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Looking to the Future: Energy risks uncertain but manageable

Energy firms are exposed to a series of high impact events whose magnitude and frequency are likely to increase in the future. The global energy sector is now a volatile and punishing marketplace. Future energy prices are highly uncertain with commodity shortages likely.

A significant change in the world energy order is upon us. In just over a decade the Chinese economy could be the size of the USA. Energy consumption of the developing world is expected to surpass that of the industrialized world. A global scramble for commodities has begun and what are the implications for our trade books and risk management practices?

The world scramble for oil

In July 2007, the International Energy Agency (IEA) warned in the Financial Times that the world faces an oil shortfall by 2012 with the stirring headlines:

"World will face oil crunch in five years time....IEA say supply falling faster than expected..."

In its medium term report issued at the same time, the IEA commented:

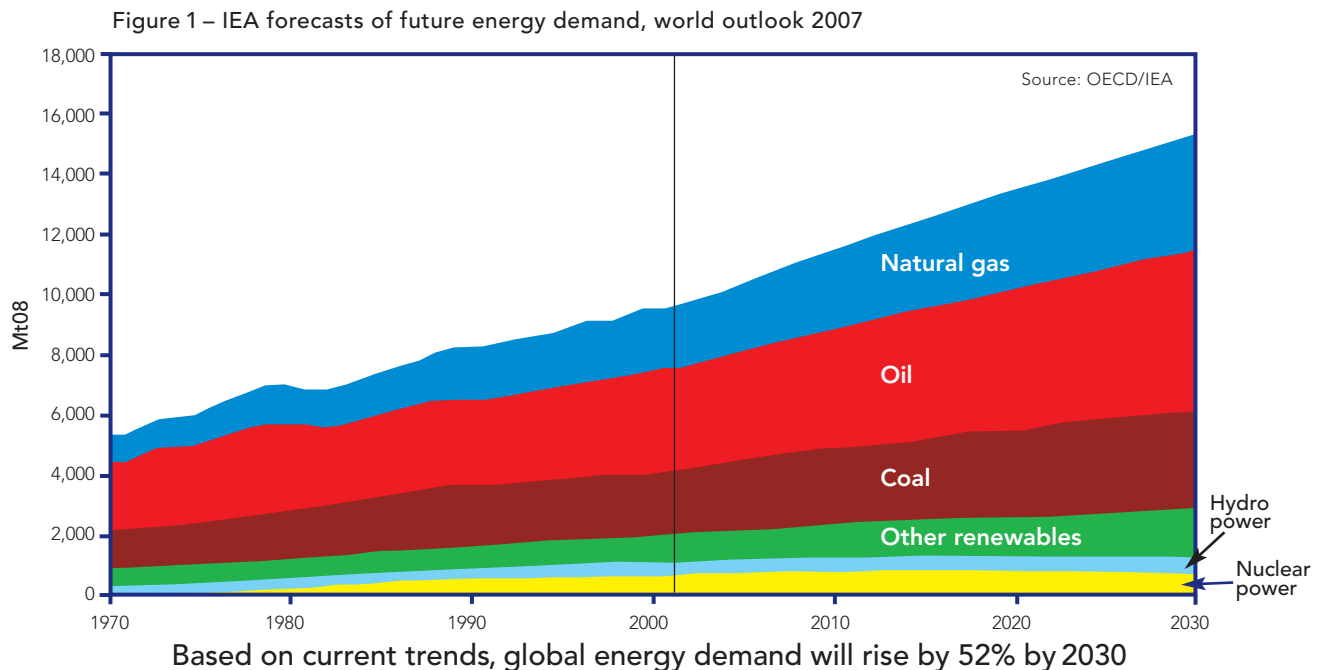
"Net oilfield decline rates average 4.6% annually for Non OPEC and 3.2% for OPEC crude..."

All told the forecast suggests the industry needs to generate 3mn b/d of new supply each year just to offset the decline. The industry has projects underway to achieve this up to 2009/10; thereafter it is more problematic. As industry professionals we have known of this issue for years and were patiently waiting for the IEA to make some form of official statement. In reality we understood that the required oil market investment could never have been made in time. In the IEA World Outlook 2005 there was a chilling statement: we have to "consider if this lack of investment is deliberate."

Our current global energy system is increasingly unstable. By 2020 there could be 7.1 billion people on the planet with an incredible 1.6 billion cars.

Over 200 million new cars could be sold in China well before 2030 leading to an oil import requirement of over 12mbd. Goldman Sachs Investment Bank predicts \$200 per barrel oil while Matt Simmons over a year ago forecasted \$300. While the US dollar continues to fall the price of oil could steadily increase yielding a stealth tax on the US consumer, but possibly with irrelevant influences on demand. For the EU, a strong Euro/\$ will only partly soften the effects of expensive oil on our economies. ▲





The globalization of gas

Geopolitics, finance and geography will determine future commodity flow. Russia and Iran have over 50% of the world's gas reserves and Russia, already the largest exporter, will continue to have the leading role for the next 40 years! Our current time horizon is often focused to where the forward curves are liquid; but we now have to consider that medium term physical commodity flows could be contracting to a handful of counterparts and this situation will persist over a very long time. The more markets are illiquid, the more physical market players and speculators can influence prices..... Liquidity and diversity are good for all markets and could help protect our utilities/commodity traders from being long term price takers.

On the demand side, the largest gas markets are Europe and USA whose supply options tighten as interim gas power generation grows. LNG is not only sourced to offset declining domestic production but to increase security of supply. Soaring costs have currently stopped the development of new LNG projects. This could lead to a short fall in global LNG as soon as 2012! When this happens it could bring chaos to the European energy markets. Gas will be substituted by an increase in global coal burn. Not only is Europe competing with USA on a global scale for gas, but also with the emerging global giant China, for shipments of coal.

If local supply and LNG markets are going to be tight so soon, then as energy traders we should be now looking to optimize our storage and portfolio

positions. Also financing commodity storage at current price levels is an added financial burden for trade books and finance teams should be aware of the potential funding need.

With wind and "vulnerable gas" at the margin, prices will be volatile, but this form of volatility could be more complex being influenced by even more factors such as energy and environmental policy. Energy trading dynamics could be changing, dampening seasonal prices at some points of the curve, accentuating it in others, with a certain premium for base load generation. We may look back to the good old days when energy trading may have been easier contending with only supply/demand and the weather! In only a few years we will have to come to our trading desks prepared for volatile pricing that will last for years not a matter of hours or days.

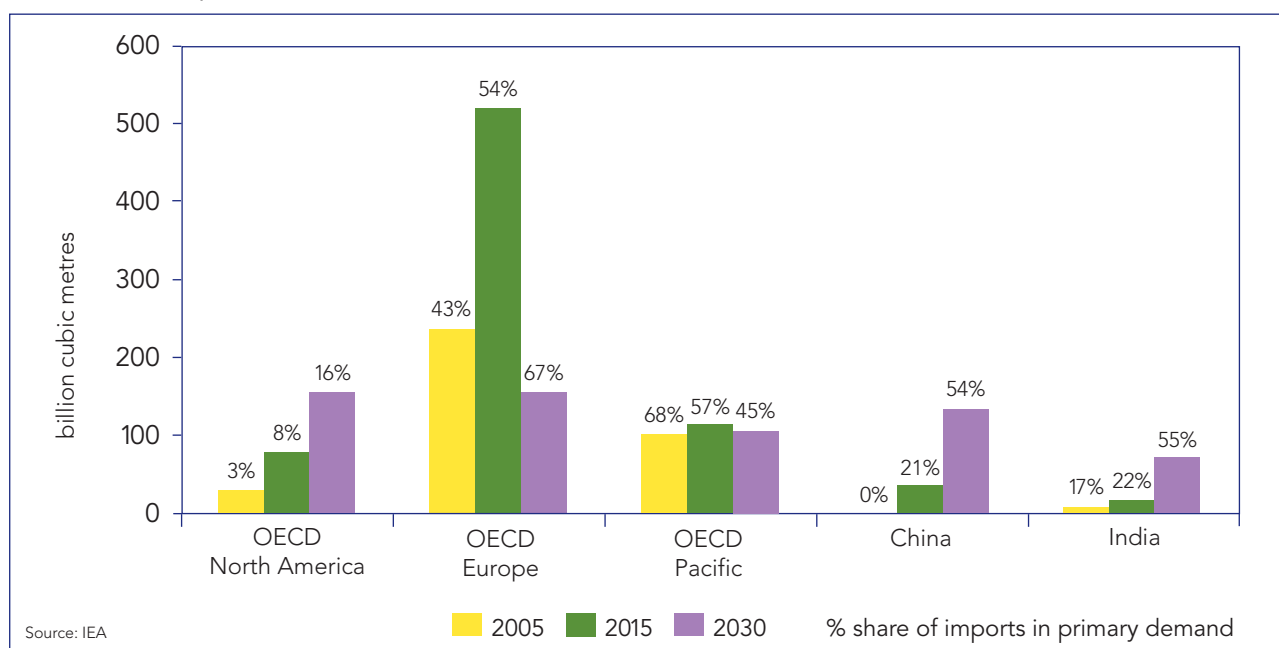
With the ever weakening US dollar, rising oil prices and strong demand fundamentals, the price pressure on European gas market prices is possibly set to continue. Another factor being a rumoured is that commercial price for Gazprom gas deliveries is potentially \$400 per 1000m³. Europe with its separate constituents, each pursuing their own energy agenda, may not have the same bargaining power as a politically centralised China.

To watch the commodity plays unfold: as we have seen with the credit contagion of the global financial markets; as global energy markets become more

integrated, effects in one market can spread to all. As **Figure 2** shows most of the major economic regions of the world will be net importers of natural gas: Europe is entering a new era of energy insecurity and if we are honest we have not planned well for it. In your trade books can you contemplate cross commodity short positions? With deep and liquid markets there is a chance of managing difficult situations, but without them companies could sustain heavy trading losses.

- In OECD countries 27% of power plants are greater than 30 years old;
- 200GW of nuclear could be phased out by 2015. The IEA models scenarios of known policy positions. Generation reduction on this scale could push down the fragile global uranium market.
- 85% of coal capacity UK is more than 30 years old, 50% in Poland and 40% in Germany;
- UK has 8GW of coal reduction and 8GW of nuclear and requires 20GW of new capacity by 2020;

Figure 2 – Net Imports of natural gas by region (2007)



Recently the IEA has turned its global gas focus to security of supply. The world does not have a "strategic store" of gas – our surplus exists in the LNG cargoes that transcend the globe: security of supply is inadequate and impossible to accumulate. This should create opportunities for companies/traders with bountiful reserves of commodities and access to storage.

Electric shock – the global power market

The global power market desperately needs timely investment from diversified fuel sources but we lack long term technology solutions and our supply concerns are compounded by increasing demand, aging generation units and tighter environmental controls. In the past 15 years alone there has been an increase of 685GW of new generation, unfortunately mostly gas fired. Other shocking statistics follow:

- The IEA predict 872GW of capacity needs to be replaced by 2030; this and its supported infrastructure at a cost of over \$11.3 trillion (in 2005 US\$). These are silly numbers and investment of this scale will not occur.

- Germany has plans for 18GW – 40GW of new generation. Initial investments are gas generation with a move to clean coal technology; and
- USA plans 149GW of new build 90GW in coal. Since 1999 generation capacity has increased by 90% because of the dash for gas.

Leaving aside the supply/demand volatility of power generation input fuels, as energy traders we need also to be aware of large portfolio effects of plant additions and retirees from our energy markets and trade books. Also electric cars are seen as the new vision for the future – micro-generation, smart metering and roaming demand could bring added challenges to forensic position management at a time of punishing volatility.

In a world of unprecedented change there are so many risks that we will need to be prepared for. We also need to find responsible outcomes: we need to communicate, plan, know where we are, where we need to be, document everything, resource appropriately and – above all – manage rigorously! ▲

Energy risks - uncertain but not unimaginable

Although energy risks may be uncertain, they are not unimaginable or unmanageable. In challenging times, we must design and execute a forward-looking and comprehensive risk management process, tightly linked with the overall business strategy. By doing this we will be better positioned to make informed decisions under growingly uncertain conditions. At the heart of a sound risk management practice is a deep awareness of the qualitative and quantitative aspects of risks. As energy trading professionals we should use all tools available to the company. Independent technical risk reviews by qualified and seasoned professionals can identify potential gaps in various building blocks of the risk process such as deficiencies in risk measurement models, inadequate stress testing programmes as well as problems in policy or delegation issues.

Limited economic capital and increasing price and credit risk

Ideally companies should hold reserves against unexpected losses and ensure they have capital adequacy to withstand any catastrophic risk that could result in insolvency inducing losses. Such risk capital should also be controlled within a Board approved risk framework, which allows each part of the company to understand the risk and reward of every transaction. With the commodity business becoming increasingly complex and punishing volatility imminent, enterprise wide risk management and contingency planning should be a critical focus of any risk manager and a priority item on every Board agenda. Going forward, to ensure longer-term survival, companies and their employees will need to become ever more focused on risk.

With increasing price volatility ensuing credit risk could be problematic. Energy markets have relatively unique market conditions: extreme price volatility, which causes credit risk and there are times when concentration risk can be severe. I believe as an energy trading industry we need to be innovative in managing our specialised credit risk.

How bad can credit risk get? – do we need reminding?

When identifying credit risk, companies need to be aware of current, as well as any potential future exposure over the life of the counterpart. Current exposure is generally the present mark to market (MTM) of the relevant position, net accounts receivable and collateral guarantees: giving the loss that would be expected if the counterpart were to default

today. However this analysis should also be tested over the lifetime of the contract to understand the Potential Future Exposure (PFE).

This form of modelling is sophisticated but is adopted by companies committed to best available current credit management techniques. Effective credit risk management also requires not only the right analytics, policies and methodologies to be implemented, but also the right people, trading and settlement operations and liquidity facilities.

So in a very simplistic sense it could be said that credit risk may be trickier and more illiquid than short-term market risk as typically quantified through Value @ Risk techniques. Good risk management is good housekeeping and when a risk has been identified it should be managed actively....

But just what are the tools for managing credit risk?

The main problem with the current arrangements is that they are relatively static and inflexible. Traditional funding availability is not linked to commodity price increases and volatility. In simple terms when the oil price doubles, a company's financing facilities do not automatically increase, which means that when credit or cash lines are full, traders stop trading with each other. This is not ideal as it prevents highly skilled personnel getting on with the very important task of hedging and ensuring company profitability.

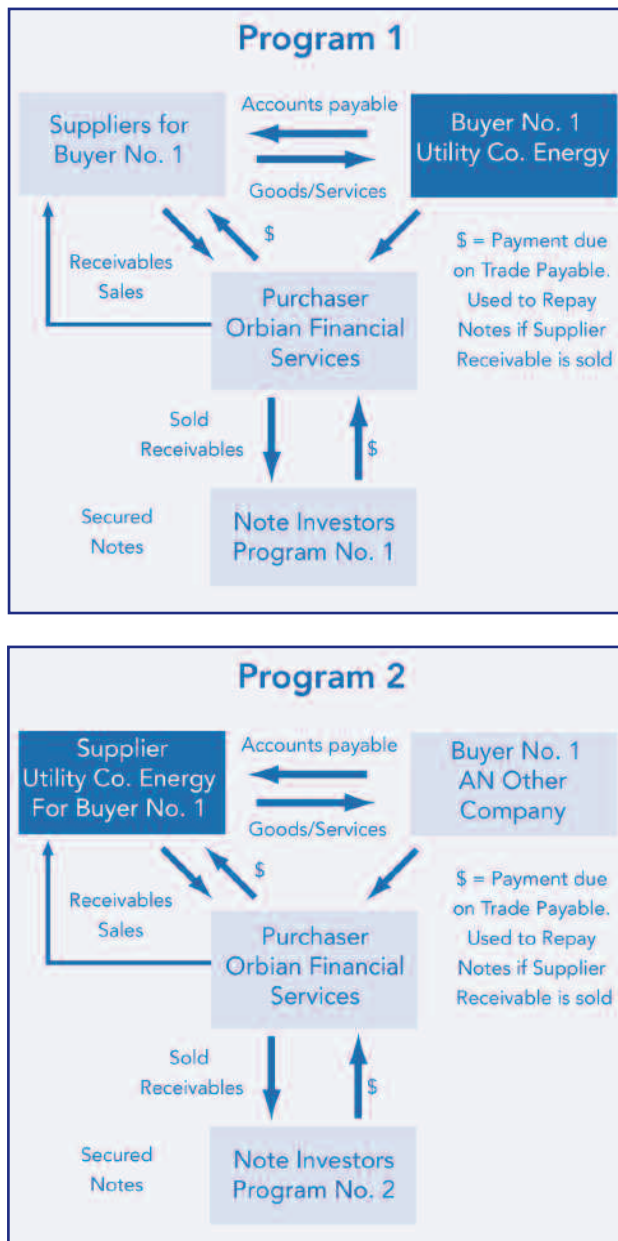
Currently energy traders will post cash or provide a Letter of Credit (LC) to cover a credit risk. Over the years there has been much discussion of the Credit Default Swap market and the use of insurance as credit risk mitigants. Credit Default Swaps strip the credit risk of a transaction and sell them to third parties. However given the current credit crunch, estimated at \$400bn, banks have put non performing assets on their balance sheets: the availability of cash and lending capacity has got slimmer and the price for such services has got higher.

Parent Company Guarantees (PCG) are also often used as a form of credit risk tool; however it has to be remembered that the correlations between defaults of parents and subsidiaries can be quite high, so we need to be careful in relying on these measures alone. We need no reminding of just one spectacular example of energy sector credit risk that resulted when the parent company TXU cut loose the whole European operations in late 2002, resulting in the break-up of the UK based utility. ▲

There is a better way

Managing credit risk and having effective finance to keep a business solvent are two of the most important issues facing energy companies at the current time. Global Energy Advisory (GEA) has experience of a financial markets proprietary financing and settlement solution which can dissipate energy trading credit risk into the wider financial markets while improving working capital of a company (**See Figure 3 below**). Why dissipate the risk in to the wider financial markets? The answer is simply while bank lines are constrained the capacity of the global financial markets is huge.

Figure 3 – The high level credit enhancement mechanism



Too much cash?

It is common for counterparts to post cash against agreed credit exposures. Indeed some counterparts contend that they have so much cash that they are trying “to hide it under the mattress.” That may as well be but a risk manager would probably have to say three things;

- (1) Great – I hope your good fortune will last but these markets are tricky and will the company always be so fortunate? Remember your finance lines don’t double in line with commodity prices;
- (2) This solution is not only about cash but also good credit risk management and a way to dissipate these large systemic credit risks into the wider financial markets.
- (3) The early adopters intend to make use of this product as a useful addition to the credit tools already in their armoury. As the “going gets tough” and counterparts scurry into the distance, it would be futile to try to begin using it when a credit event was already upon us. It is therefore responsible to make use of this product now for this a number of other good reasons.

Credit where credit is due

With soaring commodity prices and a global credit contagion, it’s inevitable that not all companies will be able to meet their payment obligations. A credit default to any company, of any size, can be a very costly, both in monetary and reputational terms, and a time consuming experience. Although using this type of solution is a relatively new concept within the UK and European energy industry, the service is well proven in many other sectors and it’s only a matter of time before the benefits are grasped here. There is a punishing future ahead for all of us. Any risk competent company would use this solution to enhance collaborative relations between all counterparts as we all have a co-reliance on our trading activities. A key objective of any market should be to build strong and liquid markets as they benefit all participants and as the volatility becomes ever more punishing then, industry is going to require superior risk management products to support the complex supply chain of businesses. □