

# European Energy Markets Observatory

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In collaboration with



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# A Strategic Overview of the European Energy Markets

Editorial by Colette Lewiner

In 2006 and early 2007, energy issues have continued to be on the top of political, industrial, financial and companies' agendas. In this Editorial, we give our strategic analysis of the recent events in the light of our 9<sup>th</sup> European Energy Markets Observatory's results and share our thoughts on the path forward.

**Oil market: the supply and demand balance will stay tight and prices trend should continue to be on the upward side**

## **Supply and demand**

The worldwide demand for oil was sustained in the last 12 months, boosted by Asian economies that are using more fuel to power their manufacturing industry. On a short term IEA forecasts a global oil product demand at 86.0 m barrels/day in 2007 (+1.8% over 2006) and on the longer term a 2.2% growth a year from 2007 to 2012, up from their last forecast at 2% growth.

It seems that, behind the overall numbers the energy habits of the planet were moving in two distinct directions. In developed countries, and in particular in the European Union (EU), obligations to conserve energy and use renewable sources of energy – both to reduce carbon dioxide emissions and maintain energy security – are expected to ease pressure on oil supplies.

But that trend is being more than offset by rapidly developing nations. While they still consume far less energy per capita, they are also manufacturing goods for rich countries, and they are increasingly

adopting western lifestyles that require heavy energy consumption. As a consequence, developing world and emerging industrialized economies will see their share of world oil consumption rise from 42% of global oil demand to 46% by 2012.

Despite an increase of 25% in year over year exploration and production expenses, the Major Oil Companies reserves fell 0.5% during 2006, with production down 1.7% from H1 2006 to H1 2007. The reserve replacement ratio was only 76% in 2006 (below the companies' objectives of 100%). However, as the oil companies start to see some pay-off from their large investments in recent years, the reserve replacement ratio is expected to improve in 2007. For these upstream projects the biggest constraints and challenges are access to human resources. In addition, as nearly all easy accessible oil has been developed, technical challenges and geopolitical problems make these exploration and production projects riskier. As a consequence, the growth in future upstream investments is expected to slow down in 2007. This overall situation is not rosy, and it is clear that unless the worldwide economy will experience a down turn, the supply and demand balance will be more and more difficult to reach with conventional oil. Unconventional oils (such as tar sands, heavy oil, oil shale, biofuels, and the conversion of coal or natural gas to liquid hydrocarbons) that are more expensive and/or riskier to produce, will have to be rapidly available on the market.

## **Oil prices**

This situation of overall tight supply and demand for crude oil and refined products, coupled with unsafe conditions in certain countries (as in the Nigeria delta) and with nationalistic attitudes in countries like Venezuela, Bolivia and Russia, has kept the oil prices high. The oil price peaked in August 2006 at \$80 and then descended to \$50 in January 2007. Due to a mild winter and a humid summer in Europe, and a mild summer in North America with no major hurricanes hitting the oil industry in the Gulf of Mexico, the oil prices did not exceed significantly \$80 per barrel. However, spikes are not precluded in the following months.

**Trends in gas: Gas security of supply is threatened by the clashing Russian and European Union strategies**

## **Moderate gas prices in Europe in 2006**

Due to the mild winter in Europe in 2006/2007, the gas prices decreased, and natural gas inventories were full at all-time-high levels and significantly above the five-year average. In Europe the average gas prices have stabilized in general since April 2006 at around €20/MWh. These moderate prices are hiding real strategic issues.

**While the EU is challenged by issues related to gas supply, Russia is fighting the challenges related to access to the market. This clash of agendas is threatening Europe's security of supply**

Europe is highly dependant on imported gas. In 2006 the imports amounted to 54% with Russia

providing, through Gazprom<sup>1</sup>, around 25% of the total needs. According to the EU Green book<sup>2</sup>, 50% of Europe's total supply will come from Russia in the year 2030. The dependency on Russian gas varies from one country to another, and the most dependant countries are the former CIS members. This vulnerable situation of the former CIS members explains why Russia is so powerful when engaging in stand-offs on their gas supplies (Ukraine – early 2006 – and Georgia and Belarus – end 2006). Because of Ukraine's transit position, this January 2006 cut-off triggered in turn cut-offs in many other European countries underlining Europe's global fragility. Gazprom is pursuing two main objectives towards the EU: increasing its control on gas transportation pipelines and entering the European retail gas markets.

### **The pipeline control battle**

Contrary to the European unbundling tendency, Gazprom wants to increase its control of the Russian gas fields, and it wants to increase the transportation pipelines from these fields to Europe. Russia continues to refuse to ratify the Energy Charter treaty, and it continues to avoid any commitment to open the pipelines to other providers. In contrast to Europe this is a *super bundling policy!*

Many events in 2007 illustrate this policy:

- The December 2006 stand off between Belarus and Russia was ended by an agreement on a gas price increase and on options for Gazprom to acquire in total 50 % of Beltransgaz, the gas transportation company in Belarus;
- In May Gazprom and the Austrian Oil and Gas Company, OMV, committed to control together the Austrian gas distribution "hub";
- In June, Eni (from Italy) and Gazprom agreed to develop the "Southstream" gas pipeline linking Russia to Bulgaria through the Black Sea. This pipeline, that will be fed with Russian gas, seems today more credible than the "Nabucco" project (supported by the EU) that has not yet secured its sources of supply.

### **Control of the whole value chain**

Again, many examples illustrate Gazprom's strategy to control the whole value chain (including retail) and to reap the associated margins:

- Their first deal was the creation of the Nord Stream AG joint venture in December 2005 (Gazprom 51%, BASF and E.ON 24.5% each) in order to build a pipeline and to transport gas from Russia to Germany through the Baltic Sea. Coupled with this deal, the companies entered into cross

- shareholding between Gazprom and E.ON-RuhrGas: an additional gas supply contract to E.ON (until 2036) was signed, access to the gas retail market in Germany was agreed upon and recently a joint ownership agreement was concluded for Gazprom's Siberian gas field Yuzhno Russkoye;
- Gazprom entered into similar agreements in 2006 including an extension of the Russian gas supply to Eni until 2035, common development projects in midstream and upstream, and access to the Italian retail market as of 2007;
- In July 2007 Gazprom's UK subsidiary announced the acquisition of a second small distribution Company (Natural gas Shipping Services) following the purchase of PNG's in 2006.

The EU, has announced ownership unbundling measures on September 19, 2007. These measures include a "reciprocity" clause to prevent foreign investors, including Russian companies, from taking over European gas and electricity transportation assets, thus responding to fears that Gazprom might grow to dominate the networks, distribution and retail. *With divergent strategies, one can easily predict that the EU/Russia battle for gas supply and value chain control is only starting.*

<sup>1</sup> Gazprom is the largest vertically integrated natural gas company in terms of reserves (61% of all Russian natural gas reserves and around 17% of global reserves), production (85% of domestic production and one-fifth of global production) and transportation (it owns the world's largest high pressure pipeline system). It is controlled by the Russian Federation, which raised its stake in the company in June 2005 in its attempt to regain control over the country's natural resources, which are the backbone of Russia's economy.

<sup>2</sup> EU Green paper March 2006

**The Oil and Gas actors game that we are witnessing, will have a mid-term impact on the output of oil and gas fields**

**On the negative side:**

Oil and gas producing countries as Venezuela, Bolivia and Russia tend to apply more and more nationalistic policies in order to reap a larger profit from the high oil prices.

This short sighted policy is illustrated by several events in Russia during 2007:

- After a long period of threats from the Russian government, Royal Dutch-Shell, Mitsui and Mitsubishi, signed in April 2007 the agreement by which they transfer their majority shares in the vast Sakhalin II gas field to Gazprom;
- Also in June 2007 Gazprom forced BP – through the TNK-BP – to cede its control of the giant Kovytkafield field.

This nationalistic attitude is short sighted as history has demonstrated that the resulting extra profits are used – at the best – to finance other sectors and are rarely returning to the oil and gas industry. At the same time, the Oil and Gas Major Companies, tend to leave the countries that implement such policies, thus depriving them from badly needed technical and financial resources. The end result is a decrease of the oil and gas output which is worrying as it predicts a tense future supply and demand situation.

**On the positive side:**

National Oil companies from non-producing countries (such as China and India) are significantly increasing their technical upstream competencies and expanding their global reach. Some major discoveries

were made in China in 2007 at the CNPC offshore oil field in the Bohai Sea and at the gas onshore field in Sichuan province). Funds have also been made available to find hydrocarbons in politically riskier countries, as illustrated by CNPC and CNOOC recent agreements in Chad, Sudan and Somalia. This should result in higher oil and gas outputs.

The market is also expecting more hydrocarbon discoveries and production from the Statoil/Hydro merger. This merger creates a worldwide leader in offshore activities that is well-equipped to approach technically complex projects, including those located in arctic climates such as the Barents Sea.

**The EU Climate change 2020 objectives: a good road map but very challenging to meet**  
**The general awareness about the looming climate change threat increased following the assertive results by the Intergovernmental Panel on Climate Change (IPCC) on climate change**

In March 2007, the EU Ministers asked Member States to commit to a 20% reduction in energy consumption and Green House Gases (GHG) emissions, as well as to reach a portion of 20% of renewable energies in their energy production. The horizon of this “three times 20% objective” is 2020. It is a short time frame for the building large carbon free plants, for the industrialization, at reasonable costs, of CO<sub>2</sub> sequestration equipments, for the renovation of a significant portion of the existing buildings and houses, and for the switch of the present car fleet to electrical cars.

While the situation differs between European countries, the EU's overall objective seems very ambitious to meet as a whole.

We estimate that<sup>3</sup>:

- The energy conservation is really THE key objective since it will automatically drive CO<sub>2</sub> reductions and the implementation of decentralized renewable energies;
- There is an urgent need to reform the Emission Trading scheme mechanisms by:
  - Allowing the certificates to be carried forward from one period to another,
  - Establishing clear and coherent rules for the NAP quotas allocations. Above a certain threshold these quotas could also be auctioned,
  - Better qualifying the projects entering into the Clean Development Mechanism to be sure that these projects would not have been done anyway,
  - Extending the Kyoto protocol obligations and mechanisms beyond 2012 to give a better visibility for Utilities investing in large and long term generation plants
- A strong political will, giving a clear priority to these objectives on national industrial interests, is needed;
- The cost of these policies should be evaluated in order to prevent an impact on Europe's competitiveness;
- These types of measures should also be applied in other regions of the world, especially in high energy consuming areas such as North America, China and India;

<sup>3</sup> Climate change Point of View by Colette Lewiner

- If these big CO<sub>2</sub> emitting countries would not commit to reduction, the EU efforts would represent just a drop of water in the ocean while jeopardizing Europe's development. In this case, the whole European scheme would have to be rethought.

In June at the G8 summit, Europe and in particular Germany's Chancellor (who was at the time chairing the EU) pushed the participants to commit on greenhouse gases reductions. The breakthrough was the declaration by G8 nations to aim to at least halve global CO<sub>2</sub> emissions by 2050. While failing to set mandatory cuts in emissions, the agreement could lay the groundwork for a unified world response to climate change. Following this G8 gathering, the end August Vienna meeting was set to prepare for the UN Climate Change Conference in Indonesia (Bali) in December 2007, which is aimed at achieving a comprehensive post-2012 agreement (post-Kyoto agreement) that should include all major emitters. At that meeting, the US representative said it will contribute to the next round of emissions cuts, a first step to setting limits since rejecting the Kyoto Protocol six years ago. However, he did not say by how much the US would reduce its emissions.

Following its March declaration, the EU Commission announced that by December 2007, it should set bidding objectives at the 2020 horizon for each of its Member States. In the meanwhile all NAP (National Allocation Plans) have been re-negotiated for the 2008/2012

period with a reduced number of free certificates for generators and with further significant reduction expected post-2012.

### Electricity security of supply in Europe has improved but the planned constructions will deteriorate Europe's CO<sub>2</sub> emissions situation

In our 8<sup>th</sup> EEMO edition<sup>4</sup> we alerted that the electricity security of supply was threatened and that €700 billion needed to be invested in new power plants during the next 25 years.

These investments are needed to:

- *Meet the electricity consumption increase:* The electricity consumption increase in Europe was on an average of 2 to 3% per annum at the end of the 1990s, and the annual growth of the present decade is expected to be lower than 2%. In 2006 the need for electricity has increased by 1.4% in UCTE countries. This covers contrasted situations: an increase of 2.5% in Spain and a decrease of 0.8% in France (mainly due to the large nuclear enrichment plant – Eurodif lower consumption) and of 0.1% in the UK. Of course if the European Climate change objectives would be met, electricity consumption would decrease (instead of increase) well below the 1990 level;
- *Replace ageing plants:* Programs for the replacement of ageing plants have to be launched. The situation is particularly urgent for nuclear plants with long approval and construction lead time (8 years in average) and which require very large investments (more than €3 bn for the 3<sup>rd</sup> generation reactor – EPR – 1,600 MW plant). In the

UK, several nuclear plants with old technology have to be closed between 2009 and 2023, and there is a need to build between 30 and 35 GW of new electricity plants in the next two decades, equivalent to about one-third of the existing capacity<sup>5</sup>. This challenge, coupled with the British North Sea gas fields depletion, explains why the British government is seriously considering launching the construction of new nuclear plants;

- *Match the “peak load” demand:* In 2006 the European peak load capacity increase was 1.7%<sup>6</sup>. This modest increase linked to the mild winter has led to an improvement of the real generation margins (7.6% instead of less than 5% the year before). *This is good news that needs to be highlighted.* However during the previous colder winters, the peak electricity demand has skyrocketed, threatening the electricity supply and demand balance. To match these exceptional events, which some scientists are predicting will occur at a higher frequency in the future, one needs to invest in peak load gas-fired plants that deteriorate the CO<sub>2</sub> emissions levels and increase Europe's dependency toward imported gas from Russia. A good alternative solution is to “shave the peak” by making compulsory the installation of smart meters (and by giving the right incentives to customers to refrain from consuming during peak hours) or, as in the US, by allowing Utilities to remotely control certain of their clients' equipments;
- *Increase the carbon free generation capacity.* Capgemini studies show that to reach the 20% decrease in CO<sub>2</sub> emission, the

<sup>4</sup> European Energy Markets Observatory 8<sup>th</sup> edition, a Capgemini study

<sup>5</sup> British Government 2007 “white paper”

<sup>6</sup> For UCTE countries covered in this 9<sup>th</sup> EEMO edition, please refer to the Countries' Abbreviations page at the end of the document

European countries need to not only implement energy demand side management bold measures but also to push their utilities to modify their energy mix in order to decrease their dependency on (imported) fossil fuels. This could be tough for countries like Germany that exploit coal and peat domestic mines and have decided to phase out their nuclear plants. Renewable energy (hydropower, wind power, solar and biomass) are carbon free sources. In 2006 their share of the primary energy has reached 6.5% (still far from the 20% objective). They will continue to grow – especially hydro and wind power – with the help of public subsidies. Nuclear energy is the only carbon free source of energy that can generate significant amounts of schedulable energy. Countries such as Finland and France have made the decision to build a third generation nuclear plant (EPR) and construction has started. Many others – such as the UK, Slovakia, Lithuania, Latvia and Estonia – are seriously considering the construction of new plants. Worldwide, many nuclear plant constructions are flourishing. 30 plants are under construction and 290 are planned. Carbon sequestration needs “lighthouse” projects to demonstrate its economic and technical viability and then it has to be deployed. In our opinion, no new construction of gas or coal plants should be accepted without a financial provision for future carbon sequestration installations.

- *Do the planned investments match the security of supply and climate change objectives?* Our Observatory shows that investments in infrastructures started to grow again in 2005.

This growth continued in 2006. Planned projects for generation plants amount to a total capacity of 190,000 MW, while the total capacity of projects with applied permits equals 165,000 MW. UCTE<sup>7</sup> studies show that for the period 2007-2010, the generation capacity adequacy does not seem at risk. From 2015 to 2020, the electricity consumption growth is expected to slow down but not sufficiently enough to stabilize the level of load. In the UCTE conservative scenario, the generation adequacy will be at risk by 2014-2015. Yet in the “best estimate scenario”, global adequacy would be ensured until 2020, provided that further investments than those already decided and known by TSOs<sup>8</sup> are made.

In this respect, one needs to be very attentive as some factors could slow down or stop these investments. Let us mention:

- Supply constraints for power plant components;
- Scarcity of consented sites;
- Tight European engineering and construction of human capacity;
- Increasing costs driven by this scarcity -as an example costs to build new coal power stations would increase by 30%;
- Earlier plant decommissioning;
- Last but not least: political risks and lengthy procedures impeding investment plans.

This analysis shows that the security of the supply situation is evolving positively. However the situation is much less rosy when comparing these projections to the EU Climate change 2020 objectives:

- The European TSOs do not predict an electricity consumption decrease at the 2020 horizon, nor even a stabilization! Electricity is of course not the only energy consumption mode. However this illustrates how difficult it will be to reach at that horizon the 20% consumption reduction objective!
- 81% of the planned generation plants will be fossil fuelled, using coal or gas, which are CO<sub>2</sub> emitters. This will worsen Europe’s CO<sub>2</sub> emissions situation. Again the 20% CO<sub>2</sub> emission reduction objective seems far away!

***This short analysis shows that the investments planned today are not consistent with the European climate change objectives. To be credible, the EU and national governments need to realign their policies.***

**Are we moving towards fluid electricity and gas markets? Do we need a third European Directive?**

**Power exchanges continued to grow in terms of volumes traded and “product” diversification**

Still further development is needed to reach the target of a fully converged (fully integrated) European wholesale market – with a harmonized price. The introduction of two new exchanges, Belpex (Belgium) and OMIP (Portugal/ Spain) is a step in the right direction. The trilateral market coupling of Belpex optimizes cross-border interconnector capacity by allocating day-ahead border capacities using three countries’ power exchanges at the same time, leading to somewhat harmonized prices. This is expected to be extended to the Nordic regions, Germany and the UK as reinforcement of interconnections is made.

<sup>7</sup> UCTE Union for the Coordination of Transmission of Electricity

<sup>8</sup> TSO: Transmission System Operators

### After years of low investment levels, European TSOs have engaged in increased investments, albeit with a focus on domestic markets

*That said, there are no noticeable improvements of interconnections or in the removal of bottlenecks at priority interconnections.* The list of prioritised projects has remained roughly the same since 2002 despite a financial encouragement from the EU. EU funded projects were worth roughly €11 million in 2006, but these were all feasibility studies, and as such they did very little to lower the actual current congestion challenge.

### Unbundling: the “third Directive” consequences

The above established facts show that progress towards a truly liberalized European energy market is very slow. In order to accelerate the pace, the EU Commission announced on September 19, 2007 a new legislative framework draft aimed at ensuring that all generators and retailers have fair access to the transportation networks. In other words they proposed and want to impose new schemes for ownership unbundling: either full unbundling (ITSO) or an Independent System Operator model (ISO). They also announced an increase in the National Regulators power, the creation of a European regulating agency (as for Telecommunication sector) and reinforced cooperation between transmission System Operators.

Capgemini analysis concludes that<sup>9</sup>:

- Unbundling alone is not enough, other measures would also need to be implemented to achieve the objectives;

- There are only two sustained models that are applicable for this market and both need research and consideration: ITSO (Independent Transmission System Operators) or deep ISO (Independent System Operators);
- There are no ‘off the shelf’ solutions to this issue and each model has benefits and challenges that need to be adapted to local specifics;
- There are key differences between the gas and electricity markets in Europe. Gas security of supply remains paramount. In this respect, the “reciprocity” rule requested should prevent non-EU companies to take control of strategic pipelines;
- The success of any of these new models requires clear market rules and new interrelated systems as well as efficient and low cost data exchanges mechanisms.

### On July 1<sup>st</sup> 2007, the residential markets’ liberalization “did not create the expected breakthrough”; however it is too early to judge

On July 1<sup>st</sup> 2007, residential customers of nearly all EU countries became eligible to choose their supplier. This event that has been prepared for many months by the Utilities was well managed technically as the new processes and IT systems were in place. Furthermore, there were no significant supply disruptions. However, it did not create the expected breakthrough, which was for the change to give birth to fully fluid and competitive retail markets. Our experience at Capgemini on markets which have been fully deregulated for some years already (United Kingdom, Sweden, Norway and the Netherlands) shows

that the market transformation takes time and that the customer churn rate increases very slowly. We shall measure in the following months the real impact of this deregulation milestone.

In 2006 it is estimated that less than 10% of electricity eligible customers have used their freedom, which is the same percentage as 18 months ago. There are much contrasted situations in different countries: the most active electricity markets are the UK (over 15% of customers switching), and Sweden and Norway (more than 5% of customers switching). In the Netherlands, Belgium and Denmark there is some switching activity. The other markets are dormant. *The gas markets, which have lower switching rates, are even less dynamic!*

Key barriers to switching include the lack of powerful and competitive oriented regulators, the lack of intensive direct marketing, customer unawareness, the privileged access of the incumbent Utilities to cheap generation and below market price regulated tariffs.

### Retail electricity prices vary widely among EU Member States

In 2006, the yearly wholesale average year over year electricity prices grew by 12.6%. This average growth combined with market dynamics pushed the prices up in all retail markets. In many EU countries the residential prices increased year over year between 5 and 12% with very contrasted situations: a 12 to 20% increase in countries such as the UK, Norway, Sweden and the Netherlands and a flat – or nearly flat – evolution in countries such as France, where regulated tariffs are still broadly used.

<sup>9</sup> Unbundling Point of View by Colette Lewiner and Oskar Almen

Our research show a staggering range of retail prices, for the residential segment, from €0.06 to almost €0.20/kWh with the cheapest prices in Poland, France, Finland and Spain. The most expensive electricity is in Norway, Ireland, the Netherlands and Germany. These four countries were already those with highest average residential prices in our previous report.

**Despite a stabilization in wholesale prices, retail gas prices have increased, and are very variable across the EU**

The increase of oil prices has driven the rise: the average oil price has gone from \$54/barrel in 2005 to \$65/barrel in 2006. This 20% hike has been passed on, (to various degrees) to retail gas prices, on the basis that supply is regulated by long term contracts in which the gas price

is linked to the oil one. Within the residential segment, the greatest hike happened in the UK (30%), while Czechs enjoyed a decrease of 5%. As was observed last year, Germany, together with Denmark, Ireland and the Netherlands, have the highest prices for their residential clients. Irish households paid gas at €80/MWh. The Baltic States enjoyed the lowest price also for household gas, priced at €20-25/MWh.

One could try to correlate price levels with the degree of market openness, but consistency is difficult to find. Prices in the UK are high although the market has been open since 1996 (and it has also one of the lowest concentration levels in Europe). Instead, the Baltic regions that are opening their markets now still enjoy the lowest prices. This lack of correlation is explained by the interference of other factors with the price levels, such as history (for former CIS countries), transportation costs, short-term supply and demand dynamics, regulated tariffs or subsidies, among others.

*As a conclusion, we can say that while the wholesale electricity and gas prices tend to converge in Europe, that is not at all the case for retail prices. In addition, there are no clear correlations between market opening and price level. **Market deregulations are by far not the only factor accountable for the price trends in electricity and in gas.***

**Mergers and Acquisitions: why is the market consolidation slow?**

Incumbent Utilities that are losing market share in their historical geographies started, more than a decade ago, cross border acquisitions (e.g. EDF in the UK, Germany, Italy, Switzerland and Eastern Europe; E.ON in Nordics, Benelux, Spain, Italy, France and Eastern Europe) and we expect that this consolidation should continue. However despite war chests being at record levels, and despite the big mergers announcement which was made in early 2006, no mega deals were closed in H1 2007. There were two mega mergers announced in late 2005 and in early 2006: Endesa's supposed takeover by Gas Natural and then by E.ON; and the Suez/Gaz de France merger. They were real sagas, and it is only now, after more than 18 months, that we can figure out the end of these stories. Under the Spanish Government's push, a so called Spanish solution was adopted. The E.ON/Endesa deal did not happen and Enel from Italy and Acciona from Spain have become Endesa's owners. Following the French President's will, Suez and Gaz de France finally agreed on September 3, 2007 on their merger's conditions. This merger will give birth, probably in H1 2008, to one of the three top Utilities in Europe. Even friendly mergers such as Essent-Nuon were stopped during the lengthy merger process. These cases illustrate the complexity of the situation as different European

players have divergent strategies. Utilities are aiming at becoming larger pan-European companies that are able to invest in the needed infrastructures. Some countries are considering energy questions as strategic and are favouring the emergence of national champions. The EU Commission wants to create more fluidity and competitiveness in the market with smaller actors.

New actors such as Equity funds and Banks have entered the game. They are investing in Utilities such as network infrastructures and water assets that have recurrent low risk revenues. Further unbundling will create more opportunities for them.

The battle is not over!

### Utilities confronted by these many changes have to implement new management models

Utilities will have to adapt to new regulations. For example if Transmission Network Unbundling is prescribed by the EU Commission, they will have to establish new Companies based on ITSO or ISO models. This will oblige them to radically change their operating models and systems in order to ensure a seamless operational data flow between these newly created spin-off Companies and the incumbents. This is critical for the security of electricity and gas supplies. In addition, incumbent Utilities that have lost recurrent revenue from their networks will need to lower their "cost-to-serve" to their retail customers in order to survive in a competitive world.

They have, over time, often accumulated different layers of managerial and IT systems. To gain in efficiency they will have

to streamline and simplify their organisation, processes and IT. This will also require them to launch a change management program in order to have their employees adhere to these changes and to act differently. They can also achieve a lot of savings by outsourcing their Information Systems management and some Business Processes to specialized service firms. The savings are tangible, and the quality of service improves, for example, when Utilities would outsource their "meter to cash" processes.

These companies are generally facing the issues of an ageing workforce as the "baby boom" generation is retiring. At EDF, for example, 23,000 employees are retiring between 2008 and 2012. Moreover, in many Western countries the young generation is less and less interested by technical training. The output of engineers from the Western Universities is decreasing. Talent gap is thus a real challenge and even more so in certain areas such as nuclear energy, where investment in new plants had nearly stopped in the last few decades. Companies have to launch special recruitment campaigns and also have to take advantage of the high quality engineers educated in Asia's Universities (India and China, for example) by having them travel to the West and by off-shoring certain activities.

New technologies will impact all of the Utilities value chain segments: generation (third generation nuclear plants, geological CO<sub>2</sub> sequestration), networks (new sensors enabled smart grid operations) and retail (Smart Metering, new internet tools such as Web 2.0. for changing the behaviour of customers). Combinations of these technologies with Information System innovations (such as Service

Oriented Architecture) are reshaping the sector. Implementing these new technologies will have a great impact on the management of people: on one side it will trigger new recruitments and enhanced training; on the other side it will help mitigate the employee retirement effects (for example, automated meter reading decreases significantly the need for field work forces).

Now it is my pleasure to introduce the 9<sup>th</sup> edition of the European Energy Markets Observatory (EEMO), in which we continue to monitor the main indicators within the electricity and gas markets. For this edition, our partners continue to enrich our analysis by providing us with their sound expertise on regulations and legal questions at the European level (Bird & Bird), on customers' behaviours in retail markets (VaasaETT) and on financial performance and strategy (Société Générale Equity Research). Again, all throughout the report, the main energy issues for key European markets (Belgium, Denmark, Eastern Europe, France, Germany, Italy, the Netherlands, Slovakia, Switzerland, Sweden and the UK) are embedded in the chapters.

I hope that you will enjoy reading this new edition of the European Energy Markets Observatory and that the information and analysis it provides will be useful for you.

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Colette Lewiner

Global Leader of Energy, Utilities and Chemicals practice at Capgemini



Paris, October 8, 2007.

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## BIRD & BIRD

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With nearly 600 lawyers, and offices in Beijing, Brussels, Düsseldorf, Frankfurt, The Hague, Hong Kong, London, Lyon, Madrid, Milan, Munich, Paris, Rome and Stockholm, as well as a number of close ties with international firms in the United States and other key centres in Europe, Bird & Bird offer their clients local expertise within a global context. Created in 2000 by a group of a dozen lawyers, the Paris office now has 70 lawyers with various backgrounds and training, with 18 partners.

Due to its in-depth understanding of the way businesses and organisations work, their needs, and the difficulties and challenges of all types that they face on a daily basis, Bird & Bird is able to assist their clients when it comes to defining strategies or implementing operations from the most traditional to the most sophisticated and innovating, on a national, European or worldwide scale.

The Paris and Lyon offices now have a solid and renowned experience in the following disciplines: corporate finance, banking, tax, public law, competition law, employment, intellectual property, data protection, telecommunications, IT, energy, media, aviation, aerospace and defence, litigation arbitration and mediation.

Further information can be found on Bird & Bird website [www.twobirds.com](http://www.twobirds.com)



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### About VaasaETT

VaasaETT is a novel, independent and global think-tank designed to provide the global energy and utilities industry with fresh and creative solutions, through access to the outstanding reach and knowledge afforded by our network of over 1,000 experts in 50 countries on four continents.

VaasaETT's three areas of expertise are: Customer Value Development, Market Efficiency Development and Executive Search and Development, although the think-tank network has a broader expertise encompassing all energy market issues.

VaasaETT's state of the art expertise concerning the efficient management of the psychology and behaviour of customers in response to changes in their environment (e.g. prices, services, regulation, liberalization etc.) is arguably unrivalled around the world.

VaasaETT's core team of specialists have provided assistance to more than 300 organizations in around 50 countries; clients include Shell International, E.ON, ERGEG (European Regulators Group for Electricity and Gas), Nokia, ABB, Electrabel, RAO, Fortum, ENECO Energie and many more.

More information at [www.vaasaett.com](http://www.vaasaett.com)



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