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INFRASTRUCTURE UNBUNDLING IN EUROPE

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The present Working Paper refers to the Infrastructure Unbundling in Europe and the battle over ownership and control of the European wires and pipelines. IENE wishes to thank its author Mr.Nicholas Frydas for his valuable contribution.

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Infrastructure Unbundling in Europe
The battle over ownership and control of the European wires & pipelines

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Summary

This note provides a background to the importance and development of unbundling of energy network industries.

Network unbundling is viewed by many as a necessary step to the creation of a competitive market in energy, as it better aligns the incentives of these asset owners with its customers, and reduces the risks associated with discriminatory and anti-competitive behaviour undertaken to protect or enhance the value of affiliated supply/generation assets.

European policy has evolved slowly, in part due to the high level of national protection afforded to some companies. Below we discuss the way in which policy has been developed, and explain the relevant features of the so called '3rd Package' of liberalisation measures which attempt to resolve the issue at its fundamental roots.

The discussion on the theoretical values of unbundling are then moved out of the abstract world into an assessment of the recent E.ON announcement on the divestment of its electricity network. We assess some of the broader implications from this event.

Background

The aim of effective regulation of the networks is to create the conditions and rules to promote a functioning Transmission Business Model (see Appendix A for a description of such a model) that balances the needs of the network owners and its customers.

Power and Gas transmission are considered "Network Industries". Due to the high sunk costs and economies of scale that networks business exhibits, networks are often considered "natural monopolies". The fundamental principle on which liberalisation and commoditisation of those broader gas and power industries has been based is, regulating the networks that do not face competition, and allowing the production (Generation) and supply sectors to compete for customers.

Trading over networks presents some unique characteristics due to the physical characteristics, and the fact that commercial electricity storage is not possible, and gas storage is often costly, as opposed to many other market environments. This makes trading on these networks sensitive to market abuse and as a result regulatory oversight over undertakings active in the electricity and gas market need to be increased.

Most network industries were traditionally organised in Europe as vertically integrated state-owned monopolies and therefore, the separation (unbundling) of the network segments from the potentially competitive segments (such as production, storage, supply and maintenance) has become a highly contentious issue and the cornerstone of the market opening process.

The discussion in this note is limited to Transmission level despite the fact that Distribution networks share many of the same attributes. However the issue of discrimination for network access appears to be less relevant at distribution level for the following reasons:

a) At the Transmission level (meshed networks) congestions and how they are handled is much more important issue as there is no congestion at distribution level so that access is in principle available to all;

b) Moreover, Distribution Systems are not involved in balancing rules so discrimination is not possible in this regard.

c) Thirdly, at distribution level, the needs of customers determine investments, not the needs of suppliers, importers or generators as for transmission. An exception are very small generation sites directly connected to the distribution network ("embedded generation"), this concerns mainly renewables and is marginal now but may become more significant in the future.

d) Finally, Distribution unbundling is less relevant with respect to EU cross-border flows as these flows are essentially local. In contrast, an integrated wholesale EU market in terms of cross-border flows is about stronger Interconnector capacities and harmonised procedures at transmission level.

The discussion on effective unbundling must cover both gas and electricity. The electricity market can only work if there is sufficient competition in the gas market - because gas is a crucial input for the electricity generation. The gas market is also at extra risk from discriminatory behaviour, since gas flows can more easily be directed.

In particular Gas transportation, as opposed to electricity transmission, involves the physical movement of gas molecules through pipelines. The Gas operator therefore has a greater degree of control in defining the direction of flows and the capacity utilisation in the system. This means that effective unbundling of the gas networks is at least as important as for the electricity networks.

The note is broken into several sections.

• *Conflict of Interest* - This discusses how the Transmission role can conflict the operation of a market.

• *Unbundling Remedies* - This outlines the solutions, through unbundling of activities, to the inherent conflicts.

• *European Experience to Date* - This looks at the where we have got to so far with liberalisation.

• *EC's "Third Energy Package"* - This details the main aspects of the significant package of new measures (EU Directives and Regulations) which have now been approved through the legislative process and are now entering the stage of being transposed to National Legislation for the 27 member states and implemented. Specifically it refers to five pieces of legislation:

1) Directive concerning rules for the internal market in electricity and repealing Directive 2003/54/EC

2) Regulation on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003.

3) Regulation establishing an Agency for the Cooperation of Energy Regulators.

4) Directive concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC

5) Regulation on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005

• *Box 1 - The E.ON solution* - This provides background and impacts of the decision to divest its electricity transmission network.

• *Appendix A* - this describes a preferred Transmission Business Model.

• *Appendix B* - contains some recent press releases relevant to liberalisation.

In energy markets three distinct functions can be identified related to Transmission:

1) the provision of connection to and "open" access to the system and to collect the revenue for the use of assets (including Planning, Operating and Maintaining those assets) which are collectively called "Transmission Services" offered by the Transmission Owner - TO;
2) the "System Operation Services", since inevitably Command & Control of the System in "real time" has to be relinquished to a System Operator who has the responsibility of Balancing, Operating and Security of Supply and who may act as the sole counterparty during those transactions; and
3) a "Market Operation" function is identified in order to meter differences between contracted and actual energy flows, run or interface with the "market" for spot imbalances and perform the overall settlement process. The discussion is now turned on what conflicts of interest may arise between those 3 functions.

Conflicts of interest in regulated networks arise in a number of areas:

- Where owners of networks are also competitors with other users of that facility (i.e. when there is "vertical integration"); and
- Between the system operator and transmission operator, where the actions of one could run counter to the objectives of the other;

The first of these conflicts is the most well known and problematic. For example where an electricity network operator owns generation assets it may seek to 'self deal' and foreclose competition for system services. Indeed, the separation issue becomes more acute when, for example in power, the SO performs its residual balancing role through market operations where the SO is the only counterparty to the trade after gate closure and therefore has more scope to favour affiliates. In gas, long term contracting with affiliates for flexibility services can also lead to uncompetitive outcomes as there is no incentive to contract efficiently.

Other uncompetitive outcomes can arise where the vertically integrated utility seeks to thwart competition by being dilatory about construction and maintenance of the transmission assets. The impacts are not so immediately apparent, since any bad results are longer term, not day by day, as with the system operator.

There are also problems of potential cross-subsidies when competitive and regulated activities are in the same company (or affiliated company) the concern is cross-subsidization of the competitive activity by the regulated one.

The second conflict requires a regulatory solution to ensure that operational codes and rules provide sufficient clarity on the operation of the network and system (particularly the SO's handling of Balancing, Congestion Management & Ancillary Services), and possibly combined with the addition of proper incentive based measures to better align system and transmission operation with the needs of users.

The resolution of these conflicts is not easy, and even heavy Regulation will not necessarily be effective and may in fact produce unintended consequences that stifle innovation and flexibility.

In order to deal with the above issues, restructuring of the industry and separation (unbundling) of those functions is a common solution wherever market approaches and competition were introduced.

The broad options for unbundling integrated functions (in order of severity) are:

- Accounting Separation
- Functional Separation (Managerial/Chinese walls/codes of conduct)
- Legal separation (Affiliate) under a holding company;
- Ownership Unbundling (Divestment)

Many European Countries which enthusiastically embraced market reforms (UK - Scandinavia - The Netherlands - Belgium - Spain, Czech Republic, Romania) at an early stage, have chosen to have complete corporate separation (ownership unbundling) of those functions in one model or another. Other countries with the prominent examples of France, Austria, Greece, Bulgaria, Poland, Slovakia (state owned vertically integrated utility), Germany (privately owned vertically integrated utilities) and Italy (initially integrated, now fully unbundled) were more reluctant to do so.

In order to encourage those Member States towards further liberalisation the EC has required Legal, Accounting and Managerial unbundling (but not as far as ownership) in its Directives 2003/54&55. Whilst there have been some slow and reluctant steps (in most of the cases a "daughter company" inheriting the staff and assets of the parent incumbent vertically integrated utility, in other cases ISOs) the end results have been disappointing. In those countries that unbundling has been delayed, competitive markets have consistently been delayed to emerge.

Many systems in Europe were built by Government owned (or supported) businesses that often encompassed production to burner tip control and the political cost of fragmentation & unbundling (often seen as pre-cursor to "privatisation") has delayed such decisions with resulting distortions for developing a competitive market.

The situation has been also exacerbated due to the lack of "truly independent" Regulation in exactly those same markets as there is a relation between unbundling and regulation. Markets in which there is less than ownership unbundling require more detailed, complex and prescriptive regulation. In such circumstances national Regulators need in particular more intrusive and burdensome powers to prevent discrimination. However, disincentives to adequately invest in networks without ownership unbundling can not in any event be fully addressed by Regulators.

Already in 2005, the Commission launched an inquiry into the progress achieved so far in competition in gas and electricity markets. The energy inquiry responded to concerns voiced by consumers and new entrants in the sector about the development of wholesale gas and electricity markets and limited choice for consumers. The findings were published in early 2007 and in brief the main conclusion is that despite some progress since 2003, IEM remains fragmented, concentrated, illiquid and with high barriers for new entrants. There are signs that this lack of progress is leading Member States to impose generalised caps on electricity and gas prices. Depending on the level at which such price caps are set and whether they are generalised in nature, they can prevent the Internal Energy Market from functioning and suppress price signals that new capacity is needed, leading to underinvestment and future supply crunches. They can, under such circumstances make it harder for new entrants, including those offering clean energy, to enter the market.

Most of the problems are linked to the existence of vertically integrated companies, which not only control essential facilities (such as electricity transmission systems, gas transport networks or main gas storage facilities) but also enjoy significant market power in the wholesale and sometimes retail markets. It is important that new entrants are able to invest in new generation and gas import capacity since incumbents, if not properly unbundled, are likely to gain from a position of artificial shortage. In practice, EU companies are often not able to sell electricity and gas across the EU on equal terms as incumbent suppliers. In particular, non-discriminatory network access and an equally effective level of regulatory supervision in each Member State do not yet exist. The high concentration of production, transmission and distribution structures characterising the European electricity and gas system have led to extremely high entry barriers for newcomers. The emergence of vertically integrated natural monopolies (up- and/or downstream) exacerbates barriers to market entry, thus being an important obstacle to competition and efficiency gains. These vertically integrated companies have an incentive to hinder the entry and expansion of rivals in order to maintain their market power and thus achieve higher profits.

There are many ways in which control of the transmission/transport system can be used for this purpose, ranging from a lack of transparency on available transmission capacity and load profiles to discriminatory terms and conditions for third party access. If access charges are not properly regulated, they may give rise to a "margin squeeze", whereby the vertically integrated incumbent sets access charges at such a high level relative to its end-user prices that the margin is too small to provide an incentive for a new firm to enter the market. Vertically integrated companies have a disincentive to invest in their networks; "congestion revenues" are often higher than expected profits from building new links. This disincentive hinders the entry of companies providing energy from renewable sources and is an obstacle to the integration of European markets through of the development of cross-border interconnections.

Experience has shown that where the transmission system operator is a legal entity within an integrated company (minimum requirement of Directives 2003/54&55), three types of problems arise:

1) Firstly, the transmission system operator may treat its affiliated companies better than competing third parties. In fact, integrated companies may use network assets to make entry of competitors more difficult. The underlying reason is that legal and functional unbundling do not solve the fundamental conflict of interest within integrated companies whereby the supply and production interests aim to maximise their sales and market share while the network operator is obliged to offer non-discriminatory access to competitors. This inherent conflict of interest is almost impossible to control by regulatory means without an excessively burdensome and intrusive regulation.
2) Secondly, under the current unbundling rules, non discriminatory access to information cannot be guaranteed as it cannot be effectively prevented that transmission system operators do not release market sensitive information to the generation or supply business of the integrated company.
3) Thirdly, investment incentives within an integrated company are distorted. The vertically integrated network operators have no incentive to develop the network in the overall interest of the market with the consequence of facilitating new entry at generation or supply levels.

Investment in interconnectors may be regarded as a particularly suitable indicator to examine the potential of ownership unbundling to promote investment. The reason is that vertically integrated companies have an interest to protect their supply business in their home market by limiting cross-border capacity. As shown in the below table, the share of congestion revenue reinvested in interconnector capacity was about twice as high for ownership unbundled TSOs as for vertically integrated TSOs.

Relationship between ownership of TSOs and reinvested congestion revenue €M

	Ownership unbundled TSOs in EU-15	Vertically integrated TSOs in EU-15
Congestion revenue (2001-06)	387	632
Interconnector investment	129	104
Share of reinvested congestion revenue	33.3%	16.8%

While the numbers should always be interpreted with caution because of the usual difficulties and timing of large scale investments, they do show a remarkable difference.

The case of the Nordic countries is another example of how ownership unbundled electricity TSOs have agreed to tackle cross-border congestion. In the framework of Nordel, the body for co-operation between the TSOs in Denmark, Finland, Iceland, Norway and Sweden, the TSOs have

identified five major cross-sections in the Nordic transmission grid which will be substantially reinforced in the coming years. The total investment volume of all five projects is about ź 800 million.

Vertically integrated companies seem particularly disinclined to increase interconnection or gas import capacity which allow for more competition in the incumbent's home market to the detriment of the internal market. Investment in interconnectors may be regarded as a particularly suitable indicator to examine the potential of ownership unbundling to promote investment. The reason is that vertically integrated companies have an interest to protect their supply business in their home market by limiting cross-border capacity. As found by the inquiry, the share of congestion revenue reinvested in interconnector capacity was about twice as high for ownership unbundled TSOs as for vertically integrated TSOs. In the period 2001 to 2005 three German TSOs managing interconnectors generated congestion revenues of ź 400-500 mil. Of these revenues, only ź20-30m was used to reinforce/build new interconnectors. All TSOs maintained that the remaining revenues were used to reduce the transmission tariffs.

While it must be acknowledged that building a new line is a difficult and lengthy procedure, the striking findings in the case of the German TSOs seem to confirm the view that unlike ownership unbundled TSOs vertically integrated companies have little incentive to invest in. Very characteristic is also the case of Italy which initially adopted the ISO model (GRTN) for its Power Transmission system while assets remained owned by the incumbent utility ENEL. Following the severe blackout incident of 2003 Italy has now implemented a fully unbundled model with independent TSO. Terna is a listed company in which ENEL is a shareholder (6% of shares). The new investment plan, for the following 4 years, shows an increase of 30% compared to the ISO investment plan. The number of authorisations obtained doubled in the last three years; since the ISO was not managing the budget for the construction of the new lines, it could afford only a very small department for planning (three people). After ownership unbundling, the new department in charge of planning and construction employs about 100 people and more investments are planned in the Southern regions and islands, where most of the bottlenecks are located and new generation capacity is expected; strong reduction in operational expenditure, partially due to the in-sourcing of GRTN.

With respect to investment, it is also important to note that the main Member States in which LNG terminals are in an advanced stage of planning or are being built by companies other than integrated energy companies are the Netherlands, the UK and Spain, i.e. countries in which the gas networks are ownership unbundled. Moreover, in these three Member States the number of LNG terminals being close to construction phase or being constructed has been significantly higher than in countries in which the gas TSOs are still part of integrated companies. This is particularly so when taking into account projects by companies not affiliated with the incumbent companies.

Market shares of the largest generator in the electricity market (as a percentage of total generation) are significantly higher in Member States with legal unbundling than in those with ownership unbundling. Abstracting from countries with incomplete data, small and isolated countries, and the special case of Germany (where four former regional monopolists dominate the market), average market shares of the largest generator were in 2005 in Member States with legal unbundling 73% versus 47.7% in Member States with ownership unbundled TSOs.

The inquiry also destroyed the myth that due to an enhanced Balance Sheet vertically-integrated companies enjoy a better credit rating or share values. Fully unbundled network

operators performed much better in both areas in the period 2001-2007.

Electricity and gas prices may not automatically decrease because of ownership unbundling as other elements such as rising commodity prices, investment costs, taxes and environmental fees may exert a strong upward pressure on prices. However, weakening the market power of vertically integrated companies has potentially a dampening effect on prices by encouraging efficiency and new entry.

The EC's impact assessment took as one approach to examine the impact of ownership unbundling on energy prices is to compare the price evolution of Member States with and without ownership unbundled TSOs. The EC used the biannual Eurostat price data for wholesale and household customers in EU-27 excluding all taxes based on the entry into force of the first electricity Directive, (i.e. a 1998 starting point). As of the moment a Member State implemented ownership unbundling, the relative price change of this Member State was included in the calculation of the price index for Member States with ownership unbundling. This methodology takes into account that the composition of Member States that apply ownership unbundling is changing over time and that price data for the newer Member States is not available for all years. The results of this calculation show that in ownership unbundled markets, the electricity price for industrial consumers decreased from 1998 until 2006 by 3.0%, while in markets without ownership unbundling this price increased by 6.0%.

Another indicator to measure the level of competition in a market is the margin between wholesale prices and retail prices. The higher this margin, the more retail suppliers benefit and the more end customers have to pay for their electricity. This observation appears to indicate that some surplus has been kept by the vertically integrated incumbent companies due to lack of competition in retail supply leading to higher supply margins.

Effective separation has not occurred in many markets and has resulted in competition probes and remedies being proposed. Major problems attributed to the wrong ownership structure have been:

- the low level of investments particularly in interconnectors, protecting internal markets and posing barriers to new entrants;
- the low level of transparency and information prohibiting liquidity in wholesale markets;
- the low degree of Regional Integration because of low interconnection capacity and inappropriate methods of its allocation to the market;
- the case of the Italian Black-out of 2003 where a vertically integrated Swiss utility had the wrong incentives to exchange the appropriate information with the Italian ISO and take the corrective measures
- since the summer 2005 gas and electricity sector probes, competition cases were opened up against RWE, E.On, Eni, Distrigas and GdF
- The German federal grid agency (Bundesnetzagentur) has opened an investigation into market abusive by the country's four biggest utilities, E.ON, RWE, ENBW and Vattenfall Europe, in April 2008, for charging grid users over Eur800 million ($1.26 billion) in excess through inefficiencies in balancing power between the four grids in the period 2006-07.

In the light of the many findings of the inquiry the Commission considered that this situation cannot continue. A coherent series of measures need to be taken with the objective of creating within three years a European Gas and Electricity Grid and truly competitive European-wide energy market. Recognising that competition is not possible if network owners and affiliated supply companies are not effectively separated, the EC came up in September 2007 with the most recent of the general remedies in the so called 'Third Package' which puts forward two solutions: Full ownership unbundling (the TSO model); or alternatively a regional Independent System Operator (RISO) model. We examine below in detail those proposals, their impact on the market environment and the reaction and counter-proposals of other stakeholders and MS.

EC'S "THIRD ENERGY PACKAGE"

The Commission Communication of 10 January 2007 entitled "An Energy Policy for Europe" highlighted the importance of completing the internal market in electricity and natural gas. It was backed by a comprehensive internal market report, the final results of the competition sector inquiry and in-depth reviews of the situation of the national electricity and gas market. It concluded that complete separation of ownership between the transmission networks and generation/supply interests (full ownership unbundling) is the solution that offers the best guarantees from a competition point of view. The level of regulation required to implement full unbundling is also lower than for an ISO and even more so than in the case of regulated unbundling. In its Resolution on Prospects for the internal gas and electricity market adopted on 10 July 2007, the European Parliament also expressed strong political support for a common energy policy, considering that "transmission ownership unbundling is the most effective tool to promote investments in infrastructures in a non-discriminatory way, fair access to the grid for new entrants and transparency in the market".

To achieve this, the Commission published on September 2007 a package of comprehensive measures (the "3rd package") the main effect of which is:

- the effective separation of supply and production activities from network operation; two alternatives have been offered: a complete ownership unbundling (OU) of TSO; or a fully independent regional ISO (RISO) under close regulatory scrutiny; The ISO model would require detailed regulation and permanent regulatory monitoring, bearing the following questions in mind: What are the tasks of the ISO? Does an ISO have investment capacity of its own? How would generation companies be prevented from using ISO as a way to stabilise their market shares? Generally, it appears difficult to develop the appropriate institutional set-up to create an ISO with more than a limited lifetime. The most common problems with the ISO model are (i) coordination problems between the ISO and the network owner and (ii) lack of network investment ("the Achilles heel" of the ISO model).

To overcome the instability of the ISO model and to emulate the benefits of full ownership unbundling, the legal framework has to provide for strong regulatory oversight and detailed regulation in particular as regards the relationship between the ISO and the network owner. Moreover, the ISO has to be fully independent from supply interests and has to have wide-ranging powers on the operation, maintenance and investment of the network. In the light of the evidence the Commission considers that ownership unbundling is the most effective means to ensure choice for energy users and to encourage investments.

- the further harmonisation of the powers and enhanced independence of the national energy regulators, and the establishment of an independent mechanism for cooperation among national regulators; (An Agency at European Level with binding powers for regional market issues).
- the creation of a mechanism for transmission system operators (TSOs network - ENTSOE/G) to improve the coordination of networks operation and grid security, cross-border trade and grid operation; and greater transparency in energy market operations.

Regarding the Commission's ownership unbundling proposal, this comprises two elements:

a) Member States must ensure that the same person or persons cannot exercise control over a supply undertaking and, at the same time, hold any interest in or exercise any right over a transmission system operator or transmission system. This provision also applies vice versa, that is, control over a transmission system operator precludes the possibility of holding any interest in or exercising any right over a supply undertaking. In order to implement this option, Member States may choose the following arrangement which may help to fully preserve the interests of the shareholders of vertically integrated companies. The shares of the vertically integrated company may be divided into shares of the company owning the transmission system on the one hand and shares of the supply company on the other. Subsequently, these shares may be attributed to the shareholders of the previously vertically integrated company.

   However, with a view to encouraging investment in new energy infrastructures by supply and production companies, the present proposal includes the possibility of a temporary derogation to ownership unbundling rules for the construction of new infrastructure (usually large capital-intensive interconnection projects).

b) The present proposal requires the effective unbundling of transmission system operators and supply and production activities not only at national level but throughout the EU. It means in particular that no supply or production company active anywhere in the EU can own or operate a transmission system in any Member State of the EU. This requirement applies equally to EU and non-EU companies. The package contains safeguards to ensure that in the event that companies from third countries wish to acquire a significant interest or even control over an EU network, they will have to demonstrably and unequivocally comply with the same unbundling requirements as EU companies (the “anti-Gazprom” rule).

According to the Commission TSO unbundling helps to tackle almost all structural problems of the gas and electricity markets. TSO unbundling is expected:

- to tackle the problem of vertical foreclosure at is very root,
- to reduce market concentration by improving third party access and thus market entry,
- to promote market integration by facilitating cooperation and mergers between the independent TSOs,
- to promote transparency by eliminating preferential information flows within vertically integrated companies,
- to help to remedy distorted price formation for example by eliminating the risk of cross-subsidies within vertically integrated companies and
- to contribute to the security of supply by stimulating investment for example in interconnections

Although the majority of MS and the "first reading" voting in the European Parliament supported the ownership unbundling model (OU) as proposed by the Commission (subject for some to adequately addressing the issues of minority shareholding and public ownership) eight Member States (AT/BG /DE/FR /GR/LU/LV/SK) tabled, on 29 January 2008, an alternative named "Third Way" and presented as "Effective and Efficient Unbundling" - EEU) to achieve the "equivalent" effective separation of activities whilst on the same time it avoids the divestment of assets issue that allegedly (according to them) gives rise to the following concerns:

- OU is not compatible with constitutional law and the principle of free movement of capital
- No clear case has been substantiated that the OU will have a positive effect of investments and prices
- Deep concerns that OU will undoubtedly generate negative social consequences

This alternative, designed for both the gas and electricity sectors, is based on two pillars, one related to the organisation and governance of the undertaking and related to the assets, staff, Board and Management and financial resources and identity of the TSO, and the other related to grid investments, market integration and connection of new power plants.

The EEU proposal while on the one hand has not fully substantiated its alleged concerns (the constitutional issue is already refuted) relies on heavy regulation and administrative measures to create similar effects and efficiencies, however it misses the point arguing instead on the "auditing; an independent entity under the proper incentive based regulatory regime, would always align better its interests with those of its users. Once incentives are properly aligned no amount of heavy handed regulation and compliance overseeing is required. France and Germany of course are the two pre-eminent MS who have vertically integrated utilities and majority interests in supply and generation companies in other MS.

As a final compromise between the Council and the European Parliament the "EEU proposal" has been included in the final text of the 3rd package and adopted, despite the fact that the Commission had already passed judgement and its analysis concludes that the Third Option would

not lead to effective separation of supply and production activities from network operations. In substance, it does not appear to go beyond the principles established already under the Second Energy Package. The Third Option does not appear to ensure the structural independence of decision making of the TSO, and would not sufficiently remove the conflict of interest within the vertically integrated company. As a consequence, in its proposed form, it would not create the incentive for the TSO to invest in a non-discriminatory manner, and to generally promote the market, a fair and efficient operation of the grid, and transparency.

Nevertheless should such a model be accepted it must be ensured that the TSO should be clearly accountable for complying with these obligations (which is not easily imposed to start with) and there must be a strict enforcement regime. The obligations must be clearly and publicly set out in licences and/or legislation and be rigorously monitored and enforced by a regulatory authority independent of government. The regulatory authority must have the power to impose dissuasive penalties, including substantial fines, for breaches of these obligations. In addition, the Commission should have a role in certifying any alternative unbundling arrangements. There must also be obligations on the Vertically Integrated Utility not to engage in any activities that would cause the TSO to breach its obligations not to discriminate. Responsibility cannot be transferred to a compliance officer or trustee. However, they can exercise an important role in ensuring compliance which needs to be further defined. The more likely outcome of the "third way" is that any alternative approach should only be available for some Member States as derogation from ownership unbundling or the ISO model which is time limited.

Gas unbundling will be more difficult to achieve. Perhaps here some variant of the Third Way might be possible. Not much has been said about the Gas Directive so far. The arrangement is that electricity will be dealt with first and then specific gas issues, e.g. storage and LNG will be looked at. The UK Government does not accept that many issues are gas-specific and will want to restrict any cases of special treatment.

Some concern has been expressed that the proposed unbundling measure might have negative repercussions on security of supply, in particular for gas in the light of the market concentration of external upstream suppliers. The Commission services have considered these arguments and do not find any negative impact arising from the proposed measures. Firstly, the EU internal market will serve to reduce dependence of individual Member States on particular external suppliers. A more integrated network that would result from better TSO cooperation and ownership unbundling would make an important contribution in this respect. In order to achieve the internal market it is necessary that gas can be freely moved around the European Union either in physical or in virtual form. TSOs which are independent of supply and production interests can be expected to facilitate such arrangements by facilitating investment in transport capacity. Secondly, in an integrated market, external suppliers would be more likely to be faced with a smaller number of large and powerful EU-wide energy companies rather than 27 small national ones. These companies would:

- have the financial strength to negotiate with external suppliers without needing to own the network,
- represent a very large portfolio of customers,
- have access to a wider range of alternative resources (LNG, North Sea gas etc.),
- be more efficient and commercially focused than state-owned national incumbents.

Finally on 25th June 2009 the 27 EU Member State unanimously adopted the 3rd Package. The 3rd Package is a complex suite of energy legislation, comprising five separate acts, that were agreed in record time (less than 2 years). When implemented (i.e. within 18 months of its formal adoption), it will put in place a new cross-border energy regulatory framework that will enable a single EU energy market to develop.

In brief, the 3rd Package provides for:

(1) the strengthening of powers of national energy regulators, and of consumer rights;

(2) the creation of an Agency for the Co-operation of Energy Regulators (ACER);

(3) the establishment (for the first time) of EU-wide Network Codes in electricity and gas;

(4) regional cooperation obligations on TSOs and Member States and;

(5) effective unbundling.

THE E.ON SOLUTION

E.ON has now thrown a banana skin into the equation with its recent announcement (see Appendix B) to sell off some generation and its electricity grid. This is a reaction to the competition case which is being brought against it by the EC (see the EC press release in Appendix B). The other motivations will also be that firmer regulatory scrutiny going forward has reduced the synergies (anti-competitive rents) that come from vertical integration and that being first to take action could derive the best sale price for the assets. This has been emphatically demonstrated two weeks ago when the recently established German Network Regulator (Bundesnetzagentur) announced a 25% reduction of E.ON's transmission network charges for 2008.

It is clear that without the synergy benefits, there will be other companies better suited to owning regulated network assets (such as National Grid who have the experience to reap benefits from an incentive based regulation framework or a fund looking for steady returns in case of rate of return regulation). The investor will be ultimately be chosen by the type of regulation which will be imposed on German networks looking forward.

There could be however other motives behind E.ON's recent decision. E.ON has certainly ambitions for expansion on a continental basis, ambitions that have been somewhat thwarted in the case of Endesa and where they met with considerable political and regulatory opposition. Such a move on divestment of non-core assets will certainly pacify regulators in future expansive moves as well as avoid controversy on E.ON's plans in the Russian Markets (where they have bought OGK assets). In the latter case they could be facing awkward questions should they have remained vertically integrated particularly in the light of the "anti-Gazprom" rule as introduced by EC in their "3rd package" on IEM (vertically integrated corporations from outside EU will be prohibited from acquiring network assets in MS).

From a broader competition point of view, separate ownership better aligns the interests of asset owners and users where the owners are paid to build and increase system utilisation rather than prevent usage. This is particularly true in the case of interconnection tie-lines to the extent that the Commission's proposals on the 3rd package go as far as handing over regional planning of the transmission systems to an independent entity with mandate over several national transmission companies (ENTSO and Regional ISO) as far as interconnections go.

In addition, the sale of a sizable network could encourage further market integration through a number of drivers. Firstly, regulators will now have a new benchmark business to assess the behaviour of the integrated business surrounding it, and secondly pressures on further harmonisation and integration will either lead to more sales or as second best alternative, the ISO approach (as we saw between the Scottish and E&W network).

At a more detailed level, ownership unbundling will sharpen the way in which the asset owner/system operator will pursue system management and support services. As described below, a properly incentivised "for profit" "Transco" subjected to the appropriate regulatory framework, is optimising the inherent synergies between asset ownership, management, maintenance,

planning, construction and system operation for maximum efficiency and minimum operating costs. NGC for example is exposed to the "Balancing Services" Incentive Scheme (the pre-cursor of which was the Ancillary Services Incentive Scheme) and procures under competitive tenders system services from market participants while pursues innovative planning and operating schemes (like for example re-locatable SVCs for reactive power support) in an attempt to beat the annually agreed with Ofgem benchmark target. On the other hand "informal" arrangements between vertically integrated generation and supply are not uncommon and with the lack of information transparency, add to unexplainable market outcomes. In fact, the pricing (and escalation of costs) of ancillary services in Germany were one of the competition issues under investigation.

A move to an unbundled German network will not necessarily mean cheaper services, but there should be more explainable actions and pricing in the system. If a company such as NG buy the assets their experience in contracting for such services will help ease any transition.

First Domino - Further Market Impact

The impact of the E.ON. move will be significant for the market structure, i.e. not just related to bleating politicians feeling let down. If the assets can be successfully sold to a quality operator and there is an improvement in investment, it will reduce many of the arguments for maintaining transmission in vertically integrated businesses (including the need for such assets to support credit ratings). Until this happens in a large Continental market there will be no belief that the world will not end.

The first encouraging signals following E.ON's decision, came from an unexpected corner; The socialist Hungarian Government announced (Appendix B) on 11th March a shake-up of the state owned power company MVM, including "real steps" on personnel, the regulatory environment and MVM's organizational structure which marks a reversal of long-standing policies supporting a strong MVM that could act as a "national champion" in the power sector. Proposed measures include the spinning-off of the system operator Mavir from MVM, changing the rules and procedures governing power capacity auctions and moving toward a regional power market.

The overall impacts across the electricity market are likely to be mild from a physical point of view, given that these markets are relatively well developed and well interconnected. Eventual increases in interconnection investment will help cross border competition and market liquidity. Furthermore, any implicit agreements to not compete 'in each others patch' will start to disappear. Where the impact however is going to be revolutionary is on the size and allocation to the market of available transfer capacities (ATC). Independent TSOs will have the correct incentive to maximize allocated interconnection capacity not only from a physical point of view (building and offering more interconnectors) but also through innovative risk management techniques like Financial Transmission Rights and rights and obligations. These will allow the TSO to manage congestion while on the same time offering maximum capacity products to Market Participants which they can use to hedge transmission risk. This will then encourage greater integration of the internal energy market.

The lessons for the gas market could be even more important. Sticking with E.ON, its purchase of Ruhrgas was not welcomed by many players, including the German Cartel office. The lower level of competition and interconnection between gas networks has meant that these markets have lagged electricity development. Should these assets go back to market without the supply arm there will be a massive change in behaviour and a rapid integration of market zones in Germany.

Opportunities

The most obvious opportunity of pro-competitive changes is an increase in market transparency and liquidity. Market entry for new players will be also enhanced and facilitated. Network operators generally have less incentive to hide information from the market and under the correct regulatory framework the appropriate incentive to optimize operation of the system and maximise access.

Investors will need support in terms of finance (and certainty), particularly where Regulators demand particular levels of credit quality. Put simply, network owners going bust is a bit embarrassing.

Provision of ancillary services should become more competitive and innovative. In fact the conversion of intra-day markets and ancillary services markets will be where the TSO becomes in "real time" the central counterparty to all transactions in power will provide new opportunities for aggregated portfolio players. With the anticipated growth of Wind Energy which could comprise 35-40% of all generation by 2020 and the intermittent and uncertain nature of it, intra-day markets will assume an increasing importance and provide a big opportunity for well placed Traders. There will be also better structures for tenders therefore becoming more open to other players.

Better system access will emerge because a third party owner is less likely to favour one customer over another.

Greater incentives to harmonise and interconnect with other networks will emerge because there will be less need to implicitly protect an affiliated supply part of the business.

Threats

There may be a period of mistrust over a new owner, and Regulators may try to hem in behaviour and seek to manage risks through inappropriate policies. This could increase costs and stifle innovation for a while.

There may be resistance to having a non-national controlling a large network. It is not unknown for Governments to try various methods to ensure that network ownership is controlled.

Tariff setting arrangements in some markets have reduced certainty on the value of some assets making it harder to sell at a good price. Investors will be wary of taking on regulated assets where the Regulators are still undecided on how to reward investment, measure the asset base and work out an appropriate rate of return.

Conclusion

The proposed sale of E.ON's network and some generation is undoubtedly very good news for liberalisation, trading and investment activity. It will also spur Regulators on to making better tariff rules which will help with any further sales by other companies. The German Cartel office is unlikely to let any other German player buy the assets, and there will be resistance to allowing a vertically integrated business (i.e. EDF, Gazprom) from doing the same.

A grid map for E.on Netz can be found at **http://www.eon-netz.com**

Appendix A

TRANSMISSION BUSINESS MODEL

In order to identify the appropriate business model we need first to identify the exact nature of the service. The key elements of the Transmission Business are:

- The TO must define and allocate transmission rights to system users;
- System Users must notify in advance the SO of scheduled energy transfers consistent with their rights;
- The SO may have to reschedule actual energy transfers over the network to make them consistent with available transmission capacity (congestion management);
- The SO must arrange for extra energy to be supplied to make good transmission losses and must despatch in real time Generation (or manage Load) for frequency control, reactive support, balancing and security of supply;
- Someone must measure flows of energy into and out of the network and then liaise with the MO to arrange payment for imbalances and ancillary services;

The commonality of services such as quality of transmission system (frequency, voltage, pressure, reserves/storage, congestion management, black start, etc) makes it impossible to charge individual users on the basis of metered consumption. Each system user has an incentive to free-ride on the quality of service provided by others. The standard solution which avoids free-riding is to negotiate a joint agreement (the "Trading Arrangements"), whereby all beneficiaries appoint an agent to provide the service and agree how to share the costs among themselves. On other words if a monopoly SO did not exist to provide system support, system users would have to invent one.

Good market design considers;

a) Imbalances;

b) Congestion Management;

c) Ancillary Services; and

d) Scheduling and Dispatch

Where these rules collectively form the Trading Arrangements.

It is the degree of integration between spot markets with the operational and commercial arrangements for scheduling, despatch, congestion management and ancillary services and the interaction between the commercial transactions and the tools that the System Operator has in his disposition to "order or encourage" the market players to act in such way so that the system is balanced and operated in the most economical way, that characterise a market model and determine its ultimate success.

The transmission business being a monopoly is tightly regulated, to ensure that users pay a fair price, and that is run efficiently and appropriate investment levels are kept. The regulation of transmission can be indeed considered as part of the trading arrangements because of the tight link between the generation and transmission and because the rules for transmission are so commercially important for the market participants and affect the price that producers/suppliers are able to offer their customers. These rules should be incentive compatible as far as possible.

It has been mentioned in the main text, of potential conflicts between TO and SO. The case of conflict of interest as far as System Operation is concerned arises because of the necessity for the provision of the so called "Ancillary Services", losses and congestion management activities, all of which can have a material impact on the TO's revenues. Significantly an asset owning TSO/Transco can more easily be given incentives by the regulator to do its job properly as opposed to a not-for-profit, asset-free ISO. The transmission control agreement between the owner of the assets and the ISO is difficult to write and enforce. A Transco by contrast is a profit-making regulated entity with assets. Liability is aligned with decision-making and ownership, so potentially a Transco can better be held accountable for its actions than an ISO.

- For example under incentive based regulation, the system operator could realise profits if he consistently maintains the costs of such services under a specified benchmark index or incurs penalties if he exceeds them. He has therefore any motive to operate the system by minimising such costs and ultimately benefiting the end users.

Due to the technical synergies present between owning, maintaining, planning and operating the system it has been argued that the benefits of integration of SO and TO outperform the benefits of separation. Such an entity is called as we have seen a "Transco", ITC, or simply TSO. A Transco for example can better choose between maintenance and investment decisions; because it more fully encompasses both functions it can better choose the right "trade-off". Similarly a Transco can be better incentivised to offer maximum transmission rights (including interconnection capacity rights) rather than two separate entities between which planning, operation and maintenance of those assets is divided. The preferred business model for transmission is a "for-profit" integrated entity subject to the appropriate incentive based regulatory framework.

The model of an Independent System Operator - ISO is arguably inferior as such entity devoid of assets is much more difficult to be incentivised and to act upon the synergies between ownership and operation of assets as discussed above. ISOs have emerged mainly in North America as co-ordinating entities of several TSOs (and are called RTOs - regional transmission operators).

Appendix B

MEMO/08/132 Brussels, 28 February 2008

Antitrust: Commission welcomes E.ON proposals for structural remedies to increase competition in German electricity market

The European Commission has welcomed structural remedies offered by E.ON to settle ongoing antitrust cases in the electricity sector. E.ON proposes to commit to sell its electricity transmission system network to an operator which would have no interest in the electricity generation and/or supply businesses and to commit to divest 4800MW of generation capacity to competitors. The Commission intends to market test E.ON's proposals, with a view to adopting a decision under Article 9 of Regulation 1/2003. Under this procedure, the commitments would be made legally binding by a decision of the Commission and the Commission would not pursue the antitrust cases.

The Commission has conducted a number of antitrust investigations into energy companies as a consequence of the energy sector inquiry. Inter alia, the Commission has been investigating two cases against E.ON in the electricity sector.

The Commission welcomes these proposed commitments in so far as they could remedy the concerns that it has as regards E.ON. These proposals, if adopted, would structurally change the electricity sector in Germany and could spur competition in the sector to the benefit of domestic and industrial customers. The Commission will continue to conduct antitrust investigations in the energy sector.

02/28/2008

E.ON proposes structural remedies to increase competition in German electricity market

E.ON has offered structural remedies to the European Commission to settle ongoing antitrust cases in the electricity sector. E.ON proposes to commit to sell its electricity transmission system network to an operator which would have no interest in the electricity generation and/or supply businesses and to commit to divest 4,800 MW of generation capacity to competitors. The Commission intends to market test E.ON's proposals, with a view to adopting a decision under Article 9 of regulation 1/2003. Under this procedure, the commitments would be made legally binding by al decision of the Commission and the Commission would not pursue the current antitrust cases.

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The European Commission welcomes these proposed commitments in so far as they could remedy the concerns that it has regards E.ON. These proposals, if adopted, would structurally change the electricity sector in Germany and could spur competition in the sector to the benefit of domestic and industrial customers.

03/11/2008

Hungarian leader orders shake-up of MVM

Hungary's prime minister has ordered a shake-up of the state-owned power company MVM, including "real steps" on personnel, the regulatory environment and MVM's organizational structure, the Prime Minister's Office said on Tuesday. The announcement marks the apparent reversal of long-standing policies supporting a strong MVM that could act as a "national champion" in the power sector.

"The government's goal is to bring to an end the factors contributing to monopolistic nature of the domestic power market," the PM's office said in a statement. The announcement said the main reason for the changes was the expected privatization of a minority stake in MVM this year through a listing on the Budapest Stock Exchange. "There is only one thing worse than a state monopoly, and that is a private monopoly," the statement said.

The changes would make MVM "a investment providing secure growth" for Hungarian citizens buying shares in MVM under favourable conditions promised by the government during the privatization process. The government also said it expects power prices to fall as a result of the steps to be taken. Studies released by the PM's office on Tuesday identify the main steps that the government believes must be taken-ending administrative restrictions on import competition, eliminating the long-term power purchase agreements between MVM and Hungary's major generators, spinning off the system operator Mavir from MVM, changing the rules and procedures governing power capacity auctions and moving toward a regional power market.

ABOUT THE AUTHOR

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Dr. Nick Frydas has 21 years of professional experience in the Energy Sector with emphasis in Energy Regulation and Energy Markets & Trading. During the period 2004-2007, Nick has served as the Chairman of the Energy Regulatory Office of Kosovo under UN Administration. He led the establishment of the independent regulatory agency, the capacity building of its 26 staff and the development of the regulatory framework with respect to all appropriate secondary legislation and sector Codes, the undertaking of Price Review and approval of tariffs, the issuance of Licenses and the development of a wholesale market model. In UK he has served for several years as the Director of Regulatory Affairs for two main European Energy Traders and he has a very comprehensive knowledge of the European Energy Markets and Trading environment and the EU Energy Regulatory Framework.

He has also worked in a number of different markets around the world and has been involved with the market design and restructuring reforms in South Korea, Bulgaria, Jordan, Central and South East Europe and North Africa. Nick was a member of EFET's "Electricity Committee" and a member of Ofgem's "Transmission Access Standing Group" and has co-authored several position papers on the issues of congestion management, cross-border trading and transmission access and pricing in liberalised markets.

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