River side of the Russian border either, where unconventional production will see a serious

upturn over the next decade. India and Indonesia will follow the unconventional suit.

ENVIRONMENTAL PASSAGE - GAS BEATS COAL?

For some, this is all environmental good news – gas is ultimately cleaner than coal. China accounted for 80% of the growth in world coal demand from 1990-2010 and the related figures probably won’t change all that much over the next twenty years. Even if China (and India) start looking for a plan B from coal based growth after 2020, other emerging and frontier markets assuredly won’t. Coal will be the bedrock of global economic growth in the decade to come.

Hence the fact that shale arguably provides a relatively quick fix away from coal will continue to divide opinion. If we are supposedly entering a ‘golden age of gas’ then the green lobby wants to know how long this gas coronation is supposed to last. Since ‘gold’ doesn’t tend to rust, the analogy is quite fitting. Should gas supplies remain firm and prices within tolerable bounds, whether we’ll ever dump gas in favour of renewables globally remains to be seen. The gauntlet is particularly perilous given that overall emissions will continue to rise sharply over the next ten to twenty years – far above and beyond levels prescribed by scientific evidence to keep global warming within ‘safe’ levels. The political focus at that stage will probably shift from mitigation in terms of changing fuel mix and land use, towards adaptation to the most adverse effects of climate change. Closing the emissions door after the carbon horse has bolted seems an unlikely development. Gas won’t be so much of a bridging fuel but an immovable architectural feature of the energy landscape.

This hits on a deeper point that energy assets invariably have long lifetimes, which means that any dramatic change in the fuel mix is highly unlikely to 2020. It will be a process of increments, policy tilts and technological change. That might mean more renewables, nuclear and hydro in the longer term, depending on policy positions, but it’s the ‘transitional period’ towards lower carbon economies that matters for now. Gas will become the clear winner, not only in terms of cost reductions, but environmental concerns ramping up gas consumption as a stopgap measure in OECD states.

Gas won't be so much of a bridging fuel but an immovable architectural feature of the energy landscape.

That logic applies to Europe and the US both on the supply and demand side, and indeed informs the often split opinion as to whether environmental policies should be deemed as a risk or positive opportunity, whereas in non-OECD economies, gas has been driven purely in terms of growth. As a result, gas will probably register the fastest growth of any fossil fuel over the next decade and beyond – most notably in Asia, but also in Latin America and the Middle East, which although rich in reserves, remain notably poor in gas production.

MIX VS. POLITICS

So if the mix will remain oil for transport, alongside coal and gas for the bulk of power, with nuclear and renewables on the fringes, then what about the geopolitics of hydrocarbon supplies? This is where the most significant 'transition' debate to 2020 sits and perhaps where recent events are most instructive. The clear message, when putting one's ear to the ground, is that Europe will increasingly preoccupy itself with internal regulatory issues while failing to make discernible upstream progress. It's surprising to see the degree to which European utilities still feel unprepared for increased internal competition, despite the fact that this has been a policy in motion for well over a decade. The fact that they don't appear particularly bothered about increased structural dependence (in this case on Russian gas) is perhaps a good thing. It's exactly what European markets will get if events in Libya are much to go by. The lessons from Tripoli appear chillingly clear: the West is no longer willing, and the EU simply unable (beyond individual capitals) to safeguard its immediate energy and geopolitical interests. Lest we need reminding, it wasn't just 1.5mb/d of sweet oil making its way over the Mediterranean to European refineries from North Africa, but 16% of EU15 gas supplies, including 43% of Italian throughput and 55% of Spain.

The crux of Europe's problem starts in America of course. The US might no longer be willing to stand guarantor for European energy interests. As Secretary of Defence Robert Gates put it, Libya is 'not a vital interest to the US' and Washington has treated it accordingly. America is understandably adopting an increasingly 'isolationist' energy policy. Europe will be

left to settle its own energy scores. That will mean providing 'negative' security incentives to keep producer regimes on the political straight and narrow, or indeed offering positive security pulls for producers willing to look beyond their traditional external mentors to feed European markets. The preoccupation so far has been more above governance small talk in Brussels rather than speaking the rough and tumble lexicon of the energy world.

That probably sounds brutal to some, but ask the simple question: why has China been able to break the Russian mould in Central Asia opening up oil and gas pipelines from Kazakhstan, Uzbekistan and Turkmenistan? Why has Beijing turned the Middle East into a 'Chimerican lake' of ebbing US power and increased Chinese oil flows? Governance reform wasn't part of the pitch: political certainty from growing Chinese economic influence and power was – both on a bilateral and regional (Shanghai Cooperation Organization) basis. It's the only reason Central Asian leaders dared to go against Moscow's long-held strategy of monopolising Eurasia supplies for (re)export purposes. It's also the only reason the Gulf States are happy to look at US demand and US military supply. Asia is the obvious option.

WESTERN SLIP, EASTERN SLAM

The US is no doubt recanting the virtues of energy independence as we speak, and while Washington only sources around 17% of its hydrocarbons from the Middle East, Libya is unlikely to come without downside political baggage. Passing up Tripoli, although understandable for domestic reasons is likely to come with a significant price tag for Washington. Most obviously with Iran, who'll be delighted to see America's bark is now far worse than its bite, but also with the Gulf States themselves. It was more than obvious that the Arab League (and more specifically, Saudi Arabia) gave the US and Europe a free hand in Libya in return for a blind eye on Gulf State 'domestic' issues. US resolve to safeguard Arab security interests (internal or external) – let alone contain Iranian political aspirations, are thus subject to serious question. Paralysis over Syria can already be seen. Political pull in Ankara is similarly suffering.

Convergence of geo-economic, geopolitical and energy forces will continue apace, but energy could well play out under a very different umbrella once the dust has settled post-2020.

The US is still obviously the dominant external actor in the region, but amid economic deterioration and political uncertainty as to Washington's place in the world, if Europe takes US messaging seriously, the fundamental question must be posed: is it time for a fundamental Transatlantic rethink on energy policy and security? Unless Europe really wants to try and go it alone as the US takes a back seat, the answer is probably yes.

TRANSITION OR TRANSITORY?

Irrespective of however gas market dynamics play out – which more likely than not will remain a cyclical game of producers sometimes up, consumers down and vice-a-versa, with Europe structurally dependent on Russian supplies – our broader hydrocarbon narrative will remain the same. We face a period of significant domestic challenges on the supply side and widening external power vacuums that will take decades to fill from those on the demand side of the fence.

China has gained the upper geo-economic hand, but this is yet to be translated into geopolitical power, or indeed energy guarantees. This will give producers considerable chance to leverage their respective positions (and commodities) between ailing US power and rising Chinese presence, but it will also bring profound uncertainties in terms of volatility, investment and supply. Convergence of geo-economic, geopolitical and energy forces will continue apace, but energy could well play out under a very different umbrella once the dust has settled post-2020.

Grim news? Perhaps. But unlike in 2001 when many assumed the world was settled and energy in abundance, at least this time round nobody is in any doubt that an entropic world can bring uncertain outcomes. That means policy attention will be required across the board, not just on supply-demand fundamentals in a shifting world, but in terms of the geopolitical and geo-economic messaging involved. Until these basic tenets are in place, working towards low-carbon economies will remain difficult. European efforts on this front are not entirely lost though. Working out what incentives will and won't work to put energy on a more sustainable footing needs to start now if climate mitigation is to have any future

worth beyond fighting perpetual rear-guard 'adaptation' battles. 2020 green targets will likely fail to be met, but they might provide telling lessons for setting credible 2030 benchmarks. More nations will join the green debate, and join it largely out of self-interest. But whether we will ever be able (or indeed find it wise) to price hydrocarbons out of the market remains a different debate of course – particularly if carbon reductions are really to remain within safe climate change levels.

But before we get ahead of ourselves, we first need to look back to 2000-2011 to distil how we got to our current stage and how this will inform contours for the future. We've outlined some of these trends, both past and present here, but we now look to the CIEP record and CIEP engagements over the past decade to put some more meat on the bones and to gain some critical insights as to where we are heading in future.



SECTION THREE

PARADOX OF PLENTY

The 2000s has reshaped global energy relations by putting the state back the heart of the debate. The US led the charge via the war on terror, while China has used statist means to achieve market desirable ends. Meanwhile Europe went 'native', initially focusing on internal market dynamics before getting the emissions ball rolling. Set against a backdrop of rising Asian demand and asset sweating in producer states, the combination was a serious price peak at \$147/b followed by all too obvious demand destruction six months later.

We are left picking up the pieces today, the Paradox of Plenty should be seen as a period of when everything should have changed for energy, but in fact we put ourselves back on an unsustainable path of hydrocarbon dependence and ever increasing emissions. Resolving these two core frictions will be the challenge of the decades to come, and indeed to be taken in sequential order.

The 2000s is perhaps best described as a period of supreme complacency followed by extreme shock for energy markets. The assumption from the late 1990s was that energy supply was going to be cheap and abundant; upstream assets were duly sweated across the board and many consumers sat back and assumed all would be well. That was the overriding dynamic in play from 2000-2004, which for a normal 'cycle' wouldn't constitute much of a problem, but with investment lagging, supply dropping from geopolitical outages, and most importantly, emerging market demand growing at a blistering pace, the unfortunate culmination was a \$147/b oil price peak in 2008. Producers riding high on searing oil prices and supercharged political gusto had lost control of the market; excess capacity was shot to pieces in terms of trying to control price. Demand destruction was inevitably waiting just around the corner.

Benchmark prices plummeted to \$33/b, all in the space of six months. Market volatility has been the new norm since, with prices consistently now firming above \$100/b – producers and consumers alike are living with the consequences. How we got to this sorry state of affairs was a toxic blend of traditional consumers either taking their eyes off the energy ball (as far as the EU was concerned) or lunging the other way on remarkably ill-judged diversions (in the case of the US). That was all while producers assumed that investment wouldn't be needed to maintain excess capacity and market control in the midst of enormous demand growth across emerging markets. That has made for a combustible market and geopolitical mix that we see unfolding today, albeit with a major new demand side player, China. The Middle Kingdom is increasingly calling the energy shots, but we still have a major lack of hydrocarbon governance and investment strategies at the top that will inevitably see the cycle of long-term boom and short-term bust continue without a step change in international energy governance.

EUROPE GOES NATIVE

In the midst of supply side complacency, Europe stands out as one of the key markets to 'go native'. The policy focus was about completing the internal market and reducing emissions, not the messy business of diversifying upstream

supplies. This was in some ways entirely consistent with perceived European national interests, even though it was the antithesis of a newly proclaimed 'Global Europe' vision from the Commission. Brussels' 'Kantian' words were only ever matched with 'Hobbesian' political practice; most Member States had no truck with the outside world, at least if not grounded in bilateral economic interests as German export strategies attest. Such ghosts are haunting the European project to this day; brutally exposed in the geo-economic calculations underpinning the Eurozone crisis, not to mention geopolitical paralysis in the MENA region and beyond.

As the oil price lurched towards \$147/b in 2008, CIEP undertook a major study, **Oil Turbulence in the Next Decade**. Amid unprecedented volatility, the paper called for a dramatic improvement in the global upstream investment climate. The report critically noted that 'without developing more medium priced oil, the Oil constrained world will be much more turbulent than necessary'. That call is yet to be fully answered, not least because an additional policy recommendation that consumer states share some investment risks of supply remains moot – as does splitting the costs of enhanced strategic reserves. The paper certainly shifted the debate towards greater OECD and non-OECD cooperation over supplies, and indeed more realistic expectations as to how petrodollars would be utilised in future. But it also proved prescient noting that 'geopolitical tensions were on the rise, with accelerating demand growth and new oil supplies being concentrated in an ever smaller group of countries.' The outlook remains decidedly bleak, and if anything 'things could get worse if interests, (especially between the major resource holder and consumer countries) further diverge'. On today's evidence, such analysis appears to have been unnervingly well placed.

Despite the enormous political capital and policy effort exerted over ratification of the Lisbon Treaty throughout the 2000s, there is still no unified Europe. We have 27 component parts, most of whom look to bigger vested

The Commission spent far too long putting the unbundling cart in front of the interconnectivity horse throughout the 1990s/2000s.

interests before deciding which way to jump. North West Europe (with the exception of Britain) panders to Germany, while Southern Europe increasingly looks to Paris, Madrid and Rome for political cover given shared economic predicaments. Eastern Europe continues to think the US will provide a useful political ledger to offset growing Russian presence, despite the fact that Washington considers itself a Pacific power. Smarter states in South East Europe are even asking what Ankara now has to offer outside the Union. Europe's global resonance will come from how emerging markets slice and dice the Union on the back of credit lines, not what Europe does in the world itself. The key barometer of world power doesn't include the EU as a metric, but weights the score heavily between the US and Asia-Pacific. Energy policy will lack credibility as a result, given that the bulk of Europe is now a consumer of geopolitical (in) stability, not a provider.

INTERNAL TUSSELES

That's not to say that both internal energy tasks didn't have considerable merit to reduce bilateral pricing pressures and cleaning supplies, other than the major drawback that they have largely proved to be prone to shortcomings. They failed for exactly the same countervailing political pressures emanating from individual Member States over the Eurozone crisis: naive self-interest and political hubris. The trench warfare of the Second Package was only surpassed by painstaking ratification of the Third Energy Package in 2011. As states now grudgingly transpose the latest raft of directives into national law, the vast majority of Member States still face infringement proceedings from its progenitor; 25 out of 27 Member States haven't been playing by the Second Package rules, while 18 Member States have already been highlighted by the Commission for dragging their feet on Third Package implementation.

It's therefore hardly surprising that the third package ultimately buckled to utility interests by failing to drive through full ownership unbundling of energy production, transmission, distribution and storage in favour of an ISO type model. Putting the legal niceties of 'independent' entities to oversee transmission aside, national champions in the vast

majority of European states remain vertically integrated. If anything, Europe adopted the warped logic that increased competition *within* individual Member States would lead to an *overall* increase in competition across the EU throughout the 2000s. All that really happened was major European players moved into new markets, leading to consolidation and market concentration on a Europe wide basis, even though individual markets could technically boast a couple of new entrants.

Irrespective of whatever policy agreements were struck or backsliding bucked, European plans would still have foundered on a major lack of investment in physical infrastructure. The Commission spent far too long putting the unbundling cart in front of the interconnectivity horse throughout the 1990s/2000s. There *was*, and still *is* a major lack of significant cross border integrated power and gas grids for competitive pressures to properly play out. Investment has been a very piecemeal, municipal to national affairs. Where interconnections have been made, it's invariably on a bilateral and regional basis. The Commission knows this; so much so, it has even started to 'sell' unbundling on the grounds that it would promote the formation of regional grids so as to one day make a European whole. That might or might not prove to be the case, but assuming national champions continue to fight access and tariffs tooth and nail, largely setting their own negotiated terms of grid access, competition will remain decidedly tepid under the Third Package to 2014 (and beyond).

Even if more liberally minded states decide to push the policy envelope towards a Fourth Package, the ink would be slow to dry, and we'd have to accept the spurious assumption that Europe would be able to put together a regulatory package capable of driving serious investment into grid, storage and effective capacity management. In 'A Smart EU Energy Policy' (April 2010) it is noted that, 'getting the balance right between market liberalisation for liberalisation's sake and long term investment is one that Europe remains a long way from perfecting – not least because there are large differences and variations between North West, Southeast, Central and Southern Europe.'

You can tinker all you like with downstream dynamics, but to relatively little avail if you have very little elasticity of upstream supply.

With the integrative debate raging throughout the 2000s CIEP undertook a study to fill in some of the gaps, quite literally in a report **Crossing Borders in European Gas Networks, The Missing Links**. The report found that barely 1,000km of new interconnections had been put in place over the past decade – delays in such investment were held to be more about poor regulatory design rather than market aversion. CIEP outlined the need for higher tariffs for cross-border transmission, grounded in actual CAPEX and costs into 'perpetual' tariffs in entry/exit systems. Long-term (standardised) transmission capacity contracts with fixed (indexed) tariffs were the other part of the jigsaw required to enhance transmission capacity. Tariff differentiation was also suggested, alongside greater powers for ACER to intervene in cross border issues in broader European consumer interests. If no 'one market' exits, one size is never going to fit all. Such messages were reinforced in the **CIEP Vision on the Gas Target Model** suggesting that Europe could already do much more with what it's got rather than reinventing the regulatory wheel.

While different environments may well require different solutions in terms of downstream and midstream reform, the blunt reality on the infrastructure side of the debate is that interconnections are still a political hot potato for incumbent players: the logical conclusion is diluted market power and strengthened competition. No one doubts that it's the easiest route to managing demand, backing up intermittent generation and reducing sharp supply side shocks. Indeed, the entire basis of driving through a European network is that benefits would be felt for all European markets. But if such investments are tantamount to 'public goods' (as opposed to enterprise gains), they may well require more public money, or at the very least, clearer (and more attractive) regulatory frameworks to get grids built, storage enhanced and pipelines welded as a result. Unfortunately our 'European good' hits on another major flaw in the debate here – a flaw that is often overlooked – but one that has been repeatedly highlighted in CIEP papers: you

can tinker all you like with downstream dynamics, but to relatively little avail if you have very little elasticity of upstream supply.

'Tabula Russia' (2009) comments: 'Russia now looms larger than ever on structural dependence. European efforts to diversify supplies have largely failed to date.' Such conclusions are in close keeping with a 2007 CIEP report: the deftly highlighted energy dilemma for Europe isn't so much about absolute supply, but rather access to them. This can play out in a number of different ways depending on how the EU sees its place in the world (and indeed it's more immediate neighbourhoods). The bottom line to date is that Europe has been exceptionally slow when it comes to diversifying upstream supply over the past decade, worrying too little about its political attractiveness for external suppliers to bring gas to the European market and relying too much on the market to deliver secure supplies. The dynamics surrounding the creation of the internal market and enlargement of the EU has triggered not only regulatory uncertainty for investors, but also an avalanche of different views about the internal market design and subsidiarity of the Member States.

Moreover, the enlargement of the EU in 2004 brought new concerns to the table. The mix of change in internal energy markets and relations were so great that the enlarged EU was initially more a cacophony of voices than anything else. External engagement often equated to some EU Member States actively courting Russia and other producers on a bilateral basis. As observed in 'Turning a Weakness into a Strength' (2008), trust was lacking in the enlarged union when it came to external energy policy. The NordStream pipeline perhaps provides a telling example of bilateral cooperation that was more difficult to digest in the enlarged EU than it would have been in the pre-2004 setting. With Nabucco hanging in the balance, the Russian inspired SouthStream pipeline will probably tell a similar tale in the Southern Corridor in the years to come. The net result will not only reduce European elasticity and diversity of supply, but could entail serious geopolitical losses in CEE and SE European states to boot. European energy borders will barely make it to the Alps, let alone the Urals.

The logic is very clear to maintain the status quo-sign up for long-term contracts (and even joint ventures) and the storm will pass. If not, face the market consequences.

The much-vexed Southern Corridor debate was covered extensively by CIEP in major studies, **'Russian Gas for Europe: Creating Access and Choice'** and **'The dynamics of Natural Gas Supply Conduction in a New World'**. Because of its large gas reserves, Russia and its semi-state-controlled firm Gazprom are well positioned to take advantage of gas exports even as they face possible competition from other gas suppliers and uncertain gas demand. Gas export earnings are an important source of income for Russia. Gazprom depends to a large extent on Europe for its hard-currency income. The report found that gas export infrastructures such as Nord and South Stream could act as important instruments to expand Gazprom's market share in current markets and in growth markets. The study argued that Gazprom's infrastructure investments are of the strategic-economic character in possibly creating a first-mover's advantage vis-à-vis its competition. Besides the goal of expanding Gazprom's market share, infrastructure investments could serve to mitigate overall transit risks, for example in Ukraine and Belarus – at least from a Russian perspective.

Amid myriad disappointments, Europe has still actually managed to score some notable gas victories, in large part thanks to burgeoning spot market developments. This has more to do with slack fundamentals than the effects of direct policy making.

FAITHFUL PARTNERS

Despite European hot air about being a faithful partner to Russia throughout the 2000s, the majority of continental gas companies found it highly profitable to arbitrage UK spot by utilising downward flexibility in the contracts, purchase less volume indexed to oil, plump for the interconnector and resell to customers at oil indexed prices. That's nice work if you can get it, other than with demand *seriously down* from the financial crisis in 2008/9 and US domestic production *seriously up*, second tier players took their chance in more liberalised markets to take market share from incumbents, bypassing traditional wholesalers and going straight to large

end users from spot. That wasn't supposed to be part of the script. Incumbents are not just now oversupplied but unable to retain market share by offering discounted supplies. Burgeoning NBP, TTF and Zeebrugge liquidity (volumes and trade) has thus created *serious* pressures on oil-indexed supplies.

The upshot is that major utilities have to try and renegotiate contracts with upstream players to allow for a greater spot component while keeping market share (and supply agreements) on an even keel. In the CIEP Gas Group it was remarked, 'there is of course no virtue quite like that of necessity'. Norway has been willing to play ball on price renegotiation, but Gazprom has proved somewhat stickier – so much so that it's ending up in court with a number of major European incumbents. It appears highly unlikely that a gentleman's agreement can be struck on oil-indexed and independent spot benchmarks – one or the other model will eventually win out. From 'Russian Gas for Europe' (2010) it is clear where Moscow's preferences are, given the investment challenges and income dependency. If Gazprom really wants to make European giants bleed, they could of course bypass incumbent wholesalers and sell directly to traders, second tier players and more end users. The logic is very clear to maintain the status-quo, sign up for long-term contracts (and even joint ventures) and the storm will pass. If not, face the market consequences.

The **CIEP Gas Group** has been extremely active in the past few years looking at European fundamentals. It first put itself on the map with **Natural Gas in the Netherlands: From Cooperation to Competition?** The general consensus on spot benchmarks and long-term oil indexation has been grounded in let the market pick, and see how co-existence works. Whether co-existence will work in the longer term remains to be seen, but CIEP has consistently outlined, and in particular in **Pricing Natural Gas: The Outlook for the European Market**, that spot can play out any which way on price. The group has also noted that Europe needs to be careful what it wishes for – things could work out in our favour, but the



European attempts to decarbonise its industrial base by ‘2020’ has leant itself to more gas, less coal, and renewables for aesthetic window dressing.

risk of jumping out the frying pan into the Russian fire, is creating a winner takes all system. That said, as CIEPs **Seasonal Flexibility in the Northwest European Gas Market: 2015-2020** surmised, greater liquidity can only be a good thing for market purists, balancing portfolios, hedging risk and investing in much needed infrastructure. Keeping supply (and price options) open is ultimately what will provide enhanced security in an increasingly liberalised market. The trick is to keep an à la carte of independent spot and oil indexed contracts on the cards rather than being forced onto a table d’hôte of one or the other.

The eventual outcome will of course depend more on market fundamentals rather than any European grand designs. Russia will use prospective long-term contracts in Asia to keep up the indexation pressures (assuming spot liquidity fails to bite in Singapore, Hong Kong and Japan), and will lean heavily on CEE states to maintain security of supply under oil-indexed terms. For all the liquidity of Northwest European markets, it’s easy to forget that this masks much poorer liquidity elsewhere – monopoly supply and geographical strangleholds will be remarkably stubborn barriers to remove.

Gazprom’s gamble is that European oversupply will disappear long before oil-indexed contracts crumble under the weight of their contradictions (and more pointedly, price differentials). It’s a gambit Moscow might well win this time around, particularly as 20-25% of UK gas in 2011 has been spot Qatari LNG. What happens in MENA production, Asian consumption and European supply all have to go into the fundamentals mix. Gas markets might remain regionally divorced, but fundamentals are increasingly ‘correlated’ as far as gas on gas competition is concerned. If Asia goes for long-term contracts, European liquidity dries up, the US continues to sit on its shale, Russia holds back on LNG developments in favour of pipeline supplies to Asia, and European unconventional plays flop, that might be the medium term outcome.

TRANSITIONAL TRENDS: EMISSIONS MISSION

While Europe will continue to remain the epicentre of a gas pricing battleground – an epicentre that will involve pain for some, and valedictory plaudits for others – the one area where producers have relatively little cause for concern is on long-term volume. A standard rule of thumb in the gas world is that forecasts eventually pan out but just not in the time scales first envisaged. Gas is sitting remarkably pretty in the European context, and doing so in large part thanks to Europe’s pre-occupation with environmental policies rather than organic demand. Once Europe realised it wasn’t going to win the liberalisation battle (at least within reasonable political costs in the early 2000s) the goal posts were duly shifted towards a climate agenda. This chimed with the fact that economic times were good – in the age of global plenty (and a growing body of scientific evidence provided by the IPCC that climatological change is a problem) Europe could afford to push the environmental envelope. Brussels could finally claim it had found a policy area where common cause and common purpose could be struck. Or so it thought.

In the spring of 2009, the **CIEP Fuel Mix Group** was launched as a new initiative to discuss issues relating to European energy policy, energy infrastructure, transition and the fuel mix with CIEP stakeholders. In six sessions held throughout the year starting in April, participants discussed the impact and consequences of several trends, including the increasing regionalisation and market coupling between power markets, the need for more investments in infrastructure, and a shift towards more centralised European policymaking on emissions reduction measures and renewable energy sources. The group also discussed the challenges with respect to national obligations on the share of renewables in the fuel mix, liberalised market conditions, the scope of domestic regulation in the field of environment and energy, and business models for transmission system operators. Follow on discussions have since covered nuclear, renewables, Emission Performance Standards, the role of EU ETS and the price of carbon.

Nobody really wants to price coal *fully* out of the market for fear of seeing the lights go out and costs spiral up.

Unfortunately, European attempts to decarbonise its industrial base by ‘2020’ has leant itself to more gas, less coal, and renewables for aesthetic window dressing. The core reason is that the Commission didn’t fully understand security of supply implications when it rolled out its 2008 climate package. It was merely assumed that setting 20-20 by 2020 targets would deliver the desired market results. The problem here is that by introducing multiple policy instruments (and indeed a market winner in the form of wind), renewables prescribe a share of specific technology, whereas the EU Emissions Trading Scheme (EU ETS) leaves it to the market to divvy up renewables, nuclear, energy efficiency, cleaner coal and gas. The obvious upshot is that spark spreads are more attractive than dark spreads as a ‘bridging fuel’ towards lower carbon economies. Renewables don’t really come into that price equation. Whenever they do, they not only tend to create major costs for consumers to bear, it has vastly complicated the security of supply equation with the net result of increased structural dependence on external gas supplies.

You could argue a kitchen sink policy approach (i.e. stick everything into the mix) has merit, but this comes with major implications and distortions, not least as definitions of what constitutes a renewable technology are likely to stretch. Amid the policy mish-mash, renewables targets have arguably lacked the most credibility. The 20% relates not to generation, but total energy demand, which in some Member States would translate to 35-40% of renewables being installed, roughly in the space of ten years. To ‘decarbonise’ generation to that extent would require massive interventions that European utilities and their governments are simply unwilling to make without commitments from other countries. That’s before we even take into account manufacturing capacity constraints or the massive investments that would be needed to link new capacity into pre-existing grids. If Europe thought it had infrastructure problems when it tried to make liberalisation stick, that will be dwarfed by the infrastructure challenge associated with renewables, and in particular, offshore wind. If Europe wants to go green, it won’t be running away from its infrastructure nightmare of the 2000s, but hurtling headlong

straight back into them. And with shale gas potentially on the horizon, the added concern for cash-strapped Europeans is that renewables will take even longer to get towards some kind of cost parity. This was only ever supposed to be limited leg up for renewables, not a blank cheque of economic (and political) support.

TOUGH CHOICES: COAL LIVES?

The overall impact of a renewables-laden approach might have looked pretty innocuous throughout the 2000s but increasingly now resembles a dash for gas to back up variable renewables, and could even see an expansion of coal to include biomass and to ensure security of supply in some regions. Some companies also prefer to keep coal in their portfolio to spread supply risk. That’s hardly the balancing act the EU was trying to walk when shifting towards renewables away from coal. The history of the EU ETS has underpinned this strategic reality: nobody really wants to price coal *fully* out of the market for fear of seeing the lights go out and costs spiral up. Grandfathering of permits was always going to bend towards a degree of industry capture. If anything, a larger number of EU Member States might well start pushing for derogation from phasing out coal should capacity margins begin to tighten.

European leaders (particularly in the CEE states close to the Russian heat), have few doubts that burning plentiful coal supplies remains the obvious choice to make if shale gas can’t be made to work in a timely (and indeed, cost effective) manner. Western European leaders face a similar dilemma. While they will rhetorically couch any new coal build under the prospect of carbon capture and storage (CCS) one day becoming a reality to capture the carbon impact on their soil, this actually points to one of the biggest missing links in European climate policy: the EU still erroneously believes that a volatile carbon price will deliver CCS technologies. This flies in the face of previous funding pumped into CCS from Washington in the FutureGen initiative throughout the 2000s that failed to make discernible progress. Not to mention the fact that the EU has already had to sponsor a dozen or so demonstration plants just to get the CCS ball rolling.



CCS and nuclear remain extremely niggly from a costs- and technology-based perspective, but they are arguably the only way the EU (and indeed the world) has of squaring the circle between security of supply and lower emissions.

CCS technologies started gaining increased traction in international debates throughout the 2000s as a potential technological fix to new coal build, build that was continuing a pace globally. The coal challenge is so large that it has been rightly (if somewhat ironically) been dubbed the fuel of the future in Asia. Given the imperative to keep driving economic growth Asia has no choice but to play its coal card, placing an ever-higher premium of making CCS work as a credible technology. While the majority of studies looked at the potential costs and economic enablers involved, CIEP took a big step back to see if anything close to physical infrastructure was in place for such schemes in relatively small North West European markets in a report, **Carbon Capture and Storage, A reality check for the Netherlands**. Depleted gas fields obvious make for an interesting play, but it was estimated existing fields could store around 35-40MT/a of CO₂ for up to 40 years before new/ alternative arrangements would have to be made. That was also dependent on getting regulation right, with a carbon price consistently well over 30 euro a tonne – not to mention public diplomacy campaigns to garner public support for such a scheme. All that said, as CIEP's paper **Putting Coal to the Test: Is Coal Fired Generation Clean, Competitive and Secure?** suggests, coal is by no means even off the gas-rich Dutch radar. Getting to the bottom of CCS is crucial both on emissions, costs and optionality grounds.

The other ten tonne elephant in the room for Europe on emissions is nuclear energy. The fact that the 2020 targets and EU ETS have no direct correlation to new nuclear build, given the time horizons involved, is not particularly helpful, nor indeed surprising given the national politics in play. Nuclear would clearly benefit from common licensing, and indeed a long-term carbon price and long-term contracts to bind consumers to the considerable sunk costs involved. Alas, for all the talk of a nuclear renaissance throughout the 2000s when a raft of EU Member States appeared willing to embrace nuclear as an option, the balance has clearly shifted

away from nuclear in light of the Fukushima disaster in Japan. For all the states that had been globally willing to plump for nuclear (most notably China and the Gulf States), there are just as many (if not more) committed to phasing nuclear out, or at least slap moratoria on future developments. Germany, Belgium and Switzerland top the decommissioning list. Italy has firmly rejected any new build. The economics of nuclear build still look shaky in the UK.

Obviously both CCS and nuclear remain extremely niggly from a costs – and technology-based perspective, but they are arguably the only way the EU (and indeed the world) has of squaring the circle between security of supply and lower emissions, particularly on the CCS side, with coal the key driver of Asian growth. If the mitigation effort is to be maintained rather than shifting towards a permanent age of adaptation from the impacts of climate change, then such technologies might prove to be a more credible option than breaking what currently seems to be a mutually agreed suicide pact between the US and China as the largest emitters of CO₂.

CIEP has closely followed the emissions debate throughout the 2000s, culminating in a report to mark **Copenhagen Climate talks in 2009 called Negotiating a Robust Climate Future**. The report highlighted the main interests and drivers of the key players, and indeed the operational aspects needed for a serious deal to be struck. Merely agreeing on 2050 emissions reduction targets was not enough without measurable and controllable short-term commitments en route. CIEP also pressed the case that market-based systems alone would not be enough to deliver major reductions, at least if not wed to a broader range of regulatory levers. CIEP suggested that climate objectives should be tied in with economic development, security of supply and security of demand as equal objectives in an international agreement. That would mean taking the interests of key fossil fuel producers into account, with a view to initiating high-level talks between producers and consumers on security of demand, alongside margins for price or production levels in future.

The question Europe needs to ponder is whether a ten-year focus on internal policy and emissions will prove to be a comparative advantage in the global energy space in future, or a serious opportunity cost.

Ultimately though, fundamental climate change measures will not happen without a massive reduction in income gaps between developed and developing nations – this means that hydrocarbons will continue to be burnt before we arrive at such a point. And when we do, don't expect the US and Europe to be setting the rules of the agreement either. This was sharply noted in CIEPs Copenhagen follow up paper, **China, Copenhagen & Beyond**, which placed Asia (China and India) at the forefront of climate change negotiations – alongside Brazil and South Africa – most of whom understandably had little truck with emissions reductions, but far greater interest in reducing energy intensity targets to drive growth without inhibiting economic potential. The introduction of more renewables into the electricity mix continues to produce surprising side effects. The recent study **Wind and Gas: Back-up or Back-out**, that is the Question, shows that introducing more wind energy into the electricity mix does not lead as straight forward to CO₂ emission reductions as earlier thought. Whereas gas was expected to be the natural choice to back wind up, it appears that gas is in the current market circumstances actually pushed out of the mix first, while coal (with biomass) stays in the mix.

Europe will likely continue in its emissions quest. Particularly as traders have learnt to play carbon markets to good effect, green global investments are being made (to the tune of \$243bn in 2010), while NGOs can be satisfied about fiscal transfers to the developing world on the sly. But Brussels will still do what all good politicians do when targets fail: kick them down the road to a new date and new target. 2030 is the likely date of a next settlement. Some might even try and plump for 2050 timelines. The point at which Europe bites the bullet and pulls the plug on 2020 targets remains to be seen, but when it does, it would do well to place its core focus on re-leveling the carbon technology playing field. Those who argue this will raise the political risk bar for future investors half a point, but they've known it's been staring them in the face ever since renewables targets were set. If the climate wheels stay on, the logical conclusion will probably entail pressures for a carbon tax to provide greater

certainty for the private sector to invest, or at the very least to provide a ceiling and floor for the EU ETS to effectively play out.

The idea would be to enable some of the costs of renewables programmes to be absorbed through taxes, and underpin some of the costs of nuclear investments, given the considerable upfront capital expenditure costs involved, not to mention waste legacies out back. More importantly, the EU can start putting more serious investment streams towards funding CCS, especially if some kind of imports tax was put into the mix. Such a tax no doubt fills most politicians with horror, but EU emission measures are currently a sham. Brussels only measures home carbon production rather than total consumption: to be credible, you really have to consider outsourced emissions to Asia, where the vast bulk of manufacturing has been shifted. This is why technology does really matter, and why supporting large-scale nuclear and CCS plants is crucial if any kind of reasonable stabilisation goals are to be met. Emissions are about taking coal (or at least the environment downside of the black stuff) offline, not necessarily putting expensive renewables onto the grid. Assuming the likes of Germany plump for coal and gas to fill nuclear gaps, it's highly unlikely that renewables will have much impact on 'European warming', let alone the global emissions challenge. As Europe has found, and others will start to realise, squaring security of supplies with sustainable supplies, and doing so at a reasonable (commercial and political price) is a nearly impossible task. The question Europe needs to ponder is whether a ten-year focus on internal policy and emissions will prove to be a comparative advantage in the global energy space in future, or a serious opportunity cost, that has placed Europe at the back of the broader global energy queue.

GEOPOLITICAL GROUND ZERO: THE RETURN OF THE STATE

While Europe was very busy playing with emissions and lingering over liberalisation, the rest of the world has been reshaping the contours of international energy politics – both in terms of market modalities and geopolitical positions involved. Oil stands at the heart of the transition.



Nobody, least of all the White House, had any truck with following the European lead on emissions to forge a transatlantic carbon hub.

Europe has been – and will remain – a bit player in the oil debate. Ironically, the strategic priority post-Libya has been thinking about reducing downstream refining options, not going on upstream forays to source new lucrative supplies. No; the real demand-side debate is between the US and China, while on the supply side, OPEC suppliers have grown in concentration given new non-OPEC prospects are struggling to be opened. The common factor is not just that oil still matters for the global economy, but that it has increasingly shaped the contours of international affairs in the 2000s. Oil and gas are politically charged commodities and will continue to be so as long as they remain the primary sources of global energy supply.

The **CIEP Oil Group** has become increasingly active as the oil debate heated up throughout the 2000s. A major conference was organised in 2010, called **'A decade of uncertainties: Coming to grips with new oil market realities'**. The international oil markets in 2009 and 2010 had been dominated by the rebound in oil prices and the industries' need to restructure and adjust to new market realities. Oil demand was slowly picking up in OECD countries and with emerging markets again experiencing rapid demand growth. Spare capacity and inventories were still deemed abundant and due to relatively consistent OPEC-production policies oil prices recovered to a stable \$60-80 per barrel price band. The core question posed was whether such stability could last, or whether we were about to lunge back into pre-crisis modes. Opinion was mixed, but fundamentals, speculation, regulatory issues, the Asian premium and the outlook for downstream sector all presented significant downside risks. Into 2011 such risks have clearly grown.

China's arrival on the international scene has meant the 'scramble for Africa' is firmly on; sharpening contestation for Central Asian energy reserves continues apace; the Middle East is still the main strategic focus for the world's greatest powers to dominate natural resources. Even long before the Arab Spring struck (and indeed long after), Iran will

continue to use resource endowments to directly challenge the West over its on-going nuclear programme, yet could still be trumped by an even larger resource endowment in Saudi Arabia. Riyadh will ultimately look to mitigate such developments through its resource wealth if things turn ugly. Any flirtation Russia might have once had with market liberalisation in the 1990s has long gone, or indeed any prospect of ratifying the Energy Charter. Moscow has opted to continue progressing statist energy interests to sit at the leading international tables on a comparable basis and to maintain its position in newly formed BRIC meetings, potentially at the expense of its economy wide modernisation plans. Such interests certainly went a long way in exerting geopolitical influence in the Caucasus where Moscow sent a very strong 'price signal' over its Georgian intent in 2008. In states where oil has recently been struck, translating this into greater political capital is the key priority: Brazil is pressing its claim to regional dominance over Venezuela in light of the Santos Basin. West African competition is increasingly fierce between Nigeria and Angola, both of whom want to stymie Ghana's rapidly climb in the West African production ranks.

Whether you call this a new 'Great Game' or merely a fleeting reflection of global energy realities is debatable, but there is no doubt that throughout the 2000s the geopolitics of energy has returned, and the state is at the heart of the debate. The bastion of free market capitalism was of course one of the first movers in this regard. American concerns with oil import dependency had prompted a step change in US energy policy, not only in terms of drilling in the Gulf of Mexico and Alaska, but to provide far more support for IOCs operating abroad – all policies the Bush administration ushered in before the 9/11 attacks. The failure of Enron didn't exactly embolden free market US thinking (a theme that Congress took up in the 2005 Unocal takeover), while major new finds in Central Asia underpinned the need for the US to step up its diplomatic efforts. US majors were certainly thinking along such lines in terms of consolidation. Chevron bid for Texaco while Conoco completed a tie up with Philips – nobody, least of all the White House, had any truck with following the European lead on emissions to forge a

transatlantic carbon hub. Others followed statist suit. Japan's 'New National Energy Strategy', adopted in 2006 pressed Japan's oil companies to increase output to safeguard Tokyo's energy needs to the tune of 30% increases. South Korea has seen a sharp increase in state influence linked to energy deals, while Britain still considers its main strategic asset in Central Asia to come through BP's position in Azerbaijan – a sentiment firmly mirrored by France's position in Africa by virtue of Total's extensive upstream stakes. When ONGC sign supply contracts, producer states always ask what New Delhi will be putting on the table to sweeten the signature? The \$280bn sovereign wealth fund India is amassing to facilitate future energy deals will no doubt provide plenty of answers. Meanwhile, Europe is flirting with aggregating market power to fill prospective Trans-Caspian gas pipelines from Turkmenistan and Azerbaijan.

Although the clock on global oil markets has not been fully wound back to pre-1973 levels in terms of direct state control and dwindling liquidity – around 70% of oil is still traded on international markets (and even China still needs to source over 80% of its oil on a spot basis) – those who assume that liquidity and fungibility of the oil market today, will automatically be the market of tomorrow, could be in for a rude awakening.

IRAQ AS WATERSHED

Debate will long continue as to what perceived role oil did or didn't play in Iraq, but by America's own admission, the actions had a distinct woft of déjà vu. As Vice President Dick Cheney claimed, 'Armed with an arsenal of these weapons of terror and a seat atop 10% of the world's oil reserves, Saddam Hussein could then be expected to seek domination of the entire Middle East, take control of a great portion of the world's energy supplies, (and) directly threaten America's friends throughout the region'. Such a quote was basically copy-pasted from White House press releases in 1990-91 to justify the first Iraq War. Cheney, serving as Secretary of Defence at the time noted that 'once (Saddam Hussein) acquired Kuwait and deployed an army as large as the one he possesses (adjacent to Saudi Arabia), he was clearly in a position to be able to dictate the future of worldwide

energy policy, and that gave him a stranglehold on our economy'. It's not just conspiracy theorists that buy into this argument; prominent figures such as Alan Greenspan could not fail but to note of the second Iraq War in 'The Age of Turbulence, Adventures in a New World' (2009), 'it is politically inconvenient to acknowledge what everyone knows: the Iraq war is largely about oil'.

With the Iraqi dust far from settled, CIEP undertook a major study in 2006, **Oil Regime Change in Iraq: Possible Strategic Implications for OPEC**. The paper carefully put the intervention into historical context but noted that if demand continued to grow, Iraqi output would be needed to fill in supply gaps. Whether that would prove to be the case depended on political risk, legal guarantees, alongside broader security concerns and state cohesion managed to hold up. Given the prizes involved though, the real risk for oil majors was not being in Iraq full stop. Competition for Iraqi oil between China, India, the US and EU would be fierce. It would also shape broader economic and political relations among oil consumers, producers and between producers and consumers alike. The longer Iraqi oil stays buried in the ground due to political unrest, the more significant its reserves would prove to be.

What's interesting about Greenspan's comments is that in the short to medium term, the second Iraq war has been disastrous for the oil market. As capacity margins tightened from 2004 onwards, excess supply simply wasn't available and OPEC was at first reluctant to quell the market. It culminated in a price peak of \$147/b four years later. Rather, Greenspan was looking at Iraq and the longer term strategic aspects in play. The US knows that if it lost strategic supremacy in the Middle East, its status as the world's leading superpower would come into considerable question. US dominance in the region not only aids its own security of supply, but allows it to aid other importing countries increasingly reliant on Middle East oil. Washington assumed that the war would fundamentally reassert US ascendancy in the region, maintain

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stability in Saudi Arabia and put Iran under intense pressure as an 'ongoing problem state'. It knew that with troops based in Afghanistan and Iraq that it would be well placed to contain Tehran and see oil production go up from Baghdad. It also figured that GCC states still needed a superpower patron with the military clout to defend their regimes and protect energy exports. America was going to be crucial to the political and economic complexion of Iraq and indeed broader stability in the region on anything ranging from the Arab-Israeli question to the slow disintegration of Yemen. Asian players would at best, remain a side show, both in the political as well as the energy realm.

The ensuing eight-year quagmire in Iraq has since taken a heavy toll on US credibility – not only directly in Baghdad, but also for the on-going willingness of GCC States to follow Washington's line. Jeopardising domestic stability from increased Shia disaffection was one concern, not only in Riyadh but in states running from Bahrain to Palestine, to Lebanon and Syria, the second was the geopolitical own goal that would inevitably result from the war: shifting the regional balance of power firmly in Iran's favour from the Levant to the Persian Gulf. It's not Iranian economic power or indeed its nuclear ambitions from which Tehran derives its regional clout but rather its conventional military forces combined with allies such as Syria, Hamas and Hezbollah that has started to tip the regional balance. Turkey has also grown in regional stature as a result of all this, particularly given its potential as key energy hub linking up multiple markers. The upshot is that Gulf States, while not looking to 'go it alone' are certainly increasingly looking for a political hedge against future US actions. Exploring Eastern options is a rational and arguably wise move for them to make, not least because foreign policies are always closely aligned to energy interests for the major producers of the region. China is the obvious 'go to' country in this regard and has been since the early 2000s. Beijing presents an increasingly viable alternative to US involvement.

RISING DRAGON, CROUCHING DONKEY

China pretty much saw Iraq as a watershed moment as well. While everyone had long been talking about explosive

demand growth in China, no one really appreciated just how explosive it was until 2010 when Beijing surpassed the US as the largest consumer of energy in the world – a dateline that previous estimates had placed well into the 2020s. This meteoric rise has been all the more remarkable given that between 1980-2000 energy demand grew at less than half the rate of economic growth – a figure which roughly translates to 4%. Fast-forward to 2002-2007 and China saw a sharp 86% rise in total energy demand as industrial output, transportation and urbanisation took off. Demand is now expected to grow at a rate of 1.5 times above Beijing's strong economic growth. Coal will remain the cornerstone of China's energy mix due to its plentiful supplies that will stoke the Chinese economy for many years to come, but the picture for other hydrocarbons is less certain: the only way China can meet demand across the board is by sourcing more and more carbon beyond its borders. This will be a structural rather than transitory feature of global energy provision, and by implication, it means that China will have a far more extensive global footprint. As one former Chinese diplomat put it 'China is now engaged in all corners of the world for one reason, and one reason only: natural resources'. This was the core narrative of the energy debate from 2000-2010; it will become the leitmotif of 2011-2020.

In light the rapidly shifting geopolitical context following the Iraq war, CIEP undertook some major studies on geopolitics and the changing context of energy markets. First, in 2004, in a study for EU Commission DGTREN **Energy Supply Security and Geopolitics**, followed later that the year by **Energy in a Changing World**, CIEP produced a major study in 2005 entitled **Tomorrow's Mores: the International System, Geopolitical Changes and Energy**. The tight oil market and the rise of new energy consumers, most notably India and China, had altered the balance on energy markets. Producing countries have relatively more power than during the 1980s and 1990s. But more importantly it also has impact on the way business is conducted on these markets. The study drew out a sharp distinction between a preference for securing energy supply through reliance on international energy



PHOTO: DRIES ZWIKKER

‘China is now engaged in all corners of the world for one reason, and one reason only: natural resources’.



markets and a preference for direct dealings between governments of producer and consumer countries. The former implies a decreasing role of governments in the energy sector in favour of market forces, while the latter implies heightened political influence in the energy sector. Based on the most important actors' assumed positions, the studies presented several possible energy futures, each of which is characterised by its own political and economic 'mores' for the international system in general and its consequences for global energy flows in particular. These futures define possible balances and matching rule-sets, coming from an analysis of current developments, perceptions and trends. The report highlighted that the position and role of the European Union in the future international system is far from clear. Much will depend on the capacity of Member States to agree on common marching orders. Most crucially, the paper clearly stated that in none of the futures outlined, would the EU play a leading role in determining tomorrow's mores – the most fundamental of which was security of supply. Instead it will follow the rule-setters, the United States and China.

Given this backdrop, it's hardly surprising that China has spent most of the decade quietly cementing its position in key producer regions spanning Central Asia, Australasia and the Middle East. From Beijing's perspective, 9/11 not only raised the outside chance of an oil embargo from Arab states, but also highlighted acutely China's 'Malacca Dilemma' should terrorists turn their attention to maritime choke points. Under either scenario, China's access to Middle Eastern oil reserves would be threatened, and the resulting higher oil prices would have collateral impacts. China was also worried about the prospect that the US would extend its geopolitical reach into Central Asia and Afghanistan after 9/11. The general view was that it would not only give the US strategic control of Central Asia, it could help contain China, Iran and Russia alongside the oil and gas resources of the Caspian Sea region. This would have dramatic impacts of Chinese natural resource acquisitions, and indeed the prospective routing of pipelines to the Chinese mainland should Central Asia become a geopolitical staging post for American interests.

The Iraq invasion obviously heightened such fears. It not only threatened Chinese access to the Middle East, but the shipment of tankers to Chinese ports as well. Price spikes due to the war were thought to be inevitable from the war, while many analysts felt it would be even harder for China to access Iranian or Saudi reserves given the dominant US position in the Persian Gulf. The Middle East and Central Asia were expected to be the bedrock on which Chinese energy security was built to secure overseas supplies; instead, they both now looked like geopolitical quicksand. With power shortages engulfing China from 2003-2006 – leaving China's energy fate purely to the market wasn't simply deemed high risk, but positively suicidal in light of the ensuing developments.

GOING OUT: MARKET DESIGN – STATE RULES

China duly opened a dialogue with OPEC to ensure an 'equitable share of the oil market' in 2006, adding a rather important footnote stating China's desire 'to participate as much as possible in some of the big decision processes on the world stage'.

While we won't go into too much policy minutiae here, it's fair to say that a state based strategy designed to diversify supplies, build globally competitive oil companies, petroleum diplomacy, setting up a national petroleum investment funds, ramping up China's domestic oil tanker fleet and expanding the army and navy, are all classic international supply-side pursuits. China's energy policy was fundamentally calibrated to meet supply, rather than reduce demand in any critical sense from 2000 onwards. Obsessing about whether China's import dependence will increase by 70% or 80% by 2030 misses the point. The general trend is indisputable: Chinese consumption and import dependency will continue to sharply increase over the coming years, with the possible exception of natural gas if unconventional gas prospects pan out as expected. Nowhere will this be more critical than in relation to oil consumption. China imported 1.6m b/d of crude in 2001, a figure that had risen to 4.1mb/d by 2007 equating to over 50% of its total oil needs before creeping up to 52% in 2009. This is hardly surprising when we consider the broader picture that China is likely to account for over 40% of global hydrocarbon demand growth. This is precisely why the Middle East is so crucial for

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As early as 2008, over half of China's oil imports were sourced from the Middle East having become the biggest source of imported oil to the mainland in 1996. By 2015 it is widely anticipated that the Middle East's share of China's oil market will rise rapidly to around 70% (India has already hit these kinds of percentages). But rather than focusing on profiting from international oil receipts, purchases are deliberately being made on an equity basis designed to directly own and physically control commodities for domestic consumption. 'Equity oil' already accounted for 15% of Chinese supply in 2004, a number that has risen since in tandem with long-term production sharing agreements. China's combined net international production levels hit 1mb/d in 2010 with commercial reserves up by around 40% – figures all achieved through dogged political determination rather than 'pure' market forces.

With China's new-found strategic interests in Africa, the continent is fast becoming a key part of the global energy system. But as a major CIEP report **Gambling in Sub-Saharan Africa: Energy Security through the Prism of Sino-African Relations** argues, such ventures are far from risk free. China has used its perceived 'blank slate' non-Colonial status to drive its expansion into Africa. Total trade between Africa and China amounted to approximately \$73 billion in 2007, compared to a total of \$4.8 billion in 1998 (a remarkable 1,277% increase), with oil accounting for 80% of this trade, demonstrating just how successful China has been in its endeavour. However, Africa is a continent plagued by conflict, making the cost of doing business there one of the highest in the world. Infrastructure is sorely lacking, as is a reliable, functioning legal framework in many countries, with the added stress for business that corruption is often endemic and pervasive. Those who are serious about doing business in Africa have to contend with the notion that security cannot be taken for granted and a substantial amount of the budget needs to be set aside to this end. The report

duly provided an in-depth overview and analysis of the types of security risks found in Africa, using Nigeria as a particular case study. The report found that Chinese firms are learning the hard way that there is a pertinent need to foster sober risk-assessment and security-management skills, as nobody – not even the Chinese, who bank on their policy of 'non-interference' to create goodwill – is immune to security risks.

Where equity deals can't be struck, Beijing reverts to plan B; tying in upstream production with downstream refining capabilities in China to give producer states a stronger stake across the energy 'value chain'. Saudi Aramco and Sinopec are currently implementing exactly these kinds of deals. Admittedly, CNPC, CNOOC and Sinopec are just as happy as the next oil company to turn a profit by selling what they can to international markets (a strategy PetroChina has embraced more than most given its listed status), but this should not be confused with where China's true priorities would reside in the midst of any significant supply disruptions. Beijing would understandably try to put China's energy interests first to ship supplies directly to Chinese ports by drawing on its contractual rights to do so.

The West should hardly be shocked by this strategy; it spent most of twentieth century trying to implement a similar blueprint of linking strategic presence to the flow of oil. But the geographical breadth and bilateral depth of China's global energy rise has started to generate serious concerns. What's more, Beijing's pro-active territorially-focused resource diplomacy has been wedded to a greater emphasis on forging alliances to secure the sea lines through which China's new-found oil is to be transported. The so-called 'String of Pearls' policy spanning from the Persian Gulf to the Chinese mainland via the Strait of Hormuz to the Malacca Straits with naval presence in Cambodia, Pakistan, South China Sea and the Indian Ocean – although formative in nature – underlines the degree to which Beijing takes security of supply and delivery of supply seriously. In broad terms this will effectively become a re-run of US dependency on Gulf oil in the post-war years. Assuming flags follow the trade,

Assuming flags follow the trade, the Middle East will become a *de facto* Chinese strategic asset: a truly seismic geopolitical shift in global affairs.

the Middle East will become a *de facto* Chinese strategic asset: a truly seismic geopolitical shift in global affairs. If we put physical pipelines from Central Asia and Russia heading for the Chinese mainland into the mix, then the narrative becomes even more convincing, and indeed disturbing, for the West.

All this matters not just for the future complexion of the global energy system, but to put the not-so 'hidden hand' of the state back at the centre of global energy provision. The common, but by no means standardised, method of securing reserves has been through a doctrine of political non-interference, inflated signature bonuses, increased trade flows, massive credit lines and major infrastructure provision – all of which have come without any traditional Western strings attached or indeed, commercial price risk considerations associated with long project cycles. This 'formula' has been deployed most in African producer states where it has most political resonance, whereas in the Middle East and Latin America the focus has been more on creating economic incentives.

DOWNSIDE RISKS?

The problem as far as the energy balance is concerned is that the rise of emerging market NOCs throughout the 2000s has come with three costs: the first is that while national champions may be willing to put more oil onto international markets at times of their choosing, the cardinal rules of the game are towards security of supply and political control of resources, not enhancing international markets. The second is that this also makes the assumption that emerging market majors will actually be able to get more resources to market in the first place; the record so far is circumspect. Their technological edge is still decidedly blunt compared to Western counterparts, and more worryingly, many of the investments made have been with scant regard for political risk pervading producer states.

Clever use of joint ventures to put local energy players on the political frontline in Africa might appear to be a canny option to hedge political and reputational risks for Beijing, but 'pushing proxies' in this way could actually complicate

regional politics even further. Aligning state based energy politics to a stable regional balance of power is clearly not one that China has managed to perfect yet. If it can, it may avoid the worst effects of our third impact; providing producer states with all the ammunition they need to enhance their bargaining positions from competing Western and Asian interests.

The most obvious play is in Central Asia where China, America, Russia, Europe and even some Middle Eastern consumers are competing for reserves. Kazakhstan and Turkmenistan are certainly well placed in this regard, as is Azerbaijan. Similar trends can be seen in West and North Africa, while Latin America is certainly not 'above' enhancing its perceived economic and political standing from a contractual perspective, nor indeed is Russia. Key Middle Eastern producers are more than able (and indeed some might say, the most experienced) at playing this game. Even Australia and Canada have been luring multiple consumers to enhance their respective positions. It would simply be commercially stupid for producers not to capitalise on new found leverage over competing consumer states, irrespective of whether resources reside in developing or developed states. The overall argument here is not to score points or to compare the relative merits of IOCs or NOCs, but to highlight the fact that without a seismic shift in capping of reserves and a rolling back of resource nationalism for all, supply will struggle to keep pace with demand in the longer term. If nothing else, the period 2004-08 provided all the evidence we need as to how producer states intend to use resources in a constrained world: for political and commercial gain.

2000s WARNING SHOTS: EXPENSIVE ENERGY = PRICEY POLITICS

Although seemingly a distant memory given the entrenched problems the Arab Spring has presented to autocratic regimes across the board in 2011, times were remarkably good for producers for the bulk of the 2000s. So good that prices rocketed over \$100/b for the first time in oil's vexed history, with associated commodities riding high. Fundamentals were part of the story, but so too were the paper markets. As with previous price peaks in 1973, 1979/80 and 1990, the

As with previous price peaks in 1973, 1979/80 and 1990, the usual ingredients of tight supply-demand fundamentals and short-term price signals driven by fear of physical outages came into play from 2004-2008.

usual ingredients of tight supply-demand fundamentals and short-term price signals driven by fear of physical outages came into play from 2004-2008. Strong Asian demand and sustained economic growth across OECD states against a backdrop of upstream 'asset sweating' from the 1990s provided all the evidence traders required to build up net long positions on crude oil futures. Money was to be made.

Speculators duly piled into energy as a hedge against the weak dollar and rising inflationary pressures, and used every scrap of geopolitical friction to push prices higher. Intractable conflicts in Nigeria and Iraq, alongside contractual instability in Central Asia and Russia entered the daily lexicon of oil price pressures, as did shorter-term flashpoints such as hijacked ships in the Gulf of Aden. Rumbblings in Latin America were billed as a potential 'Andean cataclysm' rather than a predictable confluence between Venezuela and Colombia. The death of Benazir Bhutto at the turn of 2008 also supposedly drew supply-demand fundamentals closer. As market positions amassed, investment banks started hinting toward \$200/b forecasts. This was a figure that many analysts started to present as a self-fulfilling prophecy as the market approached the \$150/b mark in July 2008.

Even price moderates within OPEC rank grew increasingly confident that demand would remain relatively inelastic. In the first half of 2008, OPEC earned as much as they did in the whole of 2007 – putting \$645bn into state funds in six months, with the GCC earning over \$1.7 trillion from 2002-2007. Foreign reserves rapidly approached \$2,500bn in the Middle East, while Sovereign Wealth Funds (although not exclusively oil based) amassed a global total net value of \$US 4 trillion in 2007. Financial gains do of course have a long history of being turned into political muscle across producer states. 2008 proved to be no exception. Iran, Venezuela, Algeria, Ecuador, Bolivia, Nigeria, Libya, Angola, Kazakhstan, Russia and to a lesser extent GCC players used high oil prices to maintain political stability at home and project power abroad, as well as maintaining robust economic growth outlooks. On average, OPEC states balanced their budgets in 2008 above \$80/b. This was a bull market they thought was

here to stay, and one in which they could gain the whip hand over consumer states and progress their regional interests.

Nigeria's budget was balanced at \$60/b in 2008 with hydrocarbons forming the bedrock of the economy. The conventional wisdom was that high oil receipts meant political defeat, rather diplomatic accommodation with the Movement for the Emancipation of the Niger Delta (MEND) as the best way of recapturing Lagos's lost West African energy crown from Angola. President Bouteflika faced no such problems beyond sporadic AQIM attacks in Algeria, but still counted on oil for 41% of its revenues. In the Persian Gulf, Iran calibrated its spending to the \$95/b benchmark price, having ably used its oil receipts to 'buy' influence in Iraq, Syria, Lebanon and Palestine. Spending also had a domestic angle. With 80% of government export revenues coming from the energy sector, Ahmadinejad could let inflation hit 30% and use 12% of GDP on energy subsidies to garner support.

Not to be outdone, Hugo Chavez balanced his budget at \$95/b to maintain the 'Bolivarian revolution' in Venezuela. Part of the revolutionary 'package' was to create an anti-US bloc in Latin America with more than a dozen countries in Central America and the Caribbean. Morales in Bolivia, Ortega in Nicaragua and the FMLN in El Salvador were the key recipients. President Medvedev took up where Putin left off in Russia by continuing to use hydrocarbons as a political tool to 'recapture' lost Russian influence. Moscow became increasingly assertive in its neighbourhood towards the US and EU over anything ranging from missile defence to the formation of a nascent gas cartel. Central Asia was similarly flagged as *de facto* Soviet space. Even the GCC states started to balance budgets above a \$50/b benchmark price, both as a means of investing in economic diversification and, more bluntly, to buy off political opposition and build strong security apparatus to deal with the symptoms of social unrest. That was arguably a costly mistake in light of recent events, not to get to the root of the underlying causes.

If anything, producer states became less concerned with prompting potential 'demand destruction' than with dealing with inflationary pressures inflicted by upward



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price movements. By mid-2008 inflation had risen to 8.6% in emerging markets. This was 'dealt' with through heavy subsidies, which although fiscally painful, remained small beer compared to the drastic deterioration in external positions suffered by over two-thirds of importing countries. Half of all developing states also ran current account deficits in excess of 5% of GDP by 2007.

POLITICAL HUBRIS

Despite this gathering storm, OPEC and non-OPEC producers did not think a major price correction was on the cards. This was a critical mistake, particularly as all the obvious signs such as slackening growth and weak US employment figures had been on the horizon long before the bubble burst. Market sentiment had to catch up with the financial crisis and weakening fundamentals. With banks scrambling to release liquidity following the collapse of Lehman Brothers, political risk only mattered for oil in terms of how credibly OPEC could set the floor as demand slackened, not how highly prices would be propelled. 'Price signals' emanating from the Caucasus over the BTC pipeline, Iranian threats to block the Strait of Hormuz and even storms in the Gulf of Mexico were now irrelevant. This was a market desperately trying to stay above \$40/b as demand fell, inventories swelled and investors raced to unwind net long positions rather than wondering when the \$200/b barrier would be broken. Regional gas markets saw similarly sharp corrections in UK (NBP), US (Henry Hub), Canada (Alberta) and Japan.

While lower prices came as a welcome respite for consumer states, it instantly put the spotlight on engrained economic and political frailties in producer states. Financial muscle has shifted towards producer states to some degree, but as the contrasting fates of 'price hawks' and 'price moderates' attest, this remained a function of economic (mis)management rather than structural shifts underway. Nowhere was this more evident than in Venezuela, Russia and Iran who six months prior, had been pushing their case for regional domination.

In Caracas fiscal positions were quickly revised, monetary policy loosened and bond issuances made to try and fill

funding shortfalls. But with inflation at over 30% and foreign debt around \$50bn and a breakeven price of \$97/b to balance external accounts, Chavez was well aware that this would not be sufficient to serve his political ambitions. Only the passage of a long-standing Constitutional proposal to indefinitely extend his political tenure beyond 2012 could only do that – a tactic Bolivia and Ecuador have since tried to imitate. In Russia, the Kremlin had to urgently draw on oil stabilisation funds to prop up the banking sector underlining the degree to which the world's largest oil producer (at least for now) is dependent upon, and exposed to hydrocarbon price swings. Russia couldn't escape the fact that oil and gas revenues account for more than 60% of its export revenues. Having whittled reserves down to under \$200bn Moscow still had some way to go before the bank was completely broken, but it had to radically reduce its budget outlook for fear of building up a major budget deficit. Russia did ironically manage to squeeze out a record 10mb/d production for the first time in 2009. The main reason was the ruble's depreciation against the dollar and euro alongside lower oil export duties which made export increases possible rather than getting investment policies right in Siberia. The Kremlin had been so sure output would drop that Deputy Prime Minister Igor Sechin was dispatched to try and sign a memorandum of understanding with OPEC to try and coordinate output. This was not a sign of strength, but one of fundamental weakness.

SECOND FIDDLE

A word of caution is still needed however: even when prices dropped to \$33/b with Russia pondering how to balance competing oligarchs, any prospective Russian membership in OPEC was simply not in the cards. Russia would find it difficult to play second fiddle to Saudi Arabia, and even more difficult to manage production cuts among its companies. It's probably just as well for the rest of OPEC that this was the case given that Saudi Arabia took the full brunt of production cuts.

Saudi Arabia was well aware that by OPEC standards, around 65% adherence to cuts was impressive in 2009, but that it was also misleading. The majority of members including

While lower prices came as a welcome respite for consumer states, it instantly put the spotlight on engrained economic and political frailties in producer states.

Iran, Venezuela, Nigeria, Algeria, Angola and Ecuador all still decided that it remained preferable to keep oil flowing above quota, rather than face the graver short-term political risk of seeing the taps shut down. Far from playing the supply restraint game, Russia reverted to historical type by putting more oil on the market to capitalize on OPEC cuts. So while a floor was set, it was predominantly the GCC states which had more fiscal room for manoeuvre to battle financial contagion and slackening prices, and in particular Saudi Arabia, that did it.

The story could however have been very different. The Kingdom now holds 90% of the world's spare oil capacity and had much to gain in allowing prices to plummet below \$30/b by failing to reign in supply. Thankfully for Iran, whose economy remains in a parlous state, allowing prices to drop below \$30/b was a game that even Saudi Arabia could not afford to play for domestic political or economic purposes. Even oil-rich Abu Dhabi had no choice but to step in and save the cash-poor Dubai towards the end of 2009.

The post-election chaos on Tehran's streets in 2009 also served as a good reminder for Riyadh that it can only take its oil power in the Middle East so far. Making Tehran sweat is one thing: raising the prospect of political implosion in Iran, Iraq and Yemen by flooding oil markets is quite another. The last thing the Saudis would want is to see some of the more apocalyptic scenarios in the Middle East play out at their hands – not unless the Arab League want to add any further political upheavals to the Tunisia, Libya and Egypt roster.

RESOURCE NATIONALISM: NOT PROMISING NEWS

The analytical point to drive home here is not only that producer states are sitting on very shaky political ground, but that this severe bruising was, in line with earlier Western thinking, supposed to trigger the 'fall' of resource nationalism across producer states. Correcting prices provide to be fertile ground for IOCs to reassert their position in global oil production amid cheaper assets, credit constraints in producer states and dwindling resource nationalism to help bring new reserves online. It is certainly a claim that

has historical validity in keeping with previous 'political risk cycles' – and from initial developments, looked like a reasonable bet to place. TNK-BP gained an extended stay of execution in Russia, Venezuela allowed IOCs to tender for new concessions, Mexico started to reconsider how it could best boost production, Kuwait's parliament appeared more amenable to hydrocarbon investment, while African producers thought a little more critically about playing the Asia card on Western multinationals. Contractual relations in Central Asia looked on a firmer footing than they had been for some time.

Facilitating greater producer-consumer cooperation has been a long term theme of CIEP output. In 2011 a large report was published, **IEF: Twenty Years of Producer-Consumer Dialogue in a Changing World**, writing in conjunction with the Oxford Institute for Energy Studies. From its humble beginnings in Paris in 1991 the global producer-consumer dialogue on energy has developed through the International Energy Forum (IEF) so that it is now the world's largest gathering of Energy Ministers. IEF Countries account for more than 90% of global oil and gas supply and demand. In addition to IEA and OPEC countries, transit states and key energy players, including Brazil, China, India, Mexico, Russia and South Africa, participate in the Forum. The magnitude and diversity of this engagement is a testament to the IEF's position as a neutral facilitator. The twists, turns and developments of the twenty-year history of the dialogue are duly documented in the publication, laying further ground for potential cooperation and dialogue.

But this was all short-lived. The bet was lost, and it was lost for two interlinked reasons. The first was that although price corrections inflicted major short-term economic and political pain on producer states, most states spanning the Middle East, North and West Africa to Latin America and Eurasia had found some kind of coping mechanism to weather the storm, even at \$33/b. What made survival more probable was the second factor: the pace at which prices

The global energy outlook, and therefore political map will inevitably undergo fundamental change in the next decade.

lifted to over \$80/b thanks to rebounding Asian demand and market sentiment, drawing states away from economic implosion. Unlike previous political risk cycles, where prices have typically remained subdued following a boom to bust scenario, producer states were instantly viewing another upward run in oil markets to reconfigure the conditions of 2004-8. Chinese demand was *the* key factor here, but such a run would not be built on an edifice on market liberalization to diversify and restructure their economies away from oil and gas or to allow for greater upstream investment, but on renewed resource nationalism to refill state coffers on the back of rising Asian demand. \$127/b in April 2011 has been the inevitable result.

TOUGH LOVE

Whether producer states are actively looking to orchestrate depletion policies (whereby reserves are carefully managed over time to maximise long term revenue) can be contested, and it certainly doesn't apply across the board. But most producer states have presided over far closer political capping and control of resources in the past few years having survived the shocks of 2008/9. IOCs can still only contest around 10-15% of global reserves with producer states as determined as ever to strengthen their grip on natural resource wealth and ownership.

In the Middle East, NOCs control 95% of reserves. Kuwait and Saudi Arabia have effectively factored out upstream investment from IOCs, while the UAE and Qatar are only marginally less cautious. Despite recent interest from international firms, Iraq remains particularly challenging to make major commitments. Not only does Baghdad want to retain tight control of its oil, it wants to do so without any credible legal or security guarantees in place. If anything, Iraqi infighting as to how oil receipts and ownership should be divvied up remains a core stumbling block to political reconciliation in Baghdad beyond the ballot box. Worrying about how Iraq will fit into OPEC quotas is likely to be a premature call, particularly when we consider that old fields will be costly to bring online and require new infrastructure in place. Iran's nuclear programme has seen an exodus of international firms allowing Chinese majors to get their foot

in a fiscally creaking door. Iran remains a net importer of gas, its oil production is now forecast to fall to under 3.5mb/d by 2014. Depending on how the nuclear issue or Tehran's internal political schisms play out, this could prove to be all the more precipitous.

African producers arguably offer better terms, but no less risk. The Nigerian government has made some progress in the Delta through a blend of 'diplomacy and dollars', the looming Petroleum Industry Bill will hardly help to increase IOC investment in the region. North African terms are set to become increasingly harsh, not only in Libya where receipts will be desperately needed to hold the state together, but also in Algeria and more marginal producers such as Egypt and Tunisia.

In Latin America, Mexico's reforms to allow for international investors to bolster PEMEX's output have been notably limp. IOCs might be able to tender for concessions in Venezuela's Orinoco belt, but only on the basis that they renounce all arbitration rights. Given that Chavez has expropriated a number of oil service companies for refusing to fulfil contracts without payment, it is hard to imagine the Bolivarian revolution mustering more than 2.5m b/d in output any time soon. A similar logic applies to Ecuador, which is likely to see production fall over the next few years. Even Brazil has made clear its intent to maintain close control of pre-salt finds, amid a tightening political grip of natural resources in Latin America. As far as the big oil prizes are concerned, this more or less leaves Russia. Unless we see a major change in the political and legislative environment, Moscow will struggle to go beyond 10mb/d output, particularly as the Kremlin is only willing to open the Arctic Shelf and Eastern Siberia on Russian terms and Moscow's time.

As prices continued their sharp rise into 2008 and supply side pressures mounted, CIEP put out a paper **Turmoil on the International Oil Markets: Getting Used to Production Capacity Constraints**, questioning whether we faced the real prospect of a pending supply crunch. The report duly noted that with above ground risks as



The onus is on producers to make sure that the geological cost of production is ‘*index linked*’ to the realities associated with political cost of survival.

pronounced as ever, supply was likely to remain tight, with the full force of spill-over effects likely to be felt on local and regional levels. Without new spare capacity, consumers would be in for a rough ride. Far more had to be done to persuade producers over long-term security of demand (biofuels obviously didn’t help in this regard) and indeed confidence to make long-term investments in high cost production. Perhaps most tellingly, the paper also warned of the perils of demand destruction. If a recession were to come, it might at least buy some time to prevent an oil crunch, but as yet, the downside risks are unfortunately still gathering supply side momentum.

A COMING CRUNCH

The overall upshot of recent developments is that producers are now far more likely to capture more of the revenue stream through contract revisions while tightening control of reserves and supply – both for economic and political priorities. Delayed final investment decisions are back, greater shares of revenue streams are being demanded and tighter control of production can be seen. The onus is on producers to make sure that the geological cost of production is ‘index linked’ to the realities associated with political cost of survival. This structural necessity to maintain high prices will almost certainly play into increased resource nationalism and populist energy policies in the short to medium term. Expropriation and contract renegotiation remains an unlikely outcome in the Gulf compared to Latin American producers, but at the very least, we could see the awkward prospect of national oil companies being used as state cash cows for social spending, rather than sinking money into much needed future E&P. For all the ‘certainty’ \$110/b prices deliver for fresh investment, the political downsides risks are formidable to secure capital flows. That goes as much for small producers such as Egypt, Bahrain and Oman as for oil giants Iraq and Iran.

With oil fundamentals precariously balanced, the Saudis are unlikely to invest much further to ramp up production towards 15mb/d until it can be sure it would not be left with the worst of both worlds (falling demand and increased

supply). Other GCC states, notably Kuwait and the UAE will follow this lead. Meanwhile, Iran, Venezuela and Russia will be more than happy to see the oil price remain firm. The desperate need to paper over political cracks will see NIOC economically plundered to new depths for social spending rather than investing in upstream capacity. Anything left over will probably go towards ‘progressing’ Iran’s regional and nuclear ambitions. Caracas will push to maintain its ‘revolution’ by whatever means Chavez sees fit to stay in power. Sabre rattling with Colombia is back; further bids for regional domination will likely follow despite the irony that PDVSA production will continue to falter. In Russia, Putin will continue to place a heavy premium on hydrocarbons to underpin the Kremlin’s position. Meanwhile, the fiscal health of all other major producer’s remains deeply intertwined with a high benchmark price. Algeria, Iraq, Angola, Ecuador, Bolivia and Kazakhstan all safely fall within this bracket.

Even in the Gulf States, where production will remain steadier, receipts will increasingly need to go on social spending rather than upstream E&P in light of the Arab Spring. OPEC pressures will be magnified even more if high-risk non-OPEC production in Sudan, Chad, Cameroon, Equatorial Guinea and Central Asia drops, either through domestic unrest or contractual instability. Even where promising new finds have been made in Africa and Latin America, turning seismic surveys into actual output remains a long and arduous task to alter the supply-demand balance.

BROKEN EGGS: SENSITIVE SHELLS

Obviously if demand destruction sets in again, OPEC will be remarkably grateful to have such deep-seated supply-side restraints given the uncertainties associated with any prospective price floors. The chances of major corrections are quite high given that markets are directly testing the solvency of the ECB and Fed as the ‘lenders of last resort’ this time around. But what this all ultimately boils down to is that that consumers missed a valuable opportunity from 2000-2010 to realise shared interests in stable production, to set a credible price band with producers and indeed, to find a common rule book on resource investment and market principles.

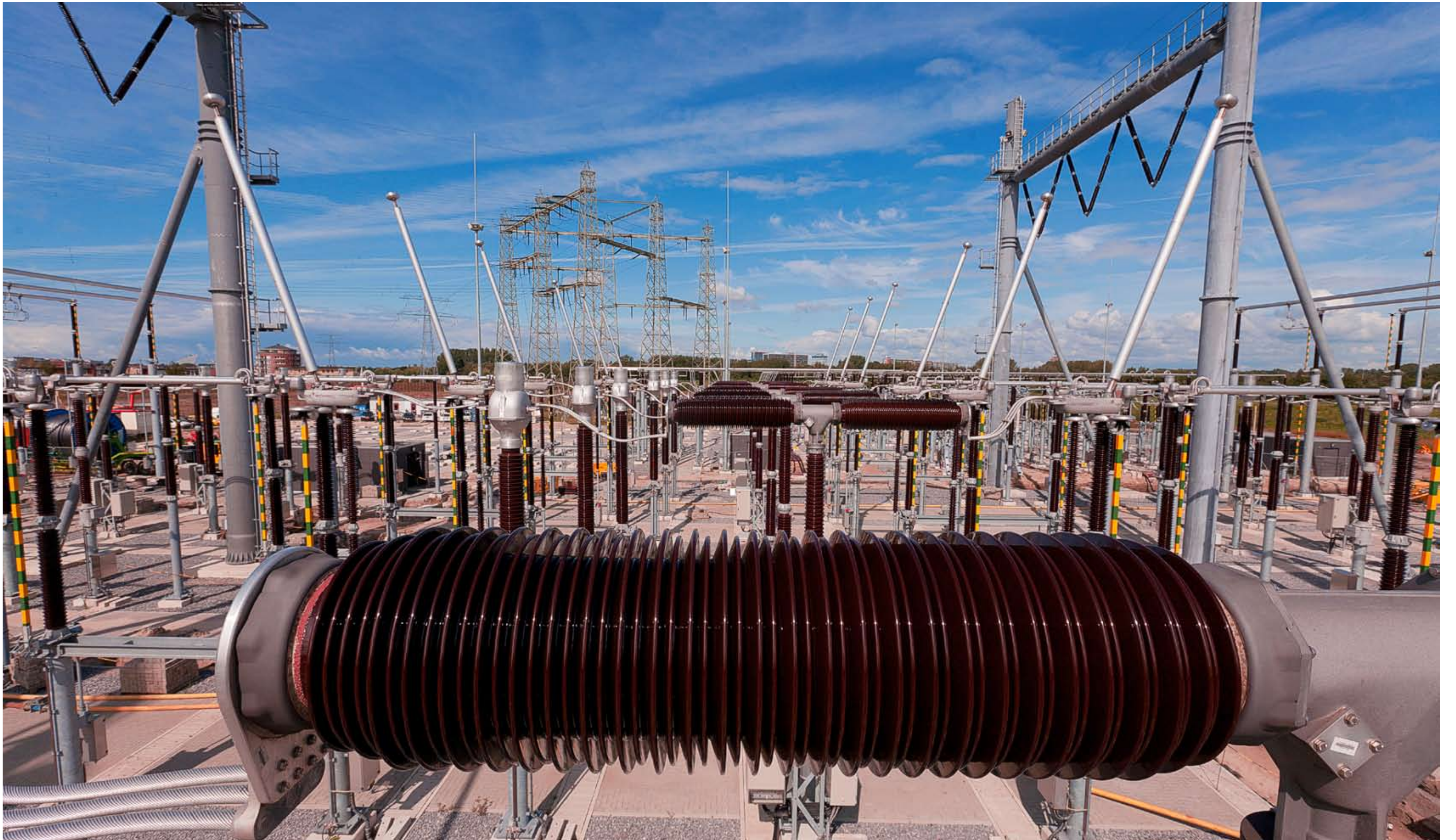
With the twentieth-century game of Western demand and producer supply gone, the rules were inevitably going to become more complex and more challenging.

It was arguably always going to be this way. With the twentieth-century game of Western demand and producer supply gone, the rules were inevitably going to become more complex and more challenging. Beijing is not only aspiring to gain the strongest hand, but is learning how to play the energy game. If anything, it’s starting to change some of the rules in its favour. The belated offer from the IEA to let China join its ranks in 2010 was instantly dismissed by Beijing. The time for co-opting China into the consumers club has passed – this will be a new game, played on new turf, with new rules being drawn up in the East.

This of course provides more questions than it does answers. Who will be providing security guarantees associated with keeping supplies flowing as China becomes the largest consumer of oil? Who will ultimately hold and effectively retain the political balance of power in this process, both in relation to producer states and the complexion of the global energy system? Will Washington or Beijing be the first political port of call for producer states, or will this remain a false distinction for canny leaders keen to keep their options open between East and West while boosting their own regional standing? How do producers, most notably OPEC, fit into this equation? And even if the US and China strike some sort of an energy compromise as the key consumers, where would these leave lesser energy powers? The relative global fuel mix will obviously play a role here as well.

The most critical ‘transition’ question for 2011-20 will therefore not be about shifting from hydrocarbons to cleaner energy, but whether the West is happy to slowly cede political and security responsibilities to China as the energy mantle shifts East. Or does the West still have a number of critical geopolitical and normative red lines that simply can’t be crossed? Europe probably doesn’t – which means it will default towards greater structural Russian supply, but the US probably still does, irrespective of however promising domestic production is looking in the Americas. While it’s very true, everyone does have a ‘rational’ interest in long-term stability and bountiful supply, this ‘shared interest’ will be a flimsy argument unless Beijing understands that its growing energy demand is inexorably linked to its

broader position in international affairs – while the West will need to think carefully how this *really* steps on its energy, political and security toes. All sides will need to critically assess and reassess the interests and motives of each other and keep diplomatic channels fully open if political friction is to be avoided. Such dialogue will be all the more critical if the current global energy system fails to deliver consistent supply – particularly as it will force the US and China to play whatever political hands they have available at the time. Either way, the global energy outlook, and therefore political map will inevitably undergo fundamental change over the next decade.



SECTION FOUR

**PARADOX OF
PERCEPTION
AND REALITY**

While we can only provide circumspect answers to many of the points raised right now, they still help us to get to the crux of where the global energy debate is heading from a market, geopolitical and resource based perspective over the next decade. CIEP output has consistently tried to grapple with such questions over the past ten years. We believe a shifting world energy order is just as much a problem for China as it is for Washington, Brussels, New Delhi, London, Seoul, Tokyo, Moscow, Riyadh, and all OPEC players, and all must remain open to discussion to make it work.

The only brushed upon narrative in this book is that of renewables. They are expected to play a more prominent role in international energy in the decades after 2020, which this book does not cover. For now, they constitute European aspirations to manage structural import dependence and steps toward a low carbon economy. But, at the same time, Europe needs to compete on world markets and the current economic crisis is seriously hampering the ability to make a major investment push forward in this area. In long-term policy directions, Europe might be beginning to carve out its own path, but in reality, this path might turn out to be illusory if not grounded in a plausible external energy policy and economic policy posture.

The danger is if perceptions start to outstrip realities, and broader potential for co-operation become framed purely in terms of risks, real or not, without a shared vision to ensure cohesive momentum in the longer term. If states continue to see energy as a winner takes all game: 'my loss is someone else's energy gain' as they arguably do now, then the prognosis doesn't look good. It will be crucial to get investment right over the next decade to prevent another serious crunch as investment lags and demand rises. Sporadic corrections will no doubt punctuate the years in between. The Paradox of Plenty (2000-2010) should be seen as the period when everything *should* have changed for energy, but in fact, we merely put ourselves back on an unsustainable path of hydrocarbon dependence and ever-increasing emissions, thus placing ourselves in a Paradox of Scarcity of this decade. How we deal with this and how messy it could prove to be as Asia takes the centre energy stage, and indeed its confluence

with broader global geo-economic and geopolitical shifts, is where the core focus should be.

What we have argued is bold, but Europe needs to try and be more than a geopolitical by-product of US-China relations, and instead be an integral catalyst towards a more stable energy future.



GLOSSARY

NOTATIONS

| | |
|----------|--|
| b/d | barrels per day |
| mb/d | million barrels per day |
| bcm | billion cubic meters |
| bcm/y | billion cubic meters per year |
| mmbtu | million British Thermal Units |
| \$/mmbtu | dollar per million British Thermal Units |
| mcm | thousand cubic meters |
| mcm/y | thousand cubic meters per year |
| \$/mcm | dollar per thousand cubic meters |
| EUR | Euro |
| tr | trillion |

COUNTRIES, GOVERNMENTAL AND INTERGOVERNMENTAL ORGANISATIONS

| | |
|-------------|--|
| EU | European Union |
| CEE | Central & Eastern European states |
| SE European | South European states |
| MENA | Middle East and North Africa |
| NATO | North Atlantic Treaty Organisation |
| OECD | Organisation for Economic Co-operation and Development |
| OPEC | Organisation of the Petroleum Exporting Countries |
| SCO | Shanghai Cooperation Organisation |
| UAE | United Arab Emirates |
| UK | United Kingdom |
| US | United States (of America) |

RESEARCH INSTITUTIONS AND ORGANISATIONS

| | |
|------|--|
| CIEP | Clingendael International Energy Programme |
| IEA | International Energy Agency |

ENERGY COMPANIES

| | |
|---------|---|
| BP | BP |
| CNOOC | China National Offshore Oil Corporation |
| CNPC | China National Petroleum Corporation |
| Gazprom | Gazprom |
| GDF | Gaz de France (Suez) |
| NIOC | National Iranian Oil Company |
| RWE | Rheinisch-Westfälisches Elektrizitätswerk |
| Statoil | Norske Stats Oljeselskap AS |

MISCELLANEOUS

| | |
|-------|--------------------------|
| CCS | Carbon Capture & Storage |
| LNG | Liquefied Natural Gas |
| NBP | National Balancing Point |
| NIMBY | Not In My Back Yard |
| TTF | Title Transfer Facility |





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