Where Politics and Markets Meet

EUROPEAN ENERGY REVIEW

YEARBOOK 2013

A SELECTION OF OUR PUBLICATIONS AND FORECASTS FOR 2014

Table of contents

THIS YEAR'S ARTICLES

FORECASTS FOR 2014

INTRODUCTION

The slow-moving energy beast

The major energy "force" that is currently at work in the world is the increasing impact of unconventional oil and gas on global energy markets. That's what BP's Group Chief Economist Christof Rühl explained to EER back in February 2013. "We were one of the first to identify the importance of unconventionals in the US. This revolution is now going global", says Rühl. "It will have a huge impact on how the energy world will look in 2030." And the essential point of all this is that it has been the result of market forces and not so much resource availability that changes the nature of supplies, Rühl claims.

Looking at the headlines in the energy news over 2013, BP's Energy Outlook 2030 seems to be spot-on. Several of European Energy Review's main features that you will find in our Yearbook underpin this. In addition to these main features illustrating "the slow movements of the energy beast", our regular correspondents offer you their personal energy outlook for 2014.

Enjoy the read.

Why the UK's new energy master plan sets an example for the rest of Europe

The UK once set the trend for the rest of Europe with the liberalisation of its energy market. Now, with a series of new legislative and policy proposals, London seems to be turning back the clock on liberalisation and returning to considerable state intervention in the energy market. Many observers have criticised the UK for having "lost faith in the market". But according to Robert Hensgens, the UK government deserves credit for its ambitions and the way it faces up to the twin challenges of the energy transition and security of supply. Although he is critical of the UK's unilateral approach, he believes London may well once again be leading the way in Europe.

By Robert Hensgens

The UK government's Electricity Market Reform, introduced to Parliament on 29 November in the form of a new Energy Bill, has been widely criticized by industry representatives and academics as heralding an unwarranted policy move from "market" to "state". Yet the government certainly had good reasons to come up with a radical reform package. First of all, the Kingdom is expecting serious problems with security of supply in the near future. An estimated 20 GW of coal and nuclear plants, offering stable base load capacity, will be phased out at the end of this decade. That amounts to roughly a fifth of total generation capacity. An equally important reason is that the UK is serious about carbon reduction. It was the first country in the world to legally anchor carbon reduction targets with its groundbreaking Climate Change Act. (So far it has only been followed by Mexico.) What the reform package is meant to do is to bring forth the huge investment needed to make the energy transition happen and ensure security of supply, whilst keeping electricity affordable.

This impressive ambition is matched by equally impressive measures. A Carbon Price Floor will underpin the European Emission Trading Scheme (EU ETS). Emission Performance Standards will ensure that no new coal plants are built without Carbon Capture and Storage. A complex auction-based capacity mechanism will be introduced in the power generation sector to ensure backup supply for intermittent renewable energy. Finally, and perhaps most importantly, a range of low-carbon technologies, including not only renewable but also nuclear energy, will be eligible for government support through the so-called Feed-in Tariffs with Contracts for Difference.

It is undeniably true that once this package is implemented, investment in the energy industry will be to a large extent Government-led

It is undeniably true that once this package is implemented, investment in the energy industry will be to a large extent Government-led. The majority of expected investment over the coming years, in low carbon technology, will be government supported through Contracts for Difference. The remainder, gas-fired generation, will be incentivised by an industry wide capacity mechanism. The relative competitiveness of technologies is consequently becoming more dependent on government decisions. Indeed this can be seen as a move away from the liberal idea that the government should only take care of carbon pricing and not interfere directly in the energy mix. The question is: are there good reasons for this loss of faith in the market?

Government to guide investment

Actually, there are - at least when it comes to investment. The fact is that large amounts of money are needed to realise the energy transition. The UK government estimates that 110 billion pounds needs to be invested until 2020, or twice the historical investment rate in the electricity industry. Diverse organisations such as the European Climate Foundation, the European Investment Bank and industry association Eurelectric, have all concluded that it will be extremely difficult to get market players to invest these kinds of sums. Current market conditions are tough because low demand has led to small spreads. Utilities are struggling to maintain healthy credit ratings and are focusing on strengthening balance sheets rather than investing. In addition, the financing of normally viable projects is difficult because of the ongoing deleveraging in the financial sector. New financial regulations, such as the Markets in Financial Instruments Directive, could further negatively affect the room for investment.

In addition to these difficulties, there are two more fundamental reasons why a government-guided investment program may be required to support climate policy. The first is that, with governments attempting to properly price carbon and stimulate renewable energy, the regulatory risks in the electricity market have become prohibitive. In a recent Eurelectric survey of 44 CEOs from the energy industry, regulatory risk was classified as the most important risk, even before market risk. The EU ETS in its current form is widely thought to be unsustainable, which has led many countries, frustrated with the low carbon prices, to implement or propose national repair measures, like coal or gas taxes and carbon price floors. The fear of the sudden introduction of such nationally inspired measures scares investors, delays investment and drives up costs.

There are also strong doubts in the market about the regulatory commitment to carbon pricing. Pending a credible long-term solution for the EU ETS, national governments have hardly any way to implement measures that are robust enough to drive investment. Instruments that target the price of carbon or fossil fuels affect dispatch decisions, but do not offer enough regulatory certainty to drive investment as long as there is European uncertainty over the carbon-trading scheme. The carbon price floor introduced in the UK is no exception. The only way to escape the regulatory commitment problem, and to reduce the cost of regulatory uncertainty, is for the government to fully take over the risks and engage in private, bilateral contracts with generators that cannot be changed over time - like the proposed Contracts for Difference.

The second reason for more government guidance is that realising the energy transition is taking more active coordination than many had perhaps anticipated. Locations for wind parks and carbon storage sites, for example, must be actively created and assigned. Grid connections must be developed. Many countries are still in the process

of formulating societal preferences on political questions like how many wind parks and storage facilities can be placed in citizens' backyards, whether technologies such as nuclear power and shale gas are acceptable and how much dependency on foreign imports is tolerable. All of these questions are strongly interrelated, because the balance of the electricity system (ensuring that demand matches supply) is precarious. Therefore, the government needs to ensure that these various concerns are addressed in an integrated, long-term fashion, rather than being left at the mercy of short-term and fragmented forces.

Whilst it is true that "government failure" will inevitably arise, the costs need not be dramatic

Criticism: the end of the market?

So there do appear to be good reasons for governments to take a more active approach in guiding investment in the energy industry. The next question is whether the reform measures proposed in the UK are a good way of going about this. The UK reform package has led to fierce criticism from industry, politicians and academics. Their criticism roughly falls into three categories: the reform would end the market as primary driver for dispatch decisions, lead to government failure in investment and will drive up the costs for consumers and business. Is the proposed cure worse than the disease?

Probably the most frequently heard criticism, especially from within the energy industry, is that the reform package would effectively end the liberalised electricity market due to its distorting effects on prices and the merit order (the order in which plants are switched on and off). However, it is not necessarily the push for investment as such that is distortive; that depends on the way such a push is designed. As long as generators are confronted with their real marginal costs, crucial information about how much electricity costs at specific times and in specific places will be retained and dispatch will be efficient. In this regard, the volume-based Contracts for Difference do have a potentially distorting effect, manifested in the phenomenon of negative prices, especially as volumes grow. Just as important, however, are cost-reflective balancing and transmission regimes that confront renewable generators with the costs of the intermittency they bring into the system. Traditionally the UK has resisted, more than other countries, the political temptation to implement distorting measures that positively discriminate renewable generation in the system.

A second criticism is that direct government support will lead to the wrong technological choices and to higher costs, because the commercial risks of investment are taken away from investors. Oxford economist Dieter Helm, for example, has called the Contracts for Difference "a lobbyists' paradise".

However, taking over the risks of investment is of course exactly the point in the face of the carbon related regulatory risks that obstruct investment to begin with. Whilst it is true that "government failure" will inevitably arise, the costs need not be dramatic. Again, the design details are crucial. Even in a system in which the government sets support levels, it is possible to incentivise renewable electricity for the lowest price per MWh, as long as the number of potential projects exceeds the budget. In the Dutch system (SDE+) for example, lower support levels are incentivised by a higher likelihood of acceptance. If administered support levels are replaced by a system of competitive tendering, as the UK intends to do in the near future, the problem can be reduced further.

The risk of government failure is related to a more general criticism, namely that the market reform will drive up costs for consumers and business too much, too fast. Some economists argue that large-scale support for the deployment of low-carbon technology is too expensive and that a focus on innovation to realise cost reductions is preferable. However, whilst these are economically sound arguments, they ultimately reveal a different goal (slower energy transition) rather than a better way to reach the same goal. If one agrees that, already in 2020, the UK will need to meet both its carbon target and budget and its 15 percent renewable target, more is needed than just funding R&D in the hope

that a groundbreaking technology will miraculously become available. Being in a hurry will undeniably increase the cost of transition, but there is plenty of evidence to suggest that we do need to hurry up. Incidentally, the Committee on Climate Change, an advisory body to the UK government, estimates that the annual household energy bill will be £100 higher in 2020 due to support for low-carbon technologies, which seems a manageable increase.

UK again leading the way in EU electricity markets?

So what does the reform in the UK mean for other European energy markets? Is there anything to learn from the country that once set the example for liberalised markets throughout Europe, but now seems to diverge from its original path? There is some good and some bad news.

The good news is that the UK may have found a way to combine government guidance, to ensure society gets where it wants to be on time, with the innovative forces of the market, to ensure it gets there more efficiently. Investment is needed throughout Europe, and the regulatory risks surrounding carbon pricing together with tough industry conditions provide a case for risk reduction through a temporary, government-guided push for investment. The main challenge will be to ensure that prices keep reflecting market fundamentals rather than an increasingly complex body of regulation, but the UK seems, more than any other country, up to this job. In addition, the UK shows leadership in coordinating infrastructure and spatial planning. The development of a regulatory regime for offshore wind and its interconnection is a good example. The transparent and market-based mechanism underlying this regime has made the Kingdom an attractive place to invest for offshore developers. Something similar could happen with its program for Carbon Capture and Storage.

The bad news for Europe is that the UK's approach is strikingly unilateral. Already, the divergence in climate policies, in the form of different renewable support systems and national taxation schemes, is posing a serious threat to the European energy project. With its intention to unilaterally implement an industry wide capacity mechanism, the UK is adding a new dimension to this divergence. Whether capacity remuneration mechanisms are needed is an important question, but it is one that should be addressed multilaterally. Countries in the North West European market, including the UK, should put more effort into regionally harmonising their climate and capacity measures. For example, increased interconnection capacity and further market integration would allow the UK to benefit from the excess gas-fired capacity in the Netherlands, making for a more efficient way to improve security of supply than by building its own backup capacity.

Although the ongoing reform of the UK electricity market certainly is in many ways open to criticism, at the end of the day, the UK Government deserves more credit for its policies than it is currently getting. Making its decisions in the messy realm of domestic and international politics, rather than the textbook world of economically optimal policy, it has managed, virtually as the first country in the world, to formulate a master plan to establish the energy transition. It is fair to say that its integrated, long-term approach sets an international standard of best practice. Given its old generation fleet a plan was perhaps needed more so in the UK than in other countries, but its dedication to decarbonisation is impressive. With the right dose of government guidance in investment, and sufficient eye for retaining the market as the main driver for prices, the UK may well be successful in pulling both the industry and climate policy itself out of their slump. If it does, in some years from now, we will perhaps realise that with its bold and brave reform, the UK was once again leading the way in European electricity markets. ■

Chasing competitiveness

by Jozef Badida

The magic triangle of the EU Energy and Climate Policy has been sufficiently weakened. The level of current electricity and gas prices is responsible for a "systematic industrial massacre" as also confirmed by Commissioner Tajani. Therefore, in 2014, the 28 bloc will undoubtedly focus on the reinforcement of its competitiveness.

In its beginning, the Barosso II Commission will most probably suggest only indicative 2030 climate goals. In the economic downturn it is not clear whether there will be any target concerning renewables. We will see whether this strategy could be helpful when negotiating with the biggest world emitters. The final objective should be the adoption of international climate agreement at Parisian COP 21 leading to a level playing field.

Much will also depend on the new Commission and European Parliament coming from the elections in May. If we want to stop deindustrialisation of the "old" continent, a very strong approach based on innovations, growth and investments will be necessary.

Do not forget that measures, such as reform of the ETS and shale gas extraction regulation, expected next year, will remarkably feature the European chase for competitiveness as well. Consequently, the year 2014 could be warmer than initially expected...

Jozef Badida, regular correspondent for European Energy Review

The Future of Coal:
Clean Coal Technologies and CCS in the EU and Central East European Countries

The study "The Future of Coal: Clean Coal Technologies and Carbon Capture and Storage (CCS)" addresses the global and European dimensions of CCS - the opportunities but also the challenges associated with this new technology that may spark a revolution in our future energy policies.

By Frank Umbach, EUCERS

Its starting-point is the realization that coal is not an outdated, disappearing source of energy. Quite contrary to the predominant perception in Europe, coal is in fact the second-most important source of energy after oil globally, largely due to high consumption rates in emerging countries. And coal is still on the rise – the International Energy Agency projects a further increase in coal use and states in its World Energy Outlook 2011 that, with no change in policies, coal consumption could even overtake oil by 2035. Since coal is here to stay, at least over the medium-term, it is necessary to point out that it should not be demonized as an energy source. Instead, new and innovative solutions are needed to maximize its energy potential while keeping environmental costs to a minimum.

We shall have to live with oil, coal, and gas for a long time; therefore it is necessary to work for the "greening of fossil fuels". Given the twin challenges of achieving long-term energy security, on the one hand, and mitigating the effects of climate change, on the other, this study highlights the potential

for coal in conjunction with CCS technologies to actually help address both simultaneously.

Currently, CCS is the only technology that can capture at least 90 percent of the emissions from the world's largest CO_2 emitters. The study investigates the countless opportunities for the application of CCS, even beyond coal-based industries. In the long term, for example,even stored CO_2 may possess economic value, rather than just being a waste product. Given these fascinating developments and the challenges ahead, the study implores us to rethink our approach to energy in the 21st century.

Instead of a strict dichotomy, coal (but also other conventional energy sources) in conjunction with CCS and renewables may actually be best seen as complementing each other. yet there are many tasks still ahead for European policy-makers before CCS can be a vital component of our energy systems, not only in Poland, Hungary, the Czech Republic and Slovakia, which are the empirical focus of this research.

One of the primary challenges that needs to be addressed before the large-scale development and widespread application of CCS technology is realistic, is to prove its competitiveness and commercial viability. It cannot be denied that technological change always involves significant costs, which is why coal-based energy with CSS will be more expensive than its counterpart without it. But there are several reasons for being cautiously optimistic.

First, there is a growing awareness that outsourcing emissions does not equal an actual reduction; if the carbon content of imported energy sources and products is included in, for example, Europe's balancesheet, the relative cost of developing and implementing new, domestic technologies goes down. Second, CCS is not only needed in coal-based industries, but in many others, including gas and oil, which will also involve considerable start-up costs. Third, stored CO_2 should not be looked at as a waste product; many applications are currently being developed through which CO_2 can have economic value, for example in Enhanced Oil and Gas Recovery or for storing electricity from renewable energy sources in gas pipeline networks ("Power-to-Gas" projects). Finally, the development of CCS technology means that there will be a huge export potential for European power plant manufactures and operators as well as industrial technology companies that will create hundreds of thousands of jobs in Europe.

All in all, despite the enormous costs, CCS holds such a huge potential that the initial challenges, at least, do not seem insurmountable. ■

Full report.

"We have a problem with politics. With volatile, unpredictable policies upsetting the investment climate. Policymakers' job is to set a framework, not to take the entrepreneurial decisions. What happened to markets and competition?"

Susanne Nies - Head of Unit Energy Policy & Generation at Eurelectric in European Energy Review February 2013

Christof Rühl, Group Chief Economist of BP, unveils the hidden forces that steer the global energy market to a new future

"The energy system moves slowly - but it does move"

Speaking with Christof Rühl, Group Chief Economist of BP, is like getting a unique tour through the past, present – and future – of the global energy world. Rühl has a crucial – and inspiring – story to tell about how market forces, even though they are sometimes deeply buried beneath stormy state interventions, slowly but surely steer the Ship of Energy to new and undiscovered lands. EER's editor Karel Beckman spoke with Rühl about what our energy future holds in store.

By Karel Beckman

Rühl shares his thoughts on the tremendous importance of technological innovation in the fossil fuel industry, which most outside observers completely miss; about what role renewables could play, if they were harnessed by market forces; about the far-reaching changes taking place in the global gas sector, which are primarily a result of liberalization and competition; about the evolving roles of national and international oil companies and governments who are all tugging at the energy beast. "It may be a slow-moving beast", Rühl says about the global energy system, "but it does move."

In January, Christof Rühl and his team for the third time presented the BP Energy Outlook 2030, one of the most important publicly available annual studies of our energy future, along with the International Energy Agency's (IEA's) "World Energy Outlook" and Shell's "Energy Scenarios".

The first BP Energy Outlook was produced in 2009, as an internal document, to provide input into the company's strategic and commercial decisions, and also to provide better alignment across the many market analyses that were floating around the company, as Rühl puts it. Three years ago, BP decided to make the Outlook public – just as it has been doing with the famous BP Statistical Review of Energy since 1952 (!) – because the British company wanted its data to "feed into the public energy debate".

"I can't think of a sector that is so important to everything we do and where the gap between its importance and the need for information is so large", says Rühl. He adds that "there are probably more economists researching happiness than energy. On energy anybody seems to be allowed to say anything."

The Chief Economist, who is also Vice-President at BP, notes that the BP Energy Outlook is fully transparent. "The underlying data are available on the internet, from 1965 on. You can walk up and down the time series and plug in your own numbers for the future if you don't agree with ours. That's the kind of debate we want. We want to provide fact-based input into the global debate. That also explains why the Outlook has this slightly nerdy format. It is an energy forecast, not a corporate brochure."

By politicians for politicians

For the same reason, says Rühl, the Outlook is a "point forecast", i.e. a projection of where the trends in the energy markets are likely taking us, unlike the IEA and Shell's outlooks, which are written as scenarios. "With a scenario the danger is that you envisage an outcome and then backtrack to today's starting point. Scenarios are typically written by committee, to reach a consensus. Often they are presented as a menu of choices, for example for politicians. They are less suitable when you want to explore what is most likely to happen." And, Rühl adds, the broader the scenarios become - and the presumptions on which they are based - the more meaningless they tend to be. A point-forecast, on the other hand, "forces you to put all your cards on the table", says Rühl. "Nothing focuses the mind of the analyst as much as the necessity to make a point prediction. Large economic institutions like the IMF and World Bank do this. They don't do scenarios for a reason."

Rühl explains how the Energy Outlook is written. "We go around, try to collect the best information available, from inside and outside the company. But, quite like the Statistical Review, in the end the Outlook is written by the Economics department. Not by a corporate committee. Given its purpose, this helps to maintain standards, legitimacy and edge. The only debates I ever had in this regard is how to say things, not what or whether to say something. For example, we were among the first to observe that it was very unlikely for the world to contain global CO_2 concentrations within 450 ppm, as people would like to see. Perhaps not an easy thing to say so for a big oil company. But there was never a question whether we should say it or not. It was a forecast, and so we said it is what we think

Scenarios are typically written by committee, to reach a consensus

will happen, not what we like to happen."

This does not mean, Rühl adds, that the Outlook is literally claiming to predict the future. "It is to the best of our knowledge. This includes knowing that events will occur, such as disruptive technological changes - that are unpredictable. We know they will happen, but we can't know when or in what field, and so we don't try to guess them. We also know that people have the ability to respond to similar situations in different ways. All this makes for humble claims on the crystal ball. And it's one reason we keep the forecast to 20 years. Anything longer will become too uncertain."

Nevertheless, although any Outlook is "likely to be wrong somewhere", says Rühl, its value lies in the information it provides for analysts and decision-makers to base current strategic and business decisions on.

"We can point the finger at what I call the fault lines of our complicated global energy system. We can point to long-run trends that will shape the future - and where these may be on a collision course. Or to issues where an outcome clearly depends on today's decisions. All this forces you to be disciplined about how to deal with the real forces that are at work in the world, but it also helps in delineating areas which are subject to change."

Dead and stale

The major energy "force" that is currently at work in the world, as identified by the most recent BP Energy Outlook, is the increasing impact of unconventional oil and gas on global energy markets. "We were one of the first to identify the importance of unconventionals in the US. This revolution is now going global", says Rühl. "It will have a huge impact on how the energy world will look in 2030."

Although most people are by now aware of the shale gas and tight oil revolution in the US, and the possibility that this will be replicated throughout the world, they still miss the essential point about it, notes Rühl. This is that it has been the result of free access and competition – of market forces at work. "What you see is how market forces over a decade, and responding to a high prices and high demand, were capable of changing the nature of supplies. Markets do this when they are left free to operate: they come up with new things. And not just shale gas or tight oil. Renewables as well."

That is why, says Rühl, the revolution happened in the US, and not for example in China or Venezuela, which have just as much unconventional resources at their disposal. "Resource availability is actually a very poor predictor of future production growth. First and foremost you need free access. Competition. A fair investment climate. Many people lost their shirt at first in the US, trying to develop technologies to access shale resources, mostly by small companies, with big companies coming in only later. Things happened because of above-ground factors: private ownership of land, a sophisticated service sector and infrastructure that emerges only after many years of competition, including deep financial markets to hedge risks. At the same time nothing came out of countries like China, Venezuela, or Mexico, which have similar resource endowments."

What the unconventional revolution shows, then, says Rühl, is "the ability of the energy system to generate technological change and innovation when market forces are allowed to work. The energy system is so big that outside observers often think it is stale. But it is not. It follows the rules of competition but because it is so large it follows them slowly. It is characterized by a tremendous degree of technological innovation, but this remains hidden

oftentimes. It is a slow-moving beast, yes – but it does move."

Upstream surprises

What the most recent Outlook implies, says Rühl, is that the market is responding to high demand and high prices by producing more of the same (oil, coal, gas, nuclear) as well as new supplies. "Around 2030 we see almost 20 percent of energy supplies delivered by shale gas and tight oil and 17 percent by renewable energy. The rest, some 60 percent, is more of the same." Rühl adds that "compared to others, we have been conservative in our projections of unconventional growth. North America could produce more. China, Russia and others could kick in faster, so there remains a potential for surprises which then would also translate into faster geopolitical changes."

Of course many people do not like the idea of the Age of Fossil Fuels being extended by new oil and gas. They would like to see a much faster development of renewable energy. What does Rühl have to say to them? "I try to focus on the need for renewables to copy a page from the success of the fossil fuels in constantly generating technical change and being able to reinvent themselves. They can do this by being subjected to market forces."

The key problem with renewable energy, in Rühl's view, is that, as a subsidized sector, it is less exposed to competition. "When you have a subsidized fuel expanding faster than its cost efficiency, the amount of subsidies paid has to expand with it. At a certain point this may become too expensive and no longer tolerable to society. The subsidized energy becomes a victim of its own success. This is what is happening in Europe right now."

Rühl makes an interesting comparison between renewable energy today and the development of nuclear energy in the 1970s and 1980s, where the same thing happened. "Nuclear energy stopped growing and hit a glass ceiling in the 1980, for a host of reasons. But nuclear energy was also heavily subsidized – you cannot get private insurance for the cost of an accident, this will always be socialized.

This is just one example. Costs failed to come down as envisaged. And so at some point it had lost acceptability without having lost the need for subsidization. It was no longer cost efficient while subsidies continued. That's when it became too expensive."

Actually, renewable energy is in a better situation today than nuclear power was back then, Rühl believes. "Renewable energies are simpler and sturdier and more easily transferable. For example, when nuclear power hit a 2 percent share of global power generation in 1971, it was present in 14 countries. When wind power hit this threshold exactly 40 years later, it was present in 92 countries. The production as well as application of wind power is much more widespread and it may therefore easier become subject to competition."

Still, he adds, "that's no guarantee for success. The really really big question is - how do you take renewables out of their subsidized shelter and expose them to competition?"

Does Rühl believe that international oil companies like BP could play a major role in the development of renewables? "They could, yes. But only if ir promised to become a real market. Look at BP. We had to more or less go out of solar, because one needs to get away from areas that are heavily subsidized if one believes this is unsustainable. Now we concentrate on areas that we see as on the verge of becoming competitive, like wind onshore in the US. We try to go where the economics have a chance to survive. In some areas, where more fundamental innovation is needed, we concentrate on R&D. In biofuels, for example, we work with the University of Berkeley where people with very big heads are trying to make possible next generation biofuels, because we know that biofuels growth from foodstuff has its limits."

Rühl notes that "to become a driver of developments rather than limping behind what is politically correct, may be difficult – but in the world of renewables it seems also necessary."

To become a driver of developments rather than limping behind what is politically correct, may be difficult, but it is also necessary in the world of renewables

What goes for renewables, also goes for CO_2 emissions, says Rühl: limiting carbon emissions is best be done by harnessing the market. "When you compare the growth of GDP to the growth of energy consumption, you see a pair of scissors opening up very nicely.

We have become more and more energy efficient, a process that has been driven by economic incentives: competition, free trade of fuels, exchange of technologies and best practices, technological improvements. When you compare energy consumption to CO_2 emissions, the scissors hardly open up at all. Why? Low prices, low tradeability. So to those of us worrying about emissions, I would say: don't go and damn 80 percent of our energy supply, but look at the book written by fossil fuels and copy some of its lessons. This is not re-inventing the wheel: a carbon price would go a long way to achieving results similar to those we have seen for energy efficiency."

Pipeline economics

The story of today's global gas markets is also a story of long-term market forces at work, says Rühl. "The gas market is changing from two sides. There's shale gas, and there is the increasing integration of the global gas trade, which is also a massive development. This has two components to it. One, the rapid growth of LNG, which is projected to grow at 4.3 percent per year, twice as fast as consumption, and today already account for 10 percent of supply. Second, the physical integration of gas markets through the development of

infrastructure: terminals, regasification and LNG plants, and so on."

The result of all this is that spot markets keep growing at the expense of long-term and oil-indexed contracts. Rühl notes that this is "not a smooth process". "The addition of new supplies of LNG is lumpy. So sometimes you may even see periods when spot prices may be higher than long-term prices."
But he believes the process of untying the oil-gas price knot and the decline of long-term contracts is irreversible. "You have to go back to the basics to see what is happening. Gas is the only fuel whose price is tied to another fuel. There are good reasons for this historically. Gas was a pipeline fuel. So up to a point you had one supplier, one buyer – a bilateral monopoly but no market. That's why the price was tied to something else. Now fast forward to the first LNG projects. Their economics were identical to pipeline economics: You had 25-30 year contracts, with volume targets and prices tied to oil. This system was gradually undermined, first before the crisis by Asian buyers who bid away LNG cargoes from the Atlantic Basin, then after the crisis by suppliers who could not sell their LNG to the US anymore and started selling on Asian spot markets. Next, a wave of new supplies from the Middle East came in, while at the same time the European power markets were liberalized. This is a long-term process in the direction of integrated markets and spot trading which won't be stopped anymore."

Rühl adds that "this reminds me very much of the history of the oil tanker. The first oil tanker – which was invented by Shell, I am sorry to say – went up and down between Rotterdam and Sumatra. It took many decades – and huge investments in infrastructure – before a real market started to develop."

The BP man points out that the market process is further advanced in Europe than in Asia thanks in part to the liberalization of the European power market. "At the time when a lot of new LNG hit the market and demand was low because of the crisis, there was a new situation in Europe. Smaller utilities were able to source their own supplies on the spot market, thanks to the liberalization, and to undercut the large utilities. That's why the Eons and Gaz de Frances of this world had to go to Gazprom to ask for price cuts, which they eventually got. In Asia, utilities are still monopolies, more likely to pass on

prices to customers, since they don't need to be not bothered by competition."

Down the tubes

So what lies ahead for our world energy system? What Rühl sees coming, based on the research of his group, is an ever wide range of energy sources being used (i.e. a reduced reliance on any single energy resource), an accelerating convergence of regional markets and continued improvement in energy efficiency – all driven by market forces.

He also expects that the unconventional energy revolution will lead to less 'resource nationalism'. "More and more people will discover they are sitting on energy resources and will demand from their governments that these be developed. This will put pressure on governments to attract private investment. Barriers to entry might well go down."

He notes that international (private) oil companies (IOCs) have been explosed to more competition from national (state-owned) oil companies (NOCs), but largely only from NOCs that are themselves subject to market forces, like Petrobras or Statoil, which are competing under market rules. "Someone should write a case study of the difference between Petrobras and Pemex (the national oil company in Mexico). Petrobras was not even privatized, it was only put in a competitive context, and it ended up developing the Brazilian deep-sea resources, finding many of them all by itself. In Mexico's offshore, not much is happening."

For IOCs the state-backed competitive NOCs, including the Chinese ones, are "a challenge", Rühl acknowledges, but also an opportunity as markets open up. He notes that "any market that becomes deeper and broader offers opportunities to specialize. It will become rare, I think, for companies not to specialize in some things either implicitly or explicitly."

What Rühl does not see is any constraints on resource availability. "Peak oil is down the tubes. For the umpteenth time. In fact, we have never run out of anything. The human capacity to innovate, if left free to develop, prevents this."

This may sound optimistic, but Rühl is no utopian. "I realize the arrogance that comes with such a statement. I am not saying everything will turn out fine, no matter what we do. Population growth is putting huge pressure on the planet. Species are dying out at an alarming rate. So I think there is a greater danger of us destroying the planet inventing new things than of us going back to the Stone Age." ■

Christof Rühl is Group Chief Economist and Vice President of BP plc. He manages BP's global Economics Team, providing economic input into the firm's commercial decisions. BP's Economics Team produces the annual Statistical Review of World Energy and the Global Energy Outlook.
Prior to joining BP, Rühl worked at the World Bank (1998-2005) where he served as the Bank's Chief Economist in Russia and in Brazil. Before that, he worked in the Office of the Chief Economist at the EBRD (Economic Bank for Reconstruction and Development) in London. He started his career as an academic economist, first in Germany and from 1991 as Professor of Economics at the University of California in Los Angeles.

What can small countries – like Sweden – contribute?

by Reiner Gatermann

According to Lena Ek, Sweden's Minister for the Environment, her country 'will continue to be a world-leading environmental nation.' On the other hand, the Green Party politicians Åsa Romson and Isabella Lövin claim that the government is passive and in some ways even acting against some of the accepted goals. Whichever the case may be, the question often discussed in small countries – like Sweden – is, what they can do to contribute effectively to the improvement of the environment.

In some ways, Sweden is in an enviable position. Almost all electricity production is fossil free and the normal emission goals are easily met. So should Sweden set its own higher goals in order to influence the EU to follow the Swedish path, something the Greens are suggesting, or should Sweden support other, poorer countries in improving their emission statistics by trading emission rights or providing technical support and knowledge - a thought discussed in the government coalition? Academics argue that to further cut the few percent of Sweden's greenhouse emissions is far too expensive in relation to the effect. Some of these experts favour a totally different way. Stefan Fölster, head of the think-tank Reforminstitutet and adjunct professor at the Royal Institute of Technology, Stockholm, says that climate policy should become much more technology driven. Sweden is spending just SEK 1 billion, 123 million euro, on basic energy research, but at the same time ten times as much on different climate projects, and this with very little effect. Fölster proposes an accident investigation commission to look deeply into the – according to him - wishful thinking which dominates the climate policy. This should give climate policy a new, more effective direction.

But will the politicians listen?

Reiner Gatermann,
regular correspondent for
European Energy Review - Stockholm

Nordic Balance Settlement, cornerstone to a common Nordic power retail market

The EU has many visions, more or less realistic ones. One vision is the creation and establishment of an European common retail market for electricity. On the way to this goal there are many obstacles to be removed. It begins with the insufficient political will, continues with fragmented legislation and ends with technical problems. Norway, Sweden and Finland however are convinced that all these barriers are surmountable. Their goal: To start in 2015 their own common power retail market with many positives (legal and technical harmonisation and long term savings) and a few negatives (high start up costs). And their hope: To present an effective and workable example to the up to now hesitant partners in the EU.

By Reiner Gatermann

Europe's Northern region is in general regarded as an in many fields rather harmonised part of this continent. And the electricity market is no exception. The national regulators of Sweden, Norway, Denmark and Finland are closely cooperating in NordReg (Nordic Energy Regulators), the national electricity producers are closely interconnected in an almost single wholesale market and – finally – the energy exchange Nord Pool Spot is setting the price for the entire region. However, for Norway, Sweden, Finland and Denmark, this is not enough. Their vision reaches wider into the direction of a common Nordic retail market. And one important cornerstone on the way to this goal is the Nordic Balance Settlement (NBS). Since a few years ago, Norway, Sweden and Finland are working resolutely towards the establishment of NBS, which is supposed to become reality sometime in 2015. Denmark stepped aside, is however a keen observer of this project which it in principle supports and at a later stage probably will join. Beside the goal of a harmonised settlement market for the Nordic countries, the parties involved are also looking beyond their borders, to the rest of Europe. Under the headline "Why NBS?" the reference group of the three Partners formulated at a meeting in November 2012:

"NBS will be a reference model within the EU for the development of a common end-user market."

All for one and one for all

Even though the Nordic region may look like a reasonably integrated power market, the differences between the three parties are still comprehensive and wide ranging and an obstacle on the way to Nordic harmonisation. At the end Sweden, Norway and Finland will get the Nordic Balance and reconciliation Settlement (NBS). The three countries Transmission System Operators (TSOs), which keep at the same time the role as national Settlement Responsible (SR), become the equal shareholders of the Nordic Settlement Responsible, which should be organised as a separate legal and eventually independent entity. In Sweden, the TSO is Svenska Kraftnät, in Norway Statnett and in Finland Fingrid. At the beginning, the Nordic SR will be heavily dependent on services provided by the TSOs, however, the actual working plan says "Nordic SR shall in the first two years make a plan describing how the provision of these services from the TSOs shall be terminated within a period of three to five years of operation" and replaced by an independent Nordic SR system. At the beginning, these services should comprise personell, at least ten persons, among them at least two national SR experts from each TSO and IT-Settlement System experts. As Fingrid has been chosen as main host, the Nordic Settlement Responsible unit (SR) will at least at the beginning be housed in Finland. However, the legal structure of SR will be as such that the unit, for which they are still searching for a name, could be established in each of the three countries.

The Nordic SR will have the following responsibilities:
Its main task is to perform the balance settlement and to invoice the BRPs (Balance Responsible Party). The BRPs, there are approximately 29 in Finland, 35 in Sweden and 90 in Norway, are responsible for a working electricity market in their regions. Furthermore, the SR will set the collateral levels (economic security) and monitor whether the BRPs are following the laws and regulations.

In the first hand the NBS project is regarded and strongly supported by the governments as a harmonisation process which should lead to a single retail market. Therefore, NBS is often described as a cornerstone on this way. However, nobody denies that costs and economical efficiency play a major roll. The common view is that at the first stage there will be additional costs, whilst in the longer term there will be cost savings on different levels. At the beginning, the TSOs, which are still responsible for the settlement in their areas, will outsource some activities to the Nordic SR, which could save costs. On the other hand, with the exception of Norway, the national TSOs have further need for their national IT-systems. First when they have to be replaced, will the TSOs be able to adjust their needs to the new situation. By the way, the establishment of an entirely new settlement IT-system represents the most considerable cost in the starting phase. The working group, representing the stakeholders, does not give any estimate, but points out, that "these funds must be made available by the TSOs". Regarding the operational cost, this is expected to be approximately 2,2 Mio Euro per year. On the other hand, the saving potential for the first years is set likewise at 2,2 Mio. The cost for all three TSOs of implementing NBS is estimated to approximately 7 to 8 Mio Euro over a three year period. In the long run this is however compensated by reduced individual costs for each TSO so that the costs including depreciation will be levelled out after ten years.

Harmonisation of data is essential

By introducing NBS, one of the major preconditions is the harmonisation of the Automatic Meter Reading (AMR) in the three countries. According to the working group, "the AMR status at end-user level varies throughout the Nordic countries. There are significant differences in how data are recorded (i.e. what kinds of registers are used,

There are significant differences in how data are recorded

hourly or monthly energy data), how metered data are collected and used in the balance settlement and finally different invoicing process". In Finland, by the end of the year 2013 almost 90 percent of the consumption energy will be recorded by using hourly metered data and all these energy data will be collected every day and submitted to the balance settlement. In Sweden, to the contrary, the system is currently based on monthly meter collection for customers below the limit 63 Amp. However, many of the installed meters are able to collect hourly metered data. There are plans to adjust the system. In Norway new regulations from June 2011 requires AMR for all electricity metering and daily reporting of hourly meter data the day after delivery day. The deadline for implementation is December 31, 2016.

The working group concludes: "Due to the fact that the level of AMR is different in each Nordic country, the NBS model is in this respect a compromise as the model needs to suit all countries AMR-systems." The regulators are asked to agree on a harmonisation of the AMR structure, since "the present different rules are an obstacle to 'deep' Nordic harmonisation".

Furthermore the regulators in NordREG are asked to make their contribution to establish a common standard for data communication. Currently, each country has its own standard when it comes to balance settlement and these are not compatible with each other.

Parallel, a separate working group will look at the establishment of a common standard for the same high capacity communication technology in order to ensure fast data transmission between the parties. Even the legislators in the three countries are asked to pave the way for NBS. In Sweden and Finland the law has to be changed in order to allow Svenska Kraftnät and Fingrid to outsource the operational SR task. This process is expected to take about one year. In Norway a BRP has to be a Norwegian company but this is not the case in the other Nordic countries. Norway is asked to adapt to the other Nordic countries.

Also common principles for calculation and final settlement have to be found. It is suggested a one-price system for consumption imbalances and two-prices for production imbalances. The preliminary settlement is set for daily collection with corrections for up to eight days, whilst the final settlement is due after nine days. Corrections after D+9 must be done bilaterally between the Distribution System Operators (DSO), the local and regional net owners, and the BRPs. This solution was a crucial point for the Danes to step aside in autumn 2011. Henrik Hornum from the Danish Energy Association explains to EER: "The NBS project was locked already before we decided to participate or not, in the decision on how to handle corrections of meter data. After nine days, after the day of operation, corrections will not be accepted by the NBS. In reality corrections after nine days will anyway occur. This means that DSOs will have to deal with these corrections in a bilateral way with all the market players (BRPs). This bilateral way of handling corrections is from our point of view very inefficient (and expensive) compared to just letting NBS run the balance settlement again with corrected data."

For the NBS project the first important step has been done. The design phase has been finalised and the implementation period has started. Until mid 2013 the regulatory changes are expected to be accomplished and

the industry preparation commence. The test period is planned for the end of 2014 and the beginning of 2015 with the intention to start the Nordic SR sometime in 2015.

The name of the game: closer integration

The parties involved in this project, from the governments and the regulators to the national SRs, do not see only economical and material advantages like increased competition among BRPs and lower costs for retailers and producers, increased quality of settlement and invoicing, increased innovation and reduced costs of balance settlement and increased transparency, they also pay a lot of attention to the idea of ever closer integration in this part of Europe.

This time it is the creation of closer Nordic cooperation for a single electricity end-user market. In addition, Jukka Ruusunen, CEO of Fingrid, regards NBS "as a good example for the whole of Europe about fruitful international cooperation that works for the best of the customers in all countries." In the first hand however, the three Nordic SR partners hope that Denmark will finally join the project. The Danish Energy Association emphasize on one hand that we "support that Denmark is not participating", but on the other hand "that we actually welcome the idea of a common Nordic retail market including a Nordic balance settlement unit". However, by now "we have not seen any positive business case for the project. The balance responsible players cannot expect lower fees for the handling of balance settlement, on the contrary fees are expected to rise." And the Danes are looking to another important project which could open the door for a return to NBS: "Denmark is at the moment in the final stage of developing a DataHub-solution for the retail market. This solution has gone live on March 1st this year. This solution will develop efficient meter data management between market participants and efficient business processes. We notice that particularly in Norway but also in Sweden there are discussions of similar solutions. A common Nordic approach to DataHub and the associated business processes could bring the NBS project into a new context where it would be sensible also for Denmark to participate."

One aspect, not to be ignored, is the possibility for NBS to become a reference model within the EU for the development of integrated power markets. Worthwhile to note, despite the fact that Norway not even is a member of EU and only Finland has the Euro, the three NBS parties decided to use Euro as the common currency. ■

Will we see Iran's oil and gas riches unlocked?

by Alex Forbes

The international oil and gas industry will be watching keenly over coming months to see whether world powers and Iran can come up with a permanent agreement on its nuclear activities that will end almost a decade of political isolation. The implications of such a deal for international oil and gas markets would be profound.

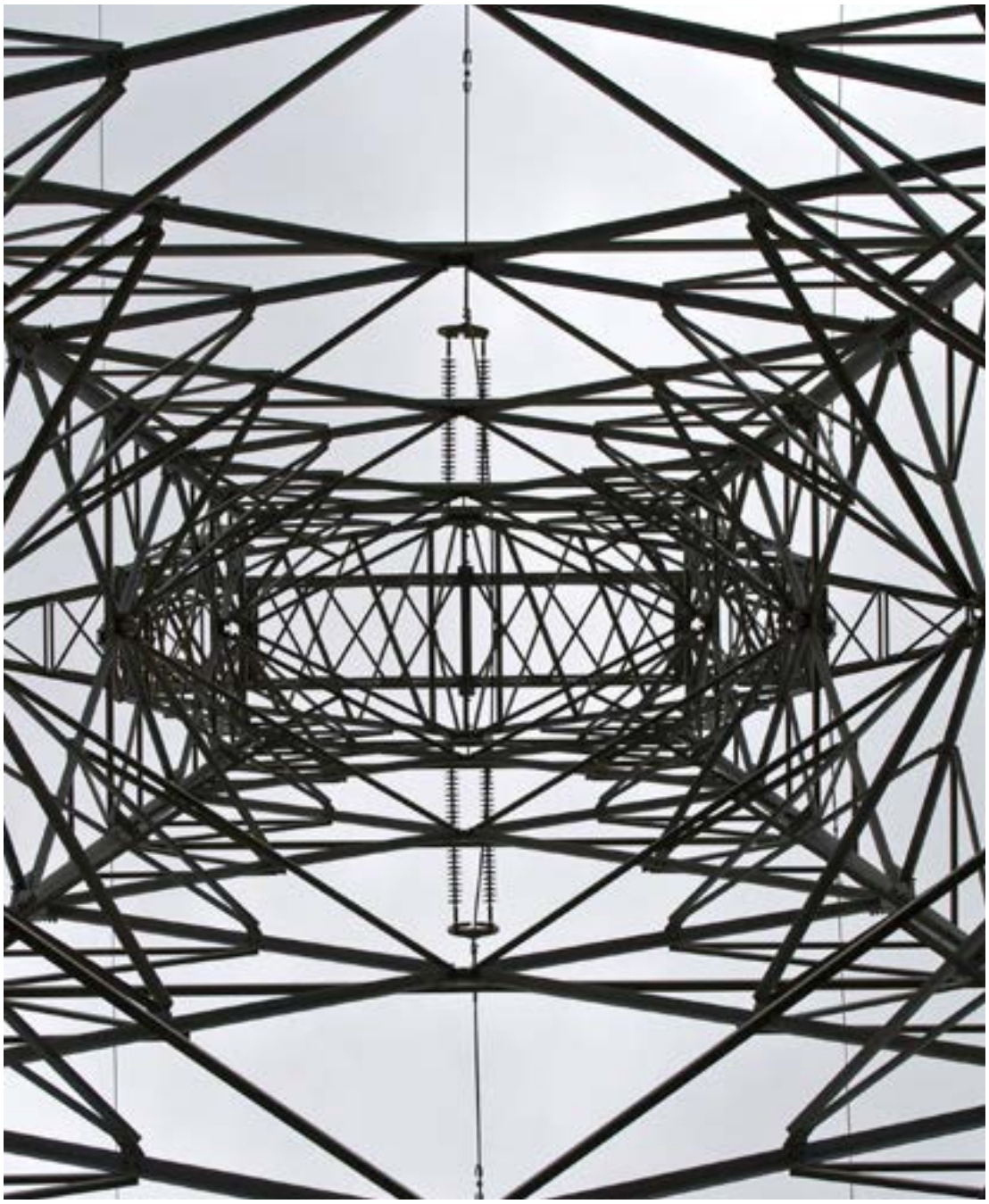
If a deal is reached, there will be a scramble of potential foreign investors in Iran's hydrocarbons industry of the kind we witnessed a decade ago when sanctions against Libya were lifted. In Libya's case the scramble was mostly to explore for new resources. In the case of Iran, the focus will be on developing the nation's huge existing reserves of oil and gas.

Iran's new oil minister, Bijan Namdar Zanganeh – who held the post in the pre-Ahmadinejad era – has already held meetings with European companies and indirectly with US companies about their possible return to Iran. If energy majors such as Total, Eni, Statoil and Shell return, they will bring with them engineering expertise, project management skills and capital that have been sorely missed. There is no doubt that they have been waiting for such an opportunity.

That would reinvigorate an industry whose progress has suffered immensely in recent years, partly because of international and unilateral sanctions, and partly because of mismanagement during the Ahmadinejad regime, at times by the former president himself.

Though the negotiations will be difficult and delicate, there are good reasons to believe that a permanent deal could happen. Iran's new president Hassan Rouhani wants it. The Iranian people, who have suffered economic hardship, want it. And the world powers want it. Following the historic interim deal reached on 24th November, at last a start has been made.

Alex Forbes, regular correspondent for European Energy Review – Brighton



The EU's electricity and gas industries: why are we in this mess and what can be done? Part 1

People are complaining more and more about 'information overload'. Sometimes, indeed, it appears to be 'misinformation (or disinformation) overload'. And the processes governing daily life are becoming more complex and being developed and applied increasingly remotely from the vast majority of citizens. Nowhere is this increasing complexity and remoteness of decision-making more obvious than in the long drawn-out efforts to complete the EU's internal markets in electricity and gas.

By Paul Hunt

Reasserting the "four freedoms"

The increasing complexity and remoteness of decision-making is imposing unnecessary, excessive and unjustified costs on final consumers and on the EU economy. It makes sense on occasion to return, as it were, to 'first principles'. The page on the website of the European Commission (EC) that deals with the single market sets out some basic governing principles:

"The cornerstones of the single market are often said to be the **"four freedoms"** - the free movement of **people, goods, services and capital**. These freedoms are enshrined in the EC Treaty and form the basis of the single market framework. But what do they mean in practice for everyone in the EU?

Individuals: the right to live, work, study or retire in another EU country

Consumers: increased competition leading to lower prices, a wider choice of things to buy and higher levels of protection

Businesses: much easier and cheaper to do business across borders"

Those of us who are more advanced in years remember the earlier manifestation of the EU as the European Economic Community. The focus then was on defining, developing, applying and enforcing these "four freedoms". And this focus was grounded on solid foundations in both the theory and practice of economics and political economy. A broad consensus existed that a mixed economy with genuinely competitive markets generated outcomes that were economically and socially superior to any alternatives that might be available or could be considered. This did not mean that the nature of the political economy that was built on these foundations went uncontested. There has always been, and continues to be, fundamental conflict in the political sphere - that, fortunately, more often than not is mediated by the democratic process - about the role of the state relative to the private sector and the location of the boundaries between the state and the market. And this conflict is often accentuated when 27 nation states are required, increasingly, to pool elements of their national sovereignty to achieve policy objectives agreed by all in their common interests.

With the passage of time it appears that the focus on these "four freedoms" has become blurred. But the continuing baleful impact of the Great Recession is encouraging a sharper focus on these 'first principles'.

Following an earlier initiative, in October 2012 the Commission issued a second (Act II) initiative on the Single Market. It includes a table of 12 key actions [note 1]. For the energy sectorlever, the objective is to "further integrate the EU energy market to reduce prices, promote renewable energy and improve security of supply"; the meansis to "improve the application of the third energy package"; and the key action is to "implement [an] action plan to enhance the implementation and enforcement of the third energy package and make cross-border markets that benefit consumers a reality" [note 2].

The absence of genuine democratic legitimacy

Describing the objective in terms of reducing prices, promoting renewable energy and improving security of supply is a demotic use of language presumably intended to render the argot of the Commission more 'citizen-friendly' and persuasive. It is possible, and, perhaps, it is the hope, that presenting the 'three pillars' of competitiveness, sustainability and security of supply (on which EU energy policy rests) in this manner may encourage increased and sustained popular acceptance and support.

The problem is that it won't; and it can't. The EU's energy and climate change project has never secured the extent of genuine democratic legitimacy that it requires. Nevertheless, the Commission has played the very weak hand of cards it was dealt initially to pursue, slowly, steadily and determinedly, over a period of more than 20 years, its objective of completing the internal market in electricity and gas. DG ENER (morphing

With the passage of time it appears that the focus on these "four freedoms" has become blurred

from its previous manifestations as DG XVII and DG TREN) has taken the lead, but it has been supported at crucial points by DG COMP and, more recently, by DG SANCO (the DG for Health and Consumers) on consumer issues.

Completing the internal market in electricity and gas was 'unfinished business' in the wake of the Single European Act (SEA) in 1987, but it took the Commission nine years from then to secure the enactment of the 1st Electricity Directive in 1996 (followed by the 1st Gas Directive in 1998). And these directives were very tentative steps towards market liberalisation. Not surprisingly, most national incumbent, integrated transmission and supply businesses were strongly opposed. Many national governments were unenthusiastic. The UK Government was not entirely alone, but its pioneering efforts in terms of the privatisation of its electricity and gas supply industries and the subsequent combination of regulation and market liberalisation attracted limited political or policy support in many other Member States. Britain's then self-sufficiency in natural gas contrasted forcefully with the increasing reliance of continental Europe on gas supplies from the Norwegian GFU, Gazprom and SONATRACH based on long-term, 'take-or-pay' contracts with oil-linked prices.

The difficulties posed by the exercise of market power and political meddling

The challenge confronting the Commission (and which continues to confront it) may best be expressed in the context of the acquisition, retention and exercise of political and economic (or market) power and the roles played by powerful and influential sectional economic interests. On energy policy and regulation, the Commission had very limited powers to pursue its objective. It relied almost totally on national governments, collectively, in the Council to provide it with the appropriate policy direction and then to persuade the Council - and increasingly the European Parliament - to consent to the legislation and regulations it drafted - and to transpose these into national law. Most national governments were very happy to 'talk the talk' of electricity and gas market liberalisation, but, when required to agree on precise primary legislative provisions and then to transpose these in to national legislation, they found it very difficult to 'walk the walk'.

Prior to market liberalisation, the existing incumbent electricity and gas suppliers enjoyed cosy, vertically integrated monopoly arrangements. Their staff and suppliers shared in this enjoyment. And the external gas suppliers enjoyed lucrative, if occasionally prickly, but broadly secure contractual arrangements with the national incumbents. The only party losing out was final consumers who ultimately paid for every aspect of these commercial and contractual arrangements. There was no doubt that significant economic rents - in terms of prices being much high than the economic costs of supply - were being captured along the electricity and gas supply chains. But there were many influential and powerful players with their snouts in the trough. Over time, most Member States had developed broadly stable arrangements to ensure the allocation of this largesse in a way that minimised conflict among the various players. Even if final consumers were paying much more than they should have being paying, secure and reliable supplies of electricity and gas were being provided.

Starting with good intentions and some success

However, the Commission was well aware that the extraction of this largesse was damaging the EU's international competitiveness in terms of higher business and living costs and, particularly, in terms of a high cost of energy to industry competing in an increasingly globalised market. The Commission's initial steps, in the 1st Electricity and Gas Directives, were limited. This was perfectly understandable. Its powers were limited; it had to rely on persuasion. And the opposition to any change was formidable. This was just one example of the continuous battle that the Commission is fated to fight - the promotion of 'more Europe' against the desires of national governments to maintain maximum discretion - and to retain the ability to pander to the narrow, sectional economic interests that exercise varying degrees of power and influence over them. The opponents of change sought to apply the principle of 'subsidiarity' (in theory allowing decisions to be taken at the appropriate level of governance, but in practice permitting national obstructionist tactics), to maintain a requirement to preserve Public Service Obligations and to highlight the obvious differences in institutional and structural arrangements among Member States so as to impede the implementation of the relatively limited changes sought by the Commission.

In addition to a growing body of economic theory demonstrating not only that the introduction of competition and choice was desirable in the electricity and gas industries, but that it was also possible, the Commission had two 'models' of how competition and choice could be introduced. The first was the process of gas industry de-regulation pursued in the US from 1978 and which was largely complete by the late 1990s. The second was the process of privatisation, competition and regulation initiated in Britain for the gas industry in 1986 and for the electricity industry in 1990. For a variety of reasons, many perfectly understandable, some downright abstruse, the Commission favoured key elements of the British approach which was based on full unbundling of network and supply activities, wholesale markets in electricity and gas and full retail competition for all final consumers from 1998. [note 3]

The EU's energy and climate change project has never secured the extent of genuine democratic legitimacy that it requires

The Commission could not be that ambitious - at least initially. But the first directives of 1996 and 1998 established two key principles. First, a minimum share of the electricity and gas markets - mainly serving large volume consumers defined by a volume threshold - was opened to competitive supply in almost all Member States. Secondly, electricity and gas networks were required to provide access (third party access) on non-discriminatory terms to network users other than the incumbent supplier. In addition, while the option of negotiated or regulated access to networks was permitted, a number of Member States accepted the need for regulated access and established economic regulatory bodies - or extended the remit of existing regulatory bodies.

The 'Forces of Darkness' regroup

Having established its beachhead, the Commission over the next 6 years, culminating in a second set of directives in 2003, sought to consolidate and expand what had been established under the first directives and to mandate full retail competition for all final consumers from 1 July 2007. This did not mean that the opposition to the changes it was advancing had been overcome. During the '90s the incumbent integrated suppliers (some completely vertically integrated (e.g. GdF or EdF), others locked in to tight contractual and monopoly

The only party losing out was final consumers who ultimately paid for every aspect of these commercial and contractual arrangements

franchise arrangements with multitudes of local electricity and gas distribution companies) began to see the 'writing on the wall' and to recognise that the changes being advanced by the Commission were running with the 'grain of the times'. They needed time to adapt - and to buy the time to adapt - their often unwieldy and ossified structures. Delaying the enactment of the first electricity and gas directives for as long as possible bought some time - as did ensuring the enforced changes were as limited as possible.

But, even though they were limited, these changes seriously threatened the incumbents' existing comfortable and lucrative business models. Rather than reduce prices to final consumes and to expand, in any meaningful or useful sense, the choice of service - though some evidence exists that both occurred, the changes initiated by the first electricity and gas directives resulted in a reallocation of the economic rents being captured along the electricity and gas supply chains. The inevitable fragmentation of demand side market power allowed more rent to flow upstream to producers and external suppliers. The implicit 'property rights' of incumbent suppliers to use transmission capacity as they wished were curtailed. Network regulation squeezed allowed revenues and facilitated the transfer of rent to new market entrants. The squeezing of allowed revenues also resulted in a reduction of the rents being captured by network staff - and by suppliers to these businesses. ■

Notes

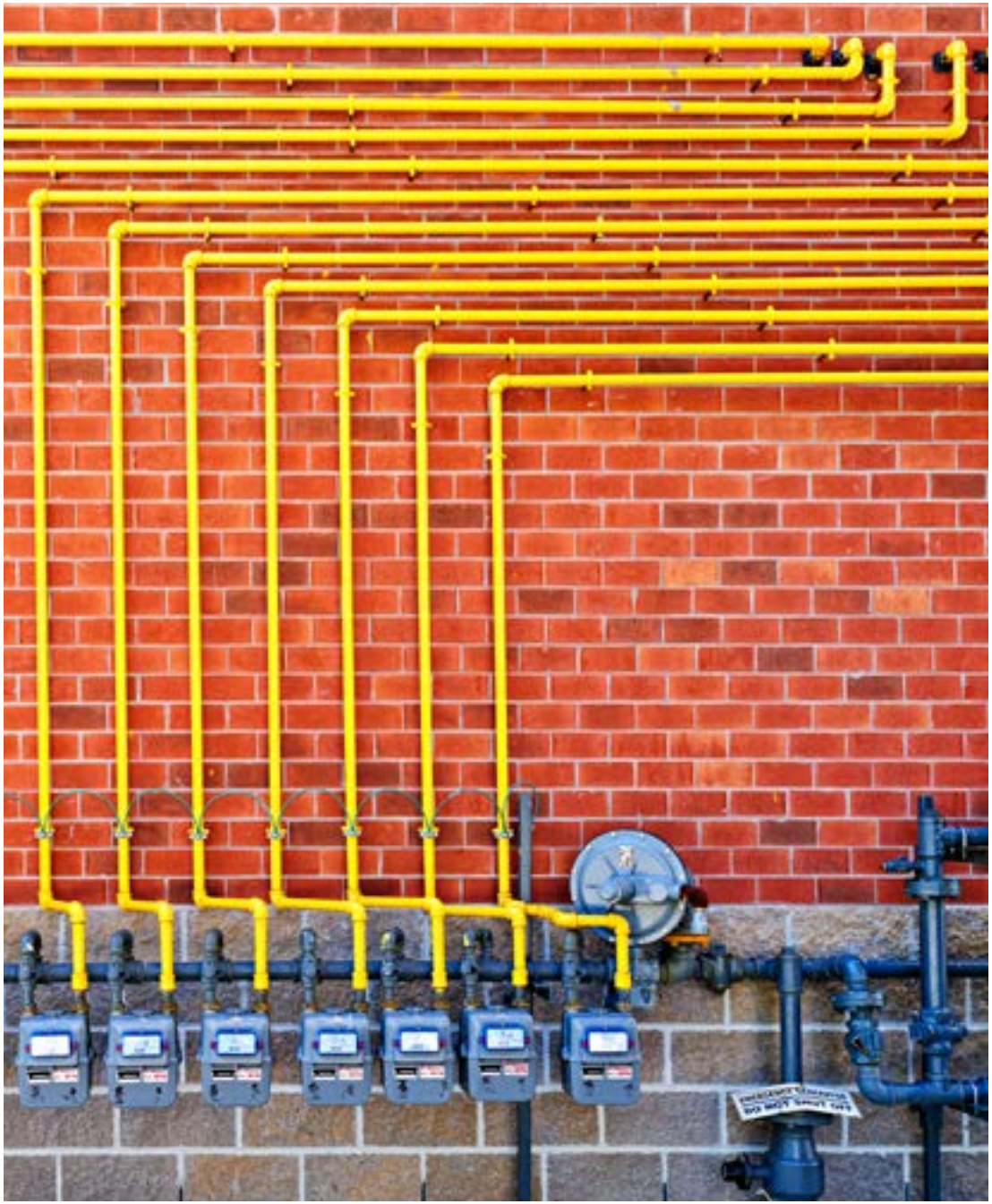
1 http://ec.europa.eu/internal_market/smact/docs/single-market-act2-keyactions_en.pdf

2 The President of the Council has upbraided the Heads of State and Government for failing to make sufficient progress on Act I and for running the risk of delaying progress on Act II:http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/135864.pdf. The Council meeting in May may make some progress in the energy area.

3 The British approach also included the 'virtual' pricing of gas transmission services (Entry-Exit pricing) which, although it facilitates the trading of gas at notional hubs, entrenches the monopoly enjoyed by the Transmission Systems Owners/Operators (TSOs) and prevents the emergence of genuinely competitive markets in gas transmission pipeline capacity. The Third Energy Package of 2009 mandates the use of Entry-Exit pricing and proscribes pricing on the basis of Point-to-Point (P2P) capacity. The generally accepted, but rarely conceded, rationale for this provision is to break Gazprom's hold on P2P transit capacity in to and across Eastern Europe. Not surprisingly, the costs (higher prices for the EU's final consumers) and the benefits (the possibility of lower external supply prices in the future) have never been assessed in a transparent manner.

"The expansion of the grids is a task and challenge to our whole society. This is why the public must play a central role. This way everyone can participate in the Energiewende."

Robert Habeck - Germany's first Energiewende minister in European Energy Review
December 2013



The EU's electricity and gas industries: why are we in this mess and what can be done? Part 2

Despite the pressures in the EU-electricity and gas sectors, the changes created new opportunities for the incumbent national suppliers – in particular for those in the larger national markets. The initial limited opening of the market created opportunities across the EU for consolidation, mergers and acquisitions which were pursued aggressively by the major incumbents to compensate for frequently mandated reductions of their shares in their national markets.

By Paul Hunt

The Empire strikes back

Although they sought to hold fast to their network businesses in the face of increased efforts by the Commission to enforce full network unbundling, the rapidly metamorphosing incumbent suppliers needed additional concessions to reclaim, maintain or enhance their market power. The Commission also wanted more in terms of full retail competition. Local distribution companies (LDCs) – providing bundled distribution and retail supply services (often both electricity and gas) in geographically defined franchise areas – were selected as the sacrificial lambs that allowed a deal to be struck. These LDCs existed in some, but not all, Member States. Many were extremely small and, as a result, often inefficient due to an inability to capture economies of scope or scale. Many of the larger ones suffered from lax municipal ownership, conflicting objectives, overstaffing and inefficient work practices.

Enforcing distribution level unbundling (expect for the very smallest) – ostensibly to facilitate the roll-out of full retail competition – allowed the national incumbents to acquire the retail supply businesses and, following continued consolidation, mergers and acquisitions of electricity generation and bulk supply activities, to vertically integrate along both the electricity and gas supply chains across the EU. And so we have the 'Big 7' – EdF, GdF/Suez, RWE, Eon, ENEL, Iberdrola and Vattenfall. Some of the dominant incumbents in the smaller national markets have also restructured and reconstituted themselves to avoid becoming the prey of these predators. In many cases they have succeeded by capturing large tracts of national energy and regulatory policy. [note 1]

The Commission decides to stay calm and carry on

This process has been advanced and expanded by the enactment of the Third Energy Package in 2009 which, additionally, in the form of the Agency for the Co-operation of Energy Regulators (ACER), established embryo cross-border energy regulation and, by empowering associations of electricity and gas TSOs, provides the basis for EU-wide electricity and gas network codes. The entire effort is being consolidated and developed in Electricity and Gas Targets Models which are slated to be implemented by 2014. The entire process has become enormously complex and cumbersome since it may be advanced only via a 'consensus among the major stakeholders' – most of whom have conflicting interests. Katja Yafimava of the Oxford Institute for Energy Studies provides an excellent outline of the complexity and areas of contention in the EU gas industry. [note 2]

The complexity has been increased – as has the potential for contention – by the imperatives of the EU's climate change policy, national initiatives that go beyond, or deviate from, key features of this policy and concerns about security of supply – particularly since the interruption of Russian gas supplied via Ukraine in 2009.

These problems have been exacerbated by a shortfall in investment in electricity generation capacity and in electricity and gas network interconnection. The continuing Great Recession and the credit crunch that precipitated it continue to be advanced as reasons for this shortfall, but other culprits, such as the inability to capture the full benefits of interconnection investment, the conflict between the long time horizons of investors in energy infrastructure and the short time horizons of users of this infrastructure or interminable delays in securing all necessary consents and permits for key energy infrastructure investments, have been identified. Again, the Commission, as is its wont, has developed instruments to address these issues, but it is a Sisyphean task continuously treating symptoms as they present themselves, rather than tackling the underlying malaise.

Where did it all go wrong?

The objective of market liberalisation – the introduction of competition and choice – was to promote efficiency in investment, production and consumption which, in turn, would generate benefits

Many of the larger LCDs suffered from lax municipal ownership

for final consumers and the EU economy. Genuinely competitive markets are the most effective means of banishing market power and political meddling. Even if the identity of those exercising it has changed, market power remains unconstrained and, in some instances, its exercise (and abuse) has increased. Political meddling has increased by leaps and bounds. While most energy regulators ostensibly enjoy sufficient independence to make decisions about the businesses subject to regulation free from overt and documentable political meddling, many operate effectively as departments of government implementing energy policy and regulation in a manner that allows ministers to evade any direct policy or political responsibility. Some have been totally captured by the businesses they have been statutorily empowered to regulations; while others were captured prior to establishment to serve the interests of state-owned regulated enterprises and for the convenience of ministry officials and governing politicians. [note 3]

Therefore it should not be surprising that most final consumers are no better off, and many are considerably worse off, than they were prior to the initiation of this long drawn-out process of electricity and gas market liberalisation. And all are facing increasing bills. It isn't difficult to understand why this is the case.

A genuine lack of understanding or well-rewarded stupidity?

There is a huge difference between free markets and genuinely competitive markets. Those who most loudly advance the case for the former generally loathe, hate and detest the latter because genuinely competitive markets prevent the acquisition, retention, exercise or abuse of market power.

Governing politicians (and their public officials) dislike them because they restrict their ability to meddle on behalf of sectional economic interests to which they are beholden. Capitalists (and their hirelings), at all times and in all places, will seek to rig, distort and subvert competitive markets – or even to prevent their emergence and effective functioning - to advance their narrow interests. And they will suborn governing politicians and their officials to achieve their goals.

The extent of vertical integration in the electricity and gas supply chains, the consolidation of market power and the limited depth and liquidity of spot and forward markets are perfectly understandable and, equally, were perfectly predictable. The only choice final consumers have is to select among vertically integrated firms who, ostensibly, 'compete' in the retail market [note 4]. The only effective criterion that the consumer has to differentiate among these 'competing' offers and to choose a supplier is price. The electricity and gas service they receive in their homes or businesses remains unchanged irrespective of the identity of the supplier. It should not be surprising that suppliers offer a plethora of tariff offers to confuse consumers, to prevent them selecting the lowest-priced offer and to seek to entrap consumers on high-priced offers. Governing politicians, policy-makers, regulators and consumer bodies focus on encouraging consumers to switch suppliers to secure a lower price, on facilitating switching, on improving the information provided to consumers and, on trying to find out, but failing to understand, why most consumers exhibit a reluctance to switch. [note 5]

But final consumers aren't stupid. Despite the unnecessary and excessive complexity with which they are confronted and to the extent to which they consider these issues, final consumers generally have a shrewd sense of the negligible market power they, individually, can exercise to secure

sustainable beneficial outcomes relative to the enormous market power exercised by the big vertically integrated suppliers. This is not a behavioural problem that requires a behavioural remedy– as all of these governing politicians, policy-makers, regulators and consumer bodies seem to think; it is a structural problem and it requires a structural remedy.

This brings us back full circle to the fundamental lack of sufficient democratic legitimacy for the manner in which the electricity and gas market liberalisation project has been implemented. It didn't have to end up like this. It was perfectly possible to have functioning competitive wholesale markets in electricity and gas – and, eventually, competitive retail markets where suppliers presented clearly differentiable service offers - that would generate sustainable benefits for final consumers. But the possibility of achieving this outcome was lost when the Commission sold the pass on the LDCs and turned its back on the potential to develop competitive markets in gas transmission capacity.

Prospects of relief for hard-pressed consumers?

And there is no going back. The only possible sources of relief for hard-pressed final consumers are the prospect of lower-priced US LNG imports and the increasing impact these will have on the pricing of external gas supplies. Smart meters and smart grids may grant consumers more control over the costs of their consumption, but their installation will generate a gold-mine for the ICT industry. There is no guarantee that the existing vertically integrated behemoths will pass on the benefits of enhanced load management to final consumers and serious information management and control issues arise.

The only viable alternative is for consumers to assert and enforce their collective interests in the face of avaricious firms and self-serving politicians and public officials, but there is a negligible probability of this happening. However, smug, complacent and self-serving politicians have been blind-sided in the past. We can but live in hope. ■

Notes

1 It has to be accepted that many of these 'behemoths' are currently suffering financially. This suffering seems to be arising from a combination of the impact of the continuing Great Recession (reducing energy demand across the board), the pace at which renewables (particularly wind power) are penetrating the market and reducing demand for convential generation capacity, Chancellor Merkel's blatant political sop to the Greens - the phasing out of nuclear by 2022 (damaging the balance sheets of RWE and Eon disproportionately), an increasing grassroots demand for 'remunicipalisation' (again largely a German phenomenon) and the painfully slow unwinding of their long-term oil-linked gas supply contracts. The risk now is that, from the perspective of EU and national policy-makers, they will present themselves – similar to many banks at the onset of the Great Recession – as 'too big to fail' (TBTF). The requirement for a structural remedy is becoming more pressing.

2 Yafimava, K., 'The EU Third Package for Gas and the Gas Target Model: major contentious issues inside and outside the EU', Oxford Institute for Energy Studies, NG 75, April 2013.

3 Ireland presents the most egregious example of pre-establishment capture of an energy regulator.

4 Smaller, new entrant suppliers, lacking their own production or generation facilities, find it difficult to secure wholesale supplies at competitive terms and prices.

5. In Britain, where full retail competition has been rolled out for much longer than in the rest of the EU, the UK Government is adopting the oxymoronic stance of 'regulating competition' so that final consumers will get the best price deal for them.

What will 2014 look like for Russia?

by Irina Mironova

One of the key developments of the year 2013, that perhaps has not yet made a boom, but definitely has the potential of changing international energy markets in particular, is the development of Asia Pacific LNG (to which EER has devoted a series of articles throughout the last months of 2013) with regard to both trade flows and trade principles. There is no doubt that we will be witnessing a large change in the nearest future.

The critical moment for Russia has come: will it be able to ride the wave of the Great Rebalancing in world energy markets and the rise of Asia as the dominant energy consumer? Russian initiatives in the recent past have been targeted eastwards: one of them – liberalisation (or, rather, 'nanoliberalisation') of the LNG exports.

It looks like the Asian train might depart without Russia, however: if there is no adequate development of the internal gas market it is doubtful that the country can be successful on an international scale - or should we say competitive and consistently present. Added to the lack of ability for companies to act swiftly (due to both the internal Russian context, as well as the overall complexity of the task of expanding presence in a new market lacking sufficient infrastructure), there is little hope Russia has the potential to keep up with the pace of the Asian growth.

Irina Mironova, regular correspondent for European Energy Review - Moscow

Nabucco cancellation has sunk EU's energy security plan

By blowing off the Nabucco gas pipeline project as Europe's fourth energy road, the BP-led Shah Deniz consortium sank a flagship of the EU's energy security plan. This decision has left Southeastern European countries more vulnerable to Russia's energy monopoly than ever. It has jeopardized the EU's action plans for energy security, while reinforcing the growing power of energy companies in the European energy market.

By Olgu Okumus

After a decade of negotiations, the consortium's selection criteria were two-fold: economic and political. The final decision's influence over European energy security also proved to be both economic and political. "Commercially, we should make sure that we have the right gas prices and the right transportation. Politically, we are looking for strong governmental support," said Al Cook, the vice president for the Shah Deniz Development at BP, in Istanbul at a meeting in November 2012.

Strengthening supply roads to Southern Europe

The announced decision laid out that the fourth energy road would consist of three partite gas pipelines delivering Azeri gas to southern Europe. The first leg is the existing South Caucasus Pipeline (SCP), running across Azerbaijan and Georgia. In Turkey, Shah Deniz gas will then be transported through the Azeri-Turkish joint Trans-Anatolian Pipeline (TANAP). In Europe, the Trans-Adriatic Pipeline (TAP) will deliver Azeri gas through Greece and Albania to Italy.

> *To some degree, the debate was already moot*

The SCP/TANAP/TAP joint pipeline would supply gas to Italy–the third largest gas consumer in OECD Europe after the United Kingdom and Germany. Italy is, however, not on the EU's list of energy security vulnerable countries—i.e., those having a need to multiply supply sources. Italy has a well-equilibrated gas supply map. Its main supplier Algeria's share is only 36.6 percent of Italy's domestic gas consumption. Russia (19.6 percent), Libya (12.5 percent), and the Netherlands (4.2 percent) also supply gas to Italy. In addition to this well-structured supply system, Italy has a reliable storage capacity of 14,417 mcm, the second largest for the EU trailing only Germany.

By welcoming TAP, the European Commission (EC) renounced the principle of solidarity among member states. After all, the EC supports an already well-established Italian system instead of working to help the vulnerable countries in Southeastern Europe such as Bulgaria, Romania, Croatia, Austria.

Lessons drawn from 2006 and 2009 gas crises

Some Southeastern European countries met with a high disruption in gas supply during the 2006 and 2009 crises - Bulgaria met 100 percent supply disruption, as did Serbia and Bosnia-Herzegovina, while Greece saw 80 percent disruption, Croatia 40 percent, and Romania 34

percent. In his analysis of the crisis, "The Impact of the Russia–Ukraine Gas Crisis in Southeastern Europe" (Oxford Institute for Energy Studies), Aleksandar Kovacevic drew the conclusion that a future energy crisis could easily devastate the financial standing of Southeastern European countries. Energy security planning in this region is still lacking.

As a proactive measure to ensure energy supply continuity security, the EC developed the European Energy Programme for Recovery. The programme aimed at multiplying gas supply sources for Southeastern European countries. The Nabucco gas pipeline project was the flagship of this plan.

Nabucco, running from Turkey's Eastern border to Baumgarten in Austria, was supposed to meet the need for integrated European energy security.
The political and governmental support Nabucco received from transit countries alongside the EU and EC over the past

years seemed an especially important asset. Even though Nabucco became a symbol of Europe's energy security plan, its weakness, high costs, heavy processing, and inflexibility put it on stand-by for more than a decade.

Setback to integrity

Besides this deadlock, Nabucco met other drawbacks when Russia's Gazprom responded to this European strategy by developing the South Stream and Blue Stream II gas pipeline projects. These were meant to reinforce gas supply to Central Europe and Turkey. Questions arose regarding Turkey and Azerbaijan's standing in Brussels versus the demands created by Moscow's gas pipeline competition. To some degree, the debate was already moot. Azerbaijan and Turkey had shown in the 1990s they would not oppose Russia when they inked the Baku-Supsa, Baku-Novorossiysk, and Blue Stream I gas pipeline projects. Balkan countries like Bulgaria, Romania, and Hungary also followed the Azeri and Turkish model when they inked host country agreements with the Russian-backed South Stream pipeline. Altogether Russia's victory in the battle over Nabucco is not all that surprising.

That is how it it became impossible for the EU to draw on the lessons of the 2006 and 2009 gas crises. Building the integrity of the EU's energy security plan proved to be an unfeasible project. While the Shah Deniz consortium decision showed the vulnerabilities of the EU's political power in energy issues and the weakness of its ability to develop integral energy security, it also proved the power of some energy companies operating in Eurasia.

Controlling oil reserves transport

Shah Deniz is on the world's top twenty gas list because it holds one-third of the South Pars gas field - the world's richest gas reserve. Shortly after its discovery, route options for a regional export pipeline were explored. Controlling the oil reserves' transport to markets was as important as sharing fields. Without a safe and secure route out of the landlocked Caspian Sea, the reserves could not secure their value.

The Shah Deniz Consortium shareholders (BP 25.5 percent, Norway's Statoil 25.5 percent, Azerbaijan's SOCAR 10 percent, France's TOTAL S.A. 10 percent, Russia's LUKoil 10 percent, Iran's NIOC 10 percent, and Turkey's TPAO 9 percent) - invested at first in the South Caucasus

> *The emergence of TAP has also shown the growing power of energy companies*

(Baku–Tbilisi–Erzurum) pipeline running to Turkey through Georgia at an estimated capacity of 20bcm of gas transit per year. The Shah Deniz gas fields' operator BP, who has been involved in the region since 1992, is the largest foreign investor in Azerbaijan. It holds a 25.5 percent share in the consortium. Therefore, the interests of BP had a priority position in the decision-making process. The June 28th decision and the emergence of TAP showed that BP shared its influence with other energy companies, such as Statoil and SOCAR.

The emergence of a flexible project - TAP

The emergence of TAP has also shown the growing power of energy companies in the region's energy sector. TAP is the joint project of Swiss Axpo(42.5 percent), Norwegian Statoil (42.5 percent) and German E.O.N (15 percent). TAP and Nabucco's shorter and cheaper variant, Nabucco West, began competing for the Shah Deniz consortium's approval after the decision to refuse the Interconnector-Greece-Italy project. TAP made strategic steps to meet the Consortium's concerns, ultimately helping engender its success. TAP first approached the Consortium's members in June 2012. This was not the most complicated move, as one of TAP's main shareholders, Norway's Statoil, already held 25.5 percent shares in the Shah Deniz consortium. In June 2012, TAP signed a cooperation agreement with the Consortium. In August 2012, TAP invited Shah Deniz Consortium members BP, SOCAR and Total to co-fund the project's development and gave them the option to purchase shares in TAP up to 50 percent.

By the end of September 2012, Greece, Italy and Albania finally signed a memorandum of understanding to allow governmental go-ahead for TAP. This permitted the project proposal to eliminate its main shortfall compared to Nabucco – a perceived lack of political support for TAP. In December 2012, TAP's second strategic move was to team up with TANAP, jointly held by Azerbaijan's SOCAR (80 percent), Turkey's BOTAS and TPAO (20 percent), to deliver Azeri gas to Bulgaria via Turkey. TANAP became much stronger in January 2013, when BP (the Shah Deniz Consortium's leader) also signed a framework accord with SOCAR, TPAO and BOTAS—allowing BP to take a 12 percent share in TANAP.

On 22nd November 2012, the partnership became official when TAP and TANAP signed a memorandum of understanding and cooperation. This established a technical and commercial cooperation between the two parties and formalized a mutual framework and forum for coordinated activities and information exchange. The TANAP-TAP partnership thereby gained an additional asset compared to Nabucco West: all four shareholders of the Shah Deniz consortium (SOCAR at 10 percent, TPAO at 9 percent, BP at 25.5 percent, and Statoil at 25.5 percent) had become involved in the TANAP-TAP partnership.

A new reality

The emergence of the TANAP/ TAP/South Caucasus trilateral cooperation is a prime example of the change in the Eurasian energy market. Over the last decade the Eurasian energy market's evolution showed a trend towards the growing power of energy companies versus governments or public organizations. It might be time for the EC to revise its energy policy strategies and projects in the frame of this reality. ■

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2014: make or break for the Energiewende

by Paul Hockenos

2014 will be a telling year for the direction of the Energiewende. The first moves of the incoming government – a Social Democrat-Christian Democrat coalition – will tell us whether it intends to push the clean-energy transition forward, passively allow it to continue on its current path, or actively slow it down. Both parties have proponents of all three options in their ranks.

There are four priorities that the new administration will have to address early in the coming year. One is reform of the energy markets, in particular electricity. It's no secret that the failure to establish a framework for reserve capacity, primarily in the form of viable gas works, could imperil the Energiewende – as well as Germany's security of supply. There is a palette of alternatives, including straightforward capacity payments, but the politicos have not yet tipped their hand as to which way they will go.

Second, the incapacitated EU Emissions Trading Scheme (ETS) has to be put back on its feet. Germany's high use of coal is the Energiewende's Achilles' heel. During the last administration, Chancellor Merkel refused to weigh in on the issue, effectively allowing it to die in the European Parliament at the hands of conservative EMPs. There has to be a reasonable price on carbon emissions if the energy transition – and simultaneously the phasing out of nuclear power – is to be taken seriously.

Third, there's going to be action on the rising price of power for consumers, this much has been promised. But will it come in the form of altering the feed-in tariff? Or maybe forcing exempt industries to pay their fair share? Some of the other taxes on electricity could be reduced, like the value added and excise taxes.

Lastly, Germany has to formulate its position on the EU's 2030 targets. It's still unclear whether Germany will sacrifice some of its own ambitious goals in the name of European solidarity or go-it-alone with targets that are unpalatable to many of its European colleagues.

Paul Hockenos, regular correspondent for European Energy Review - Berlin

Energiewende:
from Wunderkind to Troubled Adolescent

Germany's Energiewende is no longer in swaddling clothes. Germany and its incoming new government face a set of issues very different from those of a decade ago. The questions now are: How must regulation change to meet the new goals for renewables? How will Germany cope as more nuclear reactors come off line? How will the country distribute ever more electricity generated by decentralized, small-scale producers? And, finally, how to cut back on the burning of coal?

By Paul Hockenos

It's now 13 years since the Renewable Energy Sources Act (EEG) was passed, which lay the groundwork for Germany's power supply to jump from just 6 percent of renewably generated power to 25 percent today. The key to this unexpectedly rapid expansion was the feed-in tariff (FiT), which incentivized rates for twenty years, giving investors across Germany the confidence to invest in clean energy technology.

Today though, Germany and its incoming new government face a set of issues very different from those of a decade ago. Germany's next administration is currently deep in coalition negotiations. The new partners, the Christian Democrats (CDU) and the Social Democrats (SDP), appear to agree that the Energiewende is moving in the right general direction. Environment minister Peter Altmaier, who is in charge of energy for the CDU in the coalition talks, says he doesn't want to abandon it, but rather make the Energiewende "more planned, predictable, and affordable in the long-term."

Goals

There are a number of scenarios for launching Germany toward a future of low-carbon energy. The previous government felt that 80 percent clean energy was feasible by 2050, for example, while the Greens think the country could be all-renewable by 2030. One thing everybody agrees on is that nuclear power will be phased out by 2022.

The targets that the previous government devised in 2010 (and then updated in 2011) are those that have generally been used until now.

Just this week, the coalition negotiators agreed that Germany's 35 percent goal of renewable electricity in 2020 should be upped to 40 percent. Yet when it came to bolstering the 2030 goals, the parties differed: the SPD backs a 75 percent goal, while the CDU favors upping the current 50 percent by just 5 percent target, if at all.

The parties' negotiators, Altmaier and Hannelora Kraft (SPD), said that the 2020 goal of 10GW of offshore, wind-power capacity will be lowered to 6.5GW (this is in fact adjusting to reality rather, since offshore expansion is significantly delayed anyway). As for onshore wind, it too will face cutbacks, especially in regions with comparatively low wind, like in southern Germany. The tariff for PV will continue to decline at the currently foreseen rate until capacity reaches 52GW, which should take about three years.

Renewable Energy Support

The FiT may have catapulted Germany to the front of the world's clean-energy leaders, but the time has come to retool – or trash it.

The coalition negotiators aren't scrapping the FiT right away, which one might have assumed from the tenor of the election campaign. Rather they're tweaking, for the time being. This means lowering incentives for renewable technologies like bioenergy and wind.

Also, renewable-energy plant operators will no longer be compensated when oversupply forces them to halt production. Moreover, new larger renewable-power plants will have to sell

The FiT may have catapulted Germany to the front of the world's clean-energy leaders, but the time has come to retool – or trash it

their output directly on the exchange rather than to TSOs. There will be a transition phase for smaller wind power stations, but by 2018 they too must compete on the market. And, finally, the new government will scrutinize and probably purge the 2,000-odd German companies exempt from FiT-related charges.

One of the ways that Germany could eventually go is the direction of a market premium model, an option supported by Germany's biggest industrial lobby. Renewable energy producers in Germany already have this as an option, namely selling their product directly on the energy market and receiving a premium to top it off if the market price is low. Making this more market-oriented mechanism the rule rather than just an option would mean consigning the FiT to history's dustbin. If it happens, it won't be before 2015.

Another option envisions a fundamental overhaul of the EEG to the benefit of solar PV and onshore wind. The Berlin-based think tank Agora Energiewende proposes to limit future feed-in tariffs for renewable power to 8.9 cents per kilowatt-hour. The surcharge for costly technologies that haven't panned out so far, like geothermal, biomass, and offshore wind, would be cut back dramatically.

"This new model would limit the surcharge to the level needed by onshore wind and PV solar since they are the most cost effective. And there'd be no cap on them in terms of overall volume," explains Patrick Graichen, Senior Associate at Agora Energiewende. "It's a radically simplified version of the EEG that would both promote the expansion of renewables and keep costs down."

Transmission Grid

Germany had been playing catch-up with the grid since the chancellor's decision in the wake of the Fukushima disaster in 2011 to shut down eight of Germany's 17 nuclear plants.

New legislation and decisions by the Federal Network Authority (BNetzA) prioritized and accelerated the construction and upgrading of grid connections across the country. Three new corridors and 2,800 kilometers of new transmission lines are underway.

The incoming government's commitment to reduce projections for offshore wind should impact grid plans.

"One or maybe even two of the planned corridors are redundant if offshore is being scaled back," says Peter Ahmels of the Berlin-based NGO German Environmental Aid (DUH). The DUH advocates a low-cost, decentralized smart grid with fewer large corridors. Germany's major grid operators tend to favor large transmission highways based on the projection of more coal-fired plants in the mix. On another front, local activists and many municipal utilities are fighting for municipal or citizen ownership of regional transmission networks.

The Coal Question

Germany's continued reliance on coal and its high carbon emissions is arguably the most vulnerable aspect of the Energiewende. The previous government refused to scrap subsidies for the coal industry and failed to help put the EU ETS, the bloc's cap-and-trade system for carbon dioxide emissions, back on its feet. Both the CDU and SPD say they want to make this right again by "backloading" emissions certificates.

Should the ETS not be injected with more clout – or not enough – one proposal is to launch more rigorous interventions

The providing of back-up capacity grows larger the more renewably generated energy there is in the system

on the national level. This would entail new regulations to reduce the share of coal by explicitly capping coal-generated power.

Capacity Markets

The providing of back-up capacity grows larger the more renewably generated energy there is in the system. At the moment, flexible, modern gas-fired plants, Germany's reserve of choice, aren't profitable to run, much less build new. For now, there are a host of options under discussion.

One option is the "focused capacity market." This design consists of two segments. The first, comprised of older incumbent power plants, would compete for capacity payments of one or four years. The second, made up of new, high-flexibility power plants, would compete for capacity payments of over 15 years. "The capacity payments of different duration increase planning security for investors and plant operators while decreasing risk premiums and thus the costs for electricity consumers," according to the Institute of Applied Ecology, a German research institute that endorses the concept.

Another alternative is a "strategic reserve" that would directly compensate unprofitable gas works.

Germany's energy transition, once the Wunderkind of the nation, will probably prove much more difficult as a teenager. Getting its adolescence right though will determine whether it ever reaches adulthood. ■

"We think there is an urgency to address the transition challenges, but in the West, the aftermath of the financial crisis is still inhibiting concerted action to move forward. We also realise the world and its problems get too complex for anyone to deal with on their own.(…)The quality of relationships between government, business and civil society will be a critical factor in realising positive outcomes."

Wim Thomas - Chief Energy Advisor, Shell in European Energy Review April 2013

US LNG - exporting a revolution

When large-scale exports of US LNG become reality – before the end of this decade – the US will become much more than just another supplier. Along with the methane molecules, it will be exporting a new way of doing natural gas business. The implications are profound, for buyers everywhere and for new supply projects in other regions. And yet some leading executives of major companies do not seem to fathom the enormity of the US LNG export rush.

By Alex Forbes

The debate about whether the US should or should not become a large-scale LNG exporter is all but over. With the point of no return now past, it is time to consider the various impacts that this new energy revolution is likely to have – not least in the hearts and minds of buyers and sellers. These impacts are already being felt, even though exports from the Lower 48 states will not begin until 2015 or 2016.

The US becoming a large-scale LNG exporter raises three crucial questions: how large an exporter will it become? How will the new commercial models being adopted by the front-runner projects affect how business is done? And what are the likely impacts on proposed LNG supply projects elsewhere?

How large an LNG exporter is the US likely to become?

How much LNG is eventually exported from the US is less important than the amount of capacity likely to be constructed. The over-exuberance we are seeing among sponsors of potential projects suggests that more capacity will be built than will be fully utilised; export licence applications continue to arrive at the Department of Energy, despite the queue. As of last month the DoE had received 34 applications. As one source drily commented: "There is a propensity for over-investment."

This may not matter much to the project sponsors if the business model for a project is a tolling contract, as most of them are – so long as they are paid the tolling fee for their liquefaction capacity. Whether gas passes through the facility is more a matter of concern for buyers – as we will see.

In evaluating which projects are likely to proceed, the following factors are key:

- Do they have export approvals from the DoE?
- How far advanced are they in gaining the – costly and time-consuming – siting, construction and operation approvals they need from the Federal Energy Regulatory Commission (FERC)? According to Charif Souki, the CEO of

The enormity of the US LNG export stampede has yet to sink in – even amongst leading executives of major companies

Cheniere – the only company to have so far reached the end of this long road – securing such an approval takes between 18 months and two years, and costs around one hundred million USD.

- Have they sold their capacity to buyers?
- And will they be able to attract finance?

The various debates at last month's World Energy Congress in South Korea suggest that the enormity of the US LNG export stampede has yet to sink in – even amongst leading executives of major companies.

Already the DoE has given full export approvals to four projects – Sabine Pass, Freeport LNG, Lake Charles and Dominion Cove Point – each of which is a major undertaking.

The clear leader is Cheniere Energy, which is constructing four liquefaction trains at its Sabine Pass project. These alone will have a nameplate capacity of 18 mtpa, all covered by long-term arrangements, and actual capacity of around 20 mtpa. In September the company made a formal application to the FERC for train five (whose capacity is mostly already contracted) and train six, putting it on track to develop some 30 mtpa. In 2012 only one country produced more LNG than this: Qatar.

Freeport LNG is proceeding with two 4.4 mtpa trains, for which it expects FERC approval next year. All the capacity has been contracted. Moreover, it has recently sold the capacity in train three and is considering a fourth. Like Cheniere, it expects the capacity of its trains to exceed nameplate, so it could end up with some 20 mtpa.

And so the list goes on. There are plenty other credible projects, not least the Golden Pass venture being pursued by ExxonMobil and Qatar Petroleum: 15 .6 mtpa of capacity for an estimated $10 billion (compared with Australia's Gorgon – 15.6 mtpa costing over US$50 billion).

It is looking a fair bet that the US will overtake Qatar in terms of capacity sometime early in the next decade and it is conceivable that US LNG capacity could exceed 100 mtpa by 2025.

As for buyers in Europe, the more LNG is exported from the US, the less will be the price pressures that buyers here have to face

How will the new commercial models affect the way business is done?

The US front-runner projects are a major departure from the traditional way of developing such projects. They are mostly conversions of regasification projects and so already have storage tanks and ship-handling facilities in place. Generally, this makes them highly competitive with green-field projects in capital expenditure. They will take gas from the pipeline network rather than dedicated fields.

Most significant of all, the business model being adopted by most projects is a tolling arrangement, so customers contract for liquefaction capacity rather than LNG. Sabine Pass, the first project is an exception, but its sales and purchase agreements are so structured that the net effect is very similar. Buyers will pay 115 percent of the Henry Hub (HH) price for their gas, but do not have to take it if they feel the price is too high – though they still have to pay the liquefaction fee of $3-3.5/MMBtu.

This helps to explain why Asian buyers, most of whose imports are under long-term oil-linked contracts, are so enthusiastic about buying US LNG, with price indexed to HH.

The attraction is only partly to do with price level. At current oil and HH prices, US shale gas would be some 30 percent cheaper than oil-linked LNG by the time it reaches, say, Japan, even allowing for the cost of liquefaction, shipping and regasification: around $10-11/MMBtu rather than $15-16/MMBtu. However, Asian buyers are aware that oil prices could go down while HH prices could rise – which could lead to oil-linked LNG being cheaper than HH-linked LNG.

A further attraction therefore is optionality. US LNG bought under tolling arrangements is free of destination restrictions, allowing buyers to trade the gas however they wish. Buyers can also choose not to use the capacity they are paying for. They would not then have to pay for molecules, transportation or regasification.

In the words of Shigeru Muraki, vice-president at Tokyo Gas: "In the new dynamics of the Asian LNG market, the key word is diversification ... Contractual conditions will be diversified in terms of pricing. New price indices such as HH and NBP will emerge ... A portfolio of long-term, short-term and spot contracts, as well as destination flexibility, will lead to increasing liquidity."

As for buyers in Europe, the more LNG is exported from the US, the less will be the price pressures that buyers here have to face as Asian demand pulls flexible supply away from Europe.

What are the likely impacts on LNG supply projects elsewhere?

The chorus of comments from Asian buyers echoing Muraki must be impacting the thinking of proposed LNG supply projects that have not yet reached final investment decision – in Alaska, Canada, Russia, East Africa, the Mediterranean and Australia.

Chevron has just indicated it will be re-considering train four at Gorgon. Woodside has abandoned planned onshore liquefaction for Browse and is considering floating LNG to reduce costs.

Much will depend on the progress that US projects are seen to be making. Most of the proposed projects in other regions do not have the capex advantages of the regas conversions and some will need expensive pipelines and other infrastructure. High-cost projects are likely to want to underpin their investments with traditional oil-linked long-term contracts.

Once again, the LNG industry finds itself in the throes of transformation – with the future looking hard to predict. ■

Watch the new dynamics in Asia

by Rudolf ten Hoedt

Europe should closely watch the moving panels on the Asian gas market, where parties take position for the expected increase in liquidity in the years to come. Australian projects that will come on line, North-America LNG that will start to flow, Mozambique and other new African producers that will enter the stage and the anticipated Russian gas supplies from the Far East will outstrip the growing Asian gas demand. Using these new supplies as a bargaining chip, Asian buyers will build up pressure in 2014 for lower costs and more flexibility. Gas suppliers keep a stony face and deny the need to change the oil-linked price structure for Asia that has resulted in a cost premium of up to thirty percent compared to Europe. But the push from gas buyers for short term agreements and longer contracts without restrictions to resell gas volumes on the international market will intensify. Suppliers from the Middle East will face a growing opposition against their extra margin in Asia. New suppliers are being told to offer lower, 'reasonable' prices. Asian companies are looking for ways to join forces and increase their bargaining power.

The Japanese are determined to stick to their effort to launch an LNG futures market in 2014. "We will cut the current LNG import prices", the Nikkei news agency quoted a spokesman of the Tokyo Commodity Exchange in December. The international gas business is repositioning itself as well. Surfing the wave, Singapore is preparing to become an Asian gas hub. The Dutch company Vopak has announced to build an LNG storage facility in the city-state. Along with other companies in the gas trade, Shell has increased its presence by moving its Integrated Gas branch to Singapore. Everyone is on the move. These new dynamics are knocking on many doors. The implications for Europe of the outcome of the developing showdown between gas supply and demand are uncertain - but it is increasingly important to keep a close eye on the Asian gas market.

Rudolf ten Hoedt, regular correspondent for European Energy Review - Tokyo

Interview: Jérôme Ferrier, President of the IGU

"Natural gas is better than other fossil fuels"

Due to the 20th Anniversary of the Slovak Gas and Oil Association, Mr. Jérôme Ferrier - President of the International Gas Union - took part in its annual conference. In this interview he presents his view on issues like increasing gas-on-gas competition, the missing global gas market or LNG trading as a tool leading to a convergence of regional gas prices. Ferrier proposes modification to the Emission Trading System and explains the unique position of natural gas within the COP. Moreover, he openly admits that natural gas is not a perfect energy source. It is however the best among other fossil fuels.

By Jozef Badida

Mr. Ferrier, you were elected President of the International Gas Union during the 25th World Gas Conference (2012) held in Kuala Lumpur, right? Could you tell our readers more about yourself, your professional background?

"Actually, I was elected not in 2012 but already in 2008. The continuity process requires the election of the IGU's President four years in advance of his/her mandate. Why? Simply because he is able to adapt, prepare and learn in the course of the following three years in the position of Vice-President. Not surprisingly, I already know my successor - American David Carroll who is together with the Immediate Past President - Datuk Rahim Hashim part of the IGU's Council. Therefore, the whole engagement takes not three but nine years.

Concerning my career, I'm an engineer and a gas man. I was involved for a long time within the French and International Oil and Gas Company - TOTAL. However, the share of gas should increase due to our projects in Australia and Russia. During part of my career I worked in Africa and Southern Europe. I took responsibility over subsidiaries active in transmission and storage. Afterwards I moved to Latin America and was in charge of TOTAL's assets for three years. When I returned to Paris in 2008 that was the opportunity to prepare and present my candidacy...

Besides the position within the IGU, I am also the President of the French Gas Association."

According to the IGU's report the price formation mechanism has changed significantly in the last seven to eight years. One of the biggest shifts has been noticed in Europe typically featured with oil indexed gas contracts. Nowadays its gas volumes traditionally linked to oil prices have shrunk (from 78 percent in 2005 to 50 percent in 2012) while the share of gas on gas competition has increased (from 15 percent in 2005 to 45 percent in 2012). How would you explain this change?

"There are probably two main reasons visible in the last ten years. The first one is connected with the crisis and opening of the market. It is clear that the gas consumers and buyers need to be more reactive. In the good old days you had incumbents, one per country, and it was easier to anticipate the needs and negotiate over the long-term period. The gas business is highly capital-intensive but unlike the oil sector it is less flexible. When you discovered a field in good conditions fifteen years ago, you normally signed a long-term contract with a rate of return making your investment profitable.

The second reason for the more flexible gas agreements is the share of liquefied natural gas (LNG). It gives us an opportunity to make an arbitrage in the same way as with oil provided that you have enough LNG terminals. Nowadays, this condition is fulfilled and for instance, TOTAL's LNG supplies originated in Yemen have been reoriented from the USA to Asia."

Taking into account issues like security of supply, would it be possible and proper for Europe one day to catch up with the North American gas market which is almost completely (99 percent) based on spot trading?

"If you want to reach 100 percent spot market you need (i) a sufficient level of infrastructure - interconnectors, LNG facilities, underground storages, (ii) an almost perfect market without bottlenecks and with the possibility to choose at any moment the origin of your gas and (iii) over-capacity. Although bottlenecks are also present in the US environment, it is still the nearest to these perfect conditions. The key word is autonomy of the US natural gas market. Today they are able to avoid even the Canadian LNG supplies now heading to other parts of the world. Unfortunately, the European gas market doesn't meet these predispositions...

On the other hand, it is also a question of security. In Europe, we are mostly focused on the security of supply but

It is important to deliver this message – the future of natural gas is not dependent on the production of shale gas, tight gas or coalbed methane

what about the security of demand? Investors developing fields and bringing huge investments need some kind of certainty. So, at the end of the day, we will have to keep at least part of the long-term agreements."

Natural gas prices differ significantly across the world. Europe and Asia Pacific recorded the highest average wholesale prices in 2012 ($11.00 and $10.50 per MMBTU). In the same period, North America enjoyed an enviable average price below $3.00 per MMBTU. This regional price differentiation only confirms the non-existence of a global gas market. Do you see LNG as a decisive tool contributing to the creation of a global gas market?

"You are absolutely right; there are three different regional gas markets. Moreover, in Asia we should distinguish between producing countries like Malaysia and Indonesia and highly import-dependent states like Japan and South Korea - Japan pays $17.00 per MMBTU. Personally, I have doubts whether such significant price differences are here to stay. I don't believe in their total equalisation but at least in some kind of convergence. And LNG could really be this converging instrument. Many companies are investing in LNG infrastructure with the commissioning period in 2015-2017. Therefore we will see an enormous growth of LNG trade in these years."

However, is it useful for Europe to invest and build new regasification LNG terminals, for example in Krk (Croatia) or Swinoujscie (Poland), if we know that the US LNG carriers will most probably be heading to the more attractive Asian market?

"Yes, it is, because the North-South corridor with those two facilities is a strategic gas line not only for economic but also for political reasons. Its aim is to be comfortable in terms of security of supply and to share the supplies among neighbours. It is another concept and I am relatively confident about those two projects. It could also be a tool to negotiate better conditions with traditional suppliers."

The EU politicians regard backloading as an instrument helping us to survive the Emission Trading System (ETS). After its endorsement by the European Parliament, the ball is in the court of the Council of the EU. If it is signed off, this measure will most probably encourage a carbon price hike - thus improving the profitability of gas fired power plants but also worsening the competitiveness of some European industries. At least from a short-term point of view. What would you recommend to the Ministers attending the respective EU Council session and why?

"Today Europe is passing through a critical phase and we are obliged to pay attention to the industrials. We need to be pragmatic. I consider the US and probably UK decision to split between power generation and industry correct. Surely, potential higher prices or penalties are unacceptable for industry. We must be supportive. From the other point of view, power generation means final customers like you and me. More ambitious measures could be taken if people want to support policy respecting the environment, accept more renewables and are ready to pay. That is the rule. The electorate has to choose the policy and at the end of the day it has to pay for it.

Therefore my recommendation is YES to backloading and the resuscitation of the ETS, but only with regard to power generation. Energy-intensive industry has to be excluded from the ETS. Some

industries, such as ceramics and glass, cannot overcome higher CO_2 prices. This division is possible; it is a regulatory, not completely liberal, system. Look how absurd the situation is in Germany, they are on the top of the list in terms of the deployment of renewables and at the same time they build and re-open coal power plants increasing their CO_2 emissions..."

The shale gas revolution in the USA has been able to happen due to hydraulic fracking. However, this process generates a lot of environmental concerns among the people. How could 'fracking' influence the future of the natural gas industry, provided that social acceptance is becoming crucial for any energy project?

"Frankly speaking, the future of natural gas is not only linked to unconventional gas. Conventional gas reserves reach roughly 130 years.

If we include unconventional gas, these reserves would be doubled. It is important to deliver this message – the future of natural gas is not dependent on the production of shale gas, tight gas or coalbed methane. The resources of conventional gas are quite satisfactory in countries like Russia, Qatar, Turkmenistan or Iran. Certainly, you can find unconventional gas in other states like the USA, China or Argentina contributing to their diversification.

To return to your question, we do not deny that there are some problems linked to fracking, although the level of sensitivity is varying from state to state. It is also our concern in the IGU, that is why we have created a new committee on Research and Innovation dedicated to these issues. However, it is not only the shale gas production – fracturing but also the matter of leakages or flaring. People don't talk about them but we are conscious of their existence and we would like to solve them."

The International Energy Agency (IEA) and IGU anticipate an increased share of natural gas in the global energy mix in coming decades. On the other hand, the 5th Climate Report of the IIPC has recently revealed serious threats concerning global warming caused by CO_2 emissions. Don´t you think fighting climate changes could be in contradiction with your positive estimations once we know that the combustion of natural gas also produces carbon?

We have the future, not as a bridge or destination fuel but as a part of the future

"Well, natural gas advocated by the IGU is the only energy accepted by the environmentalists. We are frequently invited to conferences to share panels with them. They agree that natural gas represents the cleanest fossil fuel but they also have queries about the mentioned leakages. Therefore, we have to be honest and open.

We know the troubling issues, we study them and there is progress. Alright, natural gas is not the perfect energy but it is better than other fossil fuels and the best to be complementary to renewables. Fortunately, environmentalists recognise that. We have the future, not as a bridge or destination fuel but as a part of the future. Moreover, we regularly take part in the Climate Change Conferences (COP), where we organise special gas panels – it was the case in Copenhagen, Cancun, Durban, and Doha. No oil, no coal, no nuclear, just natural gas is presented. The next one will be in Warsaw, where another particular debate with environmentalists will be held. This is a good signal. Although there are some problems, the voice of natural gas is recognised and accepted." ■

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Tight time frame

by Ben Warner

In 1972 the Club of Rome forecasted that the world would run out of fossil fuels by the end of the century. Twentyfive years later in the early Nineties, the energy sector told the public that there was enough oil to last for at least 60 years, natural gas for 80 years or more and coal for over 200 years, based on actual demands, proven reserves and a firm estimation of futures. Today, another 25 years later, price increase and improved technology broadened the more costly exploration possibilities. Tight oil, shale gas, new finds in -until recently- untouched regions, like the Artic, have doubled those volumes. There seems to be more conventional energy within our reach than ever before, at least in terms of the future.

What does this outlook bring us for 2014. The world can lean back, there's no threat of shortage in the realm of energy, not even in view of increasing usage. But is not this reassurance a devil in disguise, leading to drowsiness? Should not we use this time-out in the race of securing long-term supplies, to double our efforts in solving our anxiety about the one and only future? There also seems to exist something like a tight time frame. I think that in 2014 the emphasis on volumes, reserves, security of supply, sustainability and investments in the discussions will shift towards the timetable, because - as we know - duration is the fourth dimension of things.

Ben Warner, regular correspondent for European Energy Review - Groningen

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